

BARRIE - COLLINGWOOD RAILWAY MULTI-USE TRAIL PRELIMINARY DESIGN





TABLE OF CONTENTS

1.0	Introduction.....	1	4.1	Opportunities	12
1.1	Purpose and Approach.....	1	4.1.1	A Continuous Corridor for Linear Infrastructure	12
1.2	A Brief History of the Barrie to Collingwood Railway	1	4.1.2	Natural and Cultural Heritage	12
2.0	Policy Context.....	3	4.1.3	Community and Individual Health	12
2.1	Provincial Policy Statement.....	3	4.2	Risks.....	12
2.2	Ontario Trails Strategy	3	4.2.1	Adjacent Land Owner Concerns	12
2.3	#CycleON: Ontario’s Cycling Strategy.....	3	4.2.2	Fences.....	13
2.4	Province-Wide Cycling Network	3	4.2.3	Public Liability.....	14
2.5	Ontario’s Cycling Tourism Plan	4	4.2.4	Potential for Soil and Groundwater Contamination	14
2.6	County of Simcoe Official Plan.....	4	4.2.5	Natural Heritage.....	15
2.7	Simcoe County Transportation Master Plan.....	5	4.3	Accessibility	15
2.8	Simcoe County Trails Strategy	6	4.4	Environmental Assessment	16
2.9	Township of Essa Official Plan.....	6	4.5	Consultation.....	17
2.10	Township of Clearview Official Plan	7	4.5.1	Engaging Indigenous Communities	17
3.0	Site Inventory and Analysis	9	4.6	Other Studies.....	17
3.1	Approach.....	9	5.0	Potential Trail Development Scenarios.....	19
3.2	Natural Heritage Inventory	9	5.1	Comparison of the Potential Scenarios.....	19
3.2.1	General Corridor Character and Features.....	10	5.2	A Preferred Scenario for Consideration	20
3.2.2	Drainage and Watercourse Crossings.....	10	6.0	Preliminary Design.....	21
3.2.3	Trail Crossings and Junctions	11	6.1	Overview of Preliminary Design.....	21
4.0	Planning and Design Considerations	12	6.2	Design Guidelines.....	22
			6.2.1	Pathway Width, Clear Zones, and Surface	22
			6.2.2	Natural Heritage Considerations.....	23
			6.2.3	Potential Impacts on Neighbouring Residences	24

6.2.4	Road Crossings	24
6.2.5	Farm Crossings	28
6.2.6	Staging Areas	28
6.2.7	Structures	30
6.2.8	Trail Amenities	31
6.2.9	Trail Signage.....	32
6.3	Opinion of Probable Cost	35
6.3.1	Additional Studies and Detailed Design	35
6.3.2	Construction.....	36
6.3.2	Maintenance	36
7.0	Recommended Next Steps	39



1.0 Introduction

The Barrie-Collingwood Railway (BCRY) Multi-Use Trail Preliminary Design study provides the foundation for the conversion of an approximately 23 km portion of the former Barrie Collingwood Railway into a multi-use trail. The trail passes through Clearview and Essa Townships and connects Stayner, Sunnidale, New Lowell, and Angus, and builds upon other active transportation initiatives at the County and local municipal level. WSP Group Canada Ltd. was retained by the County of Simcoe in May 2018 to complete the BCRY Multi-use Trail Preliminary Design study. The following report documents the study process, research and inventory findings, recommendations and preliminary design.

The study area extends from Highway 26 in Stayner to 5th Line Essa as illustrated in **Figure 1**.

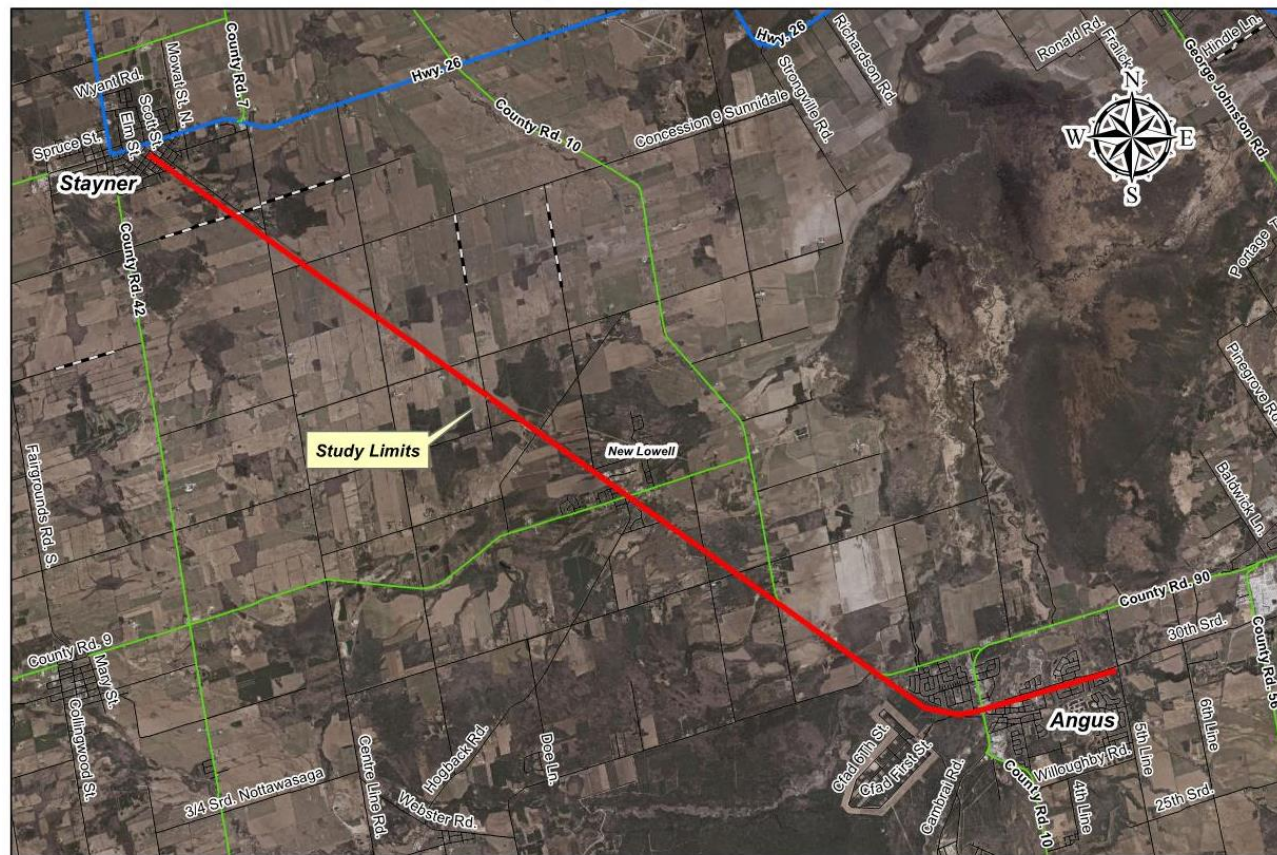


Figure 1 – Study Area (source. RFP 2018-022 - Barrie-Collingwood Railway, Simcoe County)

1.1 Purpose and Approach

As part of the study to convert a portion of railway corridor no longer in use, known as the Barrie-Collingwood Railway (BCRY), from Stayner to Angus, to a Multi-Use Trail system, the study team completed the following tasks:

- Assembled base information using the County's GIS database and recent high-resolution aerial imagery;
- Prepared a checklist of items to be observed/recorded in the field was developed and this was confirmed with the County's project team. The list of items is detailed in **Section 3**;
- Conducted a field investigation of the entire corridor, while traveling on foot. Where observations were noted a digital photo and GPS waypoint were recorded. The location of the waypoint and photo were added to the database created for the assignment;
- Completed a visual inspection of the former rail culverts and bridges along the corridor;
- Identified site opportunities and constraints through desktop analysis and field investigation;
- Prepared a preliminary design feasibility (conceptual design) along with typical design details to understand what needs to be done to bring the corridor to a standard that is compatible with multi-use, and to develop an opinion of probable cost for implementation and operation of the multi-use trail;
- Outlined the next steps in the development of a multi-use trail, which included the identification of additional studies and investigations needed to inform the detailed design and implementation;
- Summarized observations and recommendations in the form of a draft study report presented to County staff for review; and
- Modified and finalized the study report based on comments received.

The Preliminary Design report will form the basis for the detailed design which will be completed through a subsequent design assignment. The detailed design process will confirm the exact improvements, alignment adjustments / alignment of new links, complete additional studies, consultation and approval requirements and provide a more detailed construction cost estimate.

1.2 A Brief History of the Barrie to Collingwood Railway

The idea of the Barrie Collingwood Railway originated in the 1830's following the original portage route that connected Lake Ontario, Lake Simcoe and Lake Huron. The idea was formed when a group of prominent Toronto citizens gathered together to discuss trade issues for the northern hinterlands. Casimir Gzowski and

Frederick Chase Capreol spearheaded the drive to have a railway for the north incorporated, and in July 1849 the Toronto, Simcoe & Lake Huron Union Railroad Company was formed.

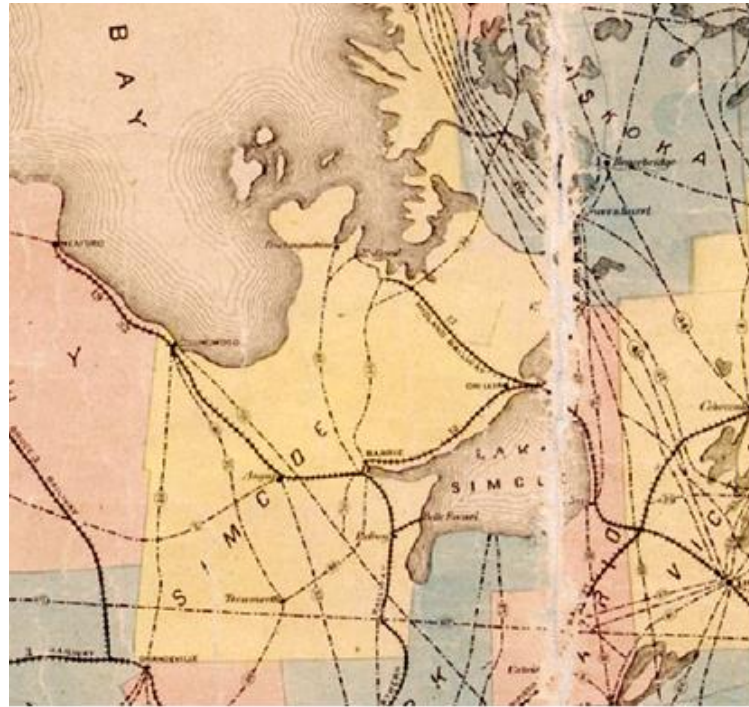


Figure 2 Excerpt from the Railway Map of the Province of Ontario, Nation Printing and Publishing Company, Toronto 1875 (accessed from http://www.archives.gov.on.ca/en/db/pics/ao6551_railway_map_3220.jpg September 2018).

A ground-breaking ceremony took place in October 1851 with grading work proceeding soon after. By August 1852, the roadbed had been completed to Allendale, just south of Barrie where it was intended that the branch line northwest to Collingwood and Meaford would begin. In November of that year, the name of the railway was changed to the Ontario, Simcoe and Huron Union Railway (OS&HUR). The first segment of the railway from Toronto and Allendale opened in 1853 and the Allendale to Collingwood line was completed in 1855. It became the Northern Railway Company of Canada in 1858. Over several years that followed, additional funds were found and traffic improved substantially from local sources. The company moved into a period of expansion and merger that resulted in the creation of a profitable central Ontario rail system later viewed upon favorably by the expansion minded Grand Trunk Railway which acquired railway in 1888.

The mainline from Toronto to Barrie is 105 km and the branch from Allendale to Collingwood is 52 km. Principal stations were located at Toronto, Aurora, Newmarket, Holland Landing, Bradford, Allendale Junction and Barrie. The Barrie to Collingwood line included stations at New Lowell, Angus, Stayner and Collingwood.



Figure 3 Stayner station (undated) from collection of Harold Culham <https://railwaypages.com/simcoe-county>.

In 1960 passenger service from Hamilton via Allendale, Collingwood to Meaford was ceased and in 1996 former Toronto, Simcoe & Muskoka Junction Railway trackage from Barrie through Orillia to Longford (south of Washago) was abandoned as CN consolidated its transcontinental traffic onto the former James Bay Railway/Canadian Northern Railway line (the former CNR Bala Subdivision.)

In 1997 the Collingwood station was demolished, and later that year the City of Barrie and Town of Collingwood purchased the railway from CN with the vision to operate a short-line railway between the two centres. The Barrie-Collingwood Railway (BCRY) commenced operations from Collingwood through Allendale to the Beeton spur at Hwy 400, and one lone track now traverses the former division point complex at Allendale, and the hard-fought-for track from Allendale into Barrie (the "Barrie Switch") has since been lifted.

The Meaford Sub which extended 34 km west from Collingwood to Meaford was abandoned and in 1989 this section of the former railway was developed into the very popular Georgian Trail. In 2011, the Collingwood-Utopia section of the Barrie-Collingwood Railway was abandoned and the County of Simcoe acquired the former railway in 2018.



Figure 4 Georgian Trail near Blue Mountain Village (source WSP 2017)



2.0 Policy Context

This section provides a brief synopsis of relevant policies that support the development of the BCRY Multi-use trail within the greater context of the Simcoe County active transportation network, regional and provincial trail networks.

2.1 Provincial Policy Statement

The Provincial Policy Statement (PPS) provides direction on matters of provincial interest with regards to land use planning and development. It provides a foundation for regulating the development and use of land in Ontario and supports the provincial goal to enhance quality of life for Ontarians. Policies contained in the PPS in combination with municipal official plans provide the framework and comprehensive long-term planning to support principles of strong communities for a clean and healthy environment and economic growth. The PPS addresses a wide range of themes such as strong and healthy communities, wise use and management of resources, and protecting public health and safety.

Section 1.0: Building Strong and Healthy Communities of the PPS references healthy active communities and active transportation, transportation and infrastructure corridors.

Specifically, Section 1.5, includes references to active transportation and trail linkages:

1.5.1a) planning public streets, spaces and facilities to be safe, meet the needs of pedestrians, foster social interaction and facilitate active transportation and community connectivity;

1.5.1 b) planning and providing for a full range and equitable distribution of publicly-accessible built and natural settings for recreation, including facilities, parklands, public spaces, open space areas, trails and linkages, and, where practical, water-based resources;

2.2 Ontario Trails Strategy

Developed in 2005, this high level Provincial strategy lays out a long-term plan for developing, managing, promoting and using trails across the province and provide a foundation for updates to the Provincial Policy Statement in 2014. It acknowledges the contribution that trails make towards better health, strong economies and strong communities and the conserving of and appreciating the environment. The vision of the Ontario Trails Strategy Trails to “*create a world-class system of diversified trails, planned and used in an environmentally responsible manner, that enhances the health and prosperity of all Ontarians*” is supported

by goals, strategies and actions. In 2015 the Ministry of Tourism Culture and Sport (MTCS) released the Ontario Trails Action Plan which provides additional details towards implementation of the actions and supports the implementation of #CycleON, including developing a provincial tourism cycling route.

2.3 #CycleON: Ontario’s Cycling Strategy

In 2013, the Ministry of Transportation (MTO) released #CycleON: Ontario’s Cycling Strategy. The strategy looks ahead 20 years and outlines what needs to be done to promote cycling across the province as a viable mode of transportation. It was followed by #CycleON Action Plan 1.0 in 2014, which sets out recommendations to increase and support cycling tourism opportunities in the province. The vision provides a framework to design healthy, active and prosperous communities; improve cycling infrastructure; make highways and streets safer; promote cycling awareness and behavioural shifts; and increase cycling tourism in Ontario.

Since 2014 the Ministry of Tourism, Culture and Sport (MTCS) has been working with MTO and other partners to make progress on actions that advance the Cycling Strategy, including working with the Ontario Tourism Marketing Partnership Corporation (OTMPC) to support cycling tourism marketing efforts and supporting Regional Tourism Organizations (RTOs) in developing partnerships to advance cycling tourism projects.

2.4 Province-Wide Cycling Network

One of the key initiatives identified in the Province’s Cycling Strategy (#CycleON) was the development of a Province-wide cycling network. The Province-wide Cycling Network Study (2018), completed by MTO identifies a network of on and off-road cycling routes throughout Ontario that connect key destinations, regional and national trails and routes such as the Great Trail/Trans Canada Trail, that are connected to local cycling and trail networks. In more densely populated areas of the province the proposed Province-wide Cycling Network is denser and caters to commuter and touring cyclists, whereas in less densely populated areas the network is focused more on cycle tourism / touring routes. In some regions this network is composed of significant sections of off-road multi-use trail. In Simcoe County the Great Trail / Trans Canada Trail route and Georgian Trail were identified as a Province-wide network routes, and the BCRY was identified as a secondary connector in the network.

2.5 Ontario's Cycling Tourism Plan

Cycling tourism in Ontario is experiencing rapid growth and is increasingly recognized by the tourism industry as a powerful economic driver to the province. Cycling offers health benefits and a unique way of viewing a destination, that make it attractive to active travelers looking for an authentic tourism experience. Ontario has the potential to be a premier cycling tourism destination and the economic benefits of cycling tourism to the province are already evident. Cycling visitors stay longer in Ontario and spend more than the average tourist.

Ontario's Cycling Tourism Plan sets out a mission and a number of action items that will cultivate the existing potential for Ontario to emerge as a leader in the development of cycling tourism, and establish the province as a strong market, renowned globally for its cycling products and experiences. The Government of Ontario understands the important role that cycling tourism plays in building a strong economy and the positive impact it has on the lives of everyday Ontarians. The mission of Ontario's Cycling Tourism Plan is to increase and support cycling tourism opportunities in the province and promote cycling as a tourism draw in Ontario communities by:

- Positioning Ontario as a premier destination for cycling tourism;
- Creating healthy, active and economically prosperous communities; and
- Working collaboratively to develop and promote cycling tourism products that will enable Ontario to meet or exceed global growth over the coming years.

2.6 County of Simcoe Official Plan

The County of Simcoe through its various policy plans has identified the importance and value of developing an expanded and connected multi-use trail system as part of an active transportation offering for residents and visitors. Opportunities to implement linear trail corridors, such as the BCRY in a former rail corridor are rare and should be pursued wherever possible.

The Official Plan (OP) is the overarching visioning and planning document that sets out the goal, objectives and policies to shape the way that the County of Simcoe will change and grow over time. The Plan provides a policy context and base for local municipalities for land use planning with consideration for the economic, social, and environmental impacts of land use, development decisions, and transportation. The Plan promotes long term sustainability and encourages quality of life within the County of Simcoe. It includes strategic goals and policies surrounding a variety of important themes including the efficient movement of people and goods. The County is expecting strong population growth and urban development. The Plan's framework encourages coordinated planning within the County of Simcoe, municipalities, agencies, and

other levels of government to manage a balance between economic development, community building, and environmental conservation.

The BCRY is classified as "Railway" in **Schedule 5.5.1** County Transportation Systems and in **Schedule 5.5.2** Future County Transportation Systems.

Furthermore **section 3.3.24** states "*The County acknowledges the importance of rail infrastructure and recognizes its critical role in long-term economic growth and the efficient and effective movement of goods and people*" and the "*County encourages protection of non-active rail line corridors from encroachment of sensitive land use development to allow for future expansion of rail services.*"

Active Transportation is defined in the OP as "*Human-powered travel, including but not limited to, walking, cycling, in-line skating and movements with mobility aids, including motorized wheelchairs and other power-assisted devices moving at comparable speed.*"

Section 4.1 states that healthy communities and housing development are a priority. The addition of the multi-use trail from Stayner to Angus is relevant as a positive influence towards enhancing community building efforts. The following policies support this concept:

- 4.1.2 Accessibility of education, health, human services, culture, and recreation facilities by walking, cycling, or transit is encouraged.
- 4.1.3 The County encourages the provision of a full range and equitable distribution of publicly accessible built and natural settings for recreation, including parkland, open space, trails, and water-based facilities.

The BCRY Multi-use trail will provide a link between the townships of Clearview and Essa as well as the communities with which it connects offering both an urban and rural experience for recreational or utilitarian use.

Section 4.8 offers central and general transportation policies in support of creating a multi-use trail from Stayner to Angus. The OP's vision is of a comprehensive and sustainable system of infrastructure for the road and alternative active off-road network. The transportation goals in this section are to maintain and improve the multimodal system for efficient auto, truck, transit, and feasible bicycle and pedestrian routes. The policies below support the connectivity of settlement areas to activity nodes, to link the various modes of transportation and provide for the movement of goods while keeping through traffic separate from local traffic. These objectives can be accomplished through long term multimodal system planning and by considering the needs of pedestrians and cyclists in road design.

- 4.8.2 To plan for a more flexible transportation system including Transportation Demand Management (TDM) strategies, cooperative transit initiatives and supportive land use strategies which facilitate TDM and transit providing choices amongst walking, cycling, transit, and the automobile for all users.



- 4.8.3 To plan for a hierarchical multimodal transportation system that offers alternative ways of moving through the County, and linking settlement areas and neighbourhoods for improvements to health, safety, the economy and the environment.
- 4.8.4 To plan for active transportation as a mode of transportation that supports healthy living, economic development, and tourism opportunities.
- 4.8.7 Land use planning and development decisions within the County shall be integrated with transportation considerations. The County and local municipalities will plan for and protect corridors and rights-of-way for infrastructure, including major goods movement facilities and corridors, transportation, transit, active transportation and electricity generation and utility facilities and transmission systems to meet current and projected needs.
- 4.8.8 Where development in planned corridors could preclude or negatively affect the use of the corridor for the purposes for which it was identified, the development shall not be permitted.
- 4.8.12 Local municipalities should seek to reduce traffic congestion and minimize the length and number of vehicle trips through traffic management techniques, support current and future use of transit (where applicable) and active transportation in their official plans, through the designation of areas of higher density and mixed land use.
- 4.8.13 The County will adopt a Mobility Plan that incorporates the following elements:
 - a) Connections between communities with a priority on active transportation and transit;
 - b) Integration of alternative transportation networks;
 - c) Partnerships with local municipalities for internal systems of pedestrian and cycling facilities that facilitate linkages and provides opportunities for multimodal transportation uses within a community;
 - d) Supporting local municipalities in developing active transportation system maps that identify existing and planned facilities;
 - e) Providing guidelines for clearly signed or marked cycling facilities where cyclists may be accommodated within existing cross-sections to enhance a presence and sense of permanence;
 - f) Liaising with local municipalities regarding planned or future transportation nodes and transit corridors (the County will consider amendments to this Plan as required); and
 - g) Collaborating with local municipalities to ensure the provision of sidewalk and trail facilities, where planned.

Section 4.8 of the OP also provides policies directly related to transportation facilities, corridors, pathways and trails. This section has more detailed objectives relating to trail connectivity between municipalities as well as the

considerations for safety and convenience of the trail user. The following policies set out standard expectations for trail development:

- 4.8.45 When considering secondary plans and development applications, the County and local municipalities shall pursue the connection of trails and/or bicycle facilities among local municipalities and beyond County boundaries and require the dedication of land for such use in accordance with the Planning Act.
- 4.8.46 The County and local municipality will ensure, whenever feasible, the provision of facilities to encourage active transportation, and to address the needs, safety and convenience of pedestrians and cyclists when constructing or reconstructing public facilities.
- 4.8.47 With cooperation and support from the County, local municipalities shall develop a municipal Active Transportation Plan as background to inform local municipal official plans.
- 4.8.48 In cooperation with local and adjoining municipalities and trail associations, to implement the active transportation routes identified in the County's Transportation Master Plan, the County should:
 - Utilize the County Road system in the development of a County-wide active transportation network;
 - Provide signage along each route;
 - Develop trail staging areas along the active transportation network and at key trail links;
 - Provide benches and rest stops at regular intervals throughout the system; and
 - Provide appropriate traffic control devices on trails and off-road cycling facilities where they cross existing roadways or other locations.
- 4.8.51 Abandoned rail rights-of-way, utility corridors, and waterways for transportation, recreation and trails purposes should be examined for opportunities that would facilitate active transportation. The County shall promote the facilitation of trails as an interim use in abandoned rail corridors and will consider safe combination of active transportation and rail facilities for the long term in consultation with applicable guidelines, adjacent and local municipalities, and appropriate rail authority.
- 4.8.52 The preservation and reuse of abandoned corridors for purposes that maintain the corridor's integrity and continuous linear characteristics should be encouraged for existing or planned transportation system opportunities and utilities wherever feasible.

2.7 Simcoe County Transportation Master Plan

Approved by Council in 2014 the Simcoe Transportation Master Plan (TMP) is a multi-year to guide the development of all modes of transportation throughout the County. The TMP examines transportation challenges and opportunities on a large scale, including the potential transportation demand over a broad

network of options and modes of travel. The TMP recognizes the role that pedestrian, cycling, transit and road components can play in servicing future needs within the transportation system in the County of Simcoe.

Recommendations within the TMP under **Section 6.1** suggest that 1% to 7% of the annual transportation budget should be assigned to stimulate walking and cycling by being used for initiatives providing linkages to trails and by developing mapping material to inform, promote, and encourage active transportation within the County. Promotion and encouragement also includes collaborating with non-profit volunteer organizations such as Huronia Trails and Greenways (HTG), which also coordinates with other organizations such as the Trans Canada Trail organization, and promotes trails and programs such as Adopt-A-Trail to create a sustainable network of trails and greenways.

The TMP recognizes the need for ongoing development and promotion of cycling and pedestrian activities within the County of Simcoe. Strategies have been created to support reaching a balance between the demand and supply of transportation services in the efforts to produce an effective multi-modal sustainable transportation system.

There is strong public input supporting the development of active transportations plans within the County of Simcoe's municipalities including direction to focus on both on and off-road facilities. The development of the multi-use trail from Stayner to Angus provides a continuation of the Clearview Trail along the BCRY crossing both Townships of Clearview and Essa. Results from the public attitude survey suggested that 88% of the respondents felt it was important to build new off-road walking/bicycle trails throughout the County and 72% suggested it was important to build dedicated bicycle lanes along major County roads.

Strategic direction from the TMP pertinent to the development of the BCRY Multi-use trail include the following:

- Permit active transportation infrastructure on some County Roads (primarily lower volume County Roads) in/around built up areas, where requested by municipalities or where required to connect to County or local trail system.
- Major focus for the County should be on the development of the off-road trail network.
- Incorporate active transportation infrastructure into County Road improvement projects where policies permit and where cost sharing agreements can be reached with municipalities.
- Other support for the multi-use BCRY trail is stated in Section 5.1 as it prioritizes an integrated off-road County wide trail system including using existing facilities and infrastructure such as abandoned railway lines to create a more comprehensive network.
- Section 5.1.2 directs that walking and cycling plans will be implemented with policies that are in the County and local Official Plans and the County's role would be to provide an annual funding commitment, manage on-going programs, and initiate recreation and tourism for the off-road County Trail System.
- The County of Simcoe's role in the development of trail networks consists of the following activities:

- Provide appropriate traffic control devices on trails and off-road cycling facilities where they cross existing roadways or other locations to direct pedestrians and cyclists, without conflicting with auto users.
- Traffic control (signs) for trail/pedestrian users are typically smaller but conform to standard traffic signs designs (colour, shape, etc.). An inventory of trail related signing should be maintained and all signs should be inspected at regular intervals to ensure that signs remain visible over time;
- County staff and Council should continue ongoing consultation with agencies responsible for publicly owned lands (i.e. federal and provincial governments) to establish and protect corridors or alignments for extensions to the trail network within and beyond the County.

2.8 Simcoe County Trails Strategy

The Simcoe County Trails Strategy is intended to communicate and create a framework for a shared strategy for stakeholders, municipalities, developers, and multiple trail groups to achieve a County-wide network of passive-use trails and greenways. This document focuses on encouraging a well-connected trail network and does not specify trail design standards, types, or uses. The report concentrates on the health, environment, economic, and cultural benefits that trails provide. One goal of the Trails Strategy is to identify the gaps in the existing longer distance trails to be included as a part of the proposed County trail network.

2.9 Township of Essa Official Plan

Transportation policies in the Township of Essa Official Plan, **section 24.2.2** encourage the safe and efficient movement of people and goods in the Township and to “*facilitate where possible the improvement of the existing road network to meet the long-term needs of the Township residents and to satisfy regional transportation requirements.*”



The BCRY is classified as “Transportation and Utility” in Official Plan Schedules, such as Schedule B Angus), illustrated in **Figure 5**.

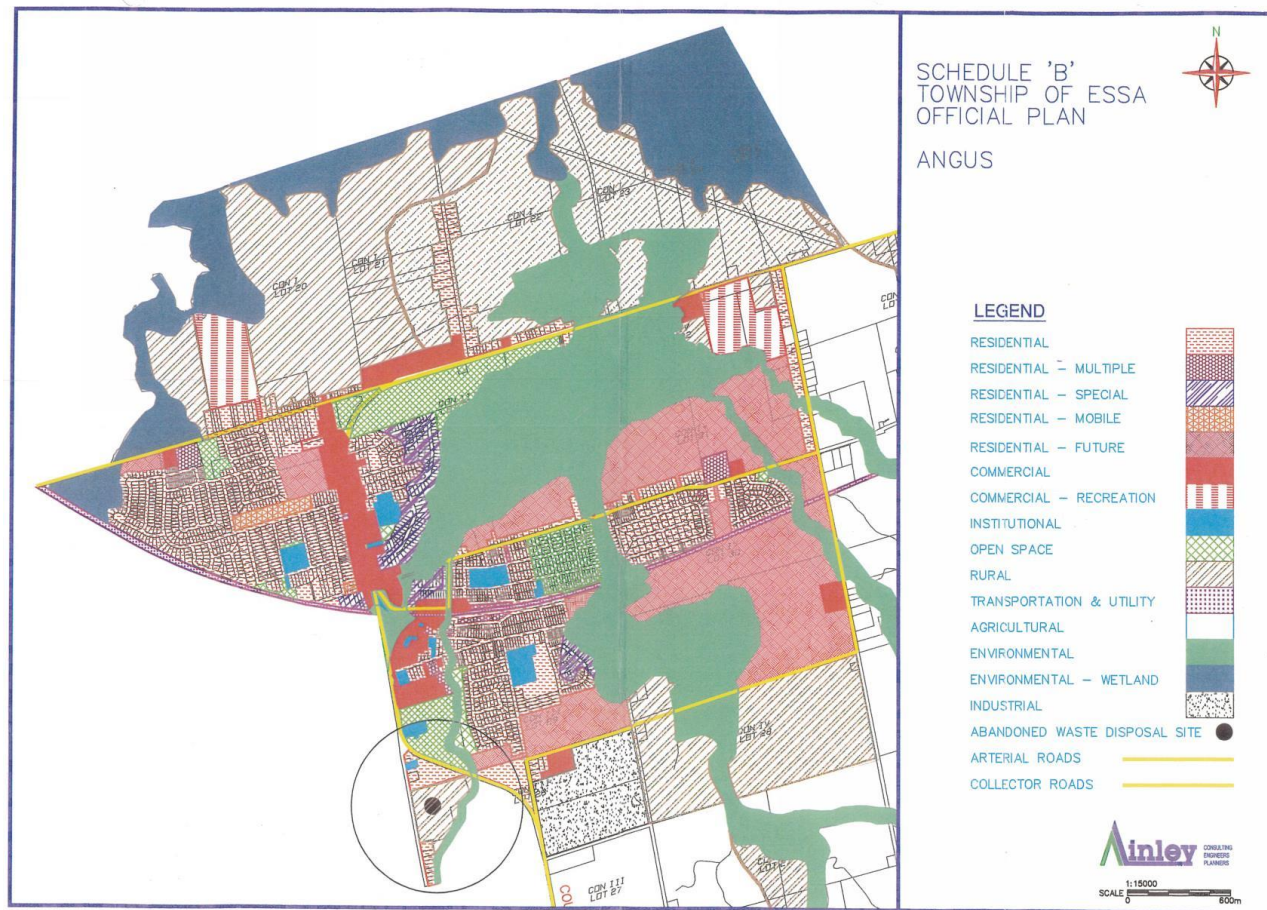


Figure 5: Schedule B, Township of Essa Official Plan

2.10 Township of Clearview Official Plan

The BCRY is classified as “Railway Lands / Water Transmission Line” in the Township of Clearview Official Plan. Schedule A3-Stayner, **Figure 6**, and one of the OP goals is to “*maximize the development opportunities associated with the Collingwood Airport and other industrial/commercial assets such as the water pipeline and Barrie-Collingwood Railway.*”

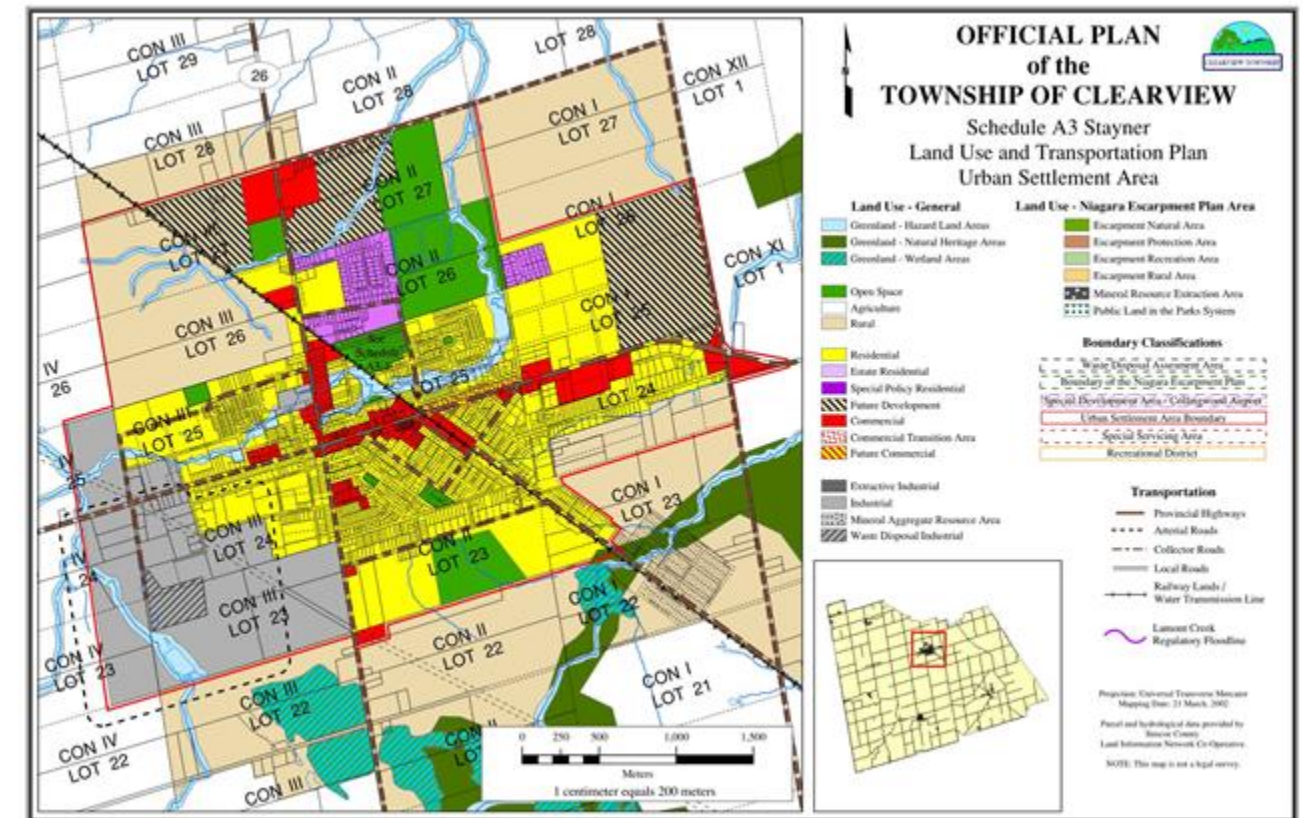


Figure 6: Schedule 3A-Stayner, Clearview Official Plan

In the Spring of 2000, a 57 km water pipeline between the Collingwood and the Town of New Tecumseth became operational. The pipeline which was constructed to provide a reliable source of water to New Tecumseth from Georgian Bay, partially extends along the Barrie- Collingwood railway right-of-way. At the time of the pipeline’s construction, provision was made for potential connections to the water utility to service lands in or near New Lowell, Stayner and Brentwood.

Transportation policies in the OP include a goal “to establish a system of pathways and trails linking the Township’s settlements and major development areas and public spaces within those settlements as an alternative to the vehicular network of roads”.

Section 4.2.7 of the OP supports the development of trail systems including establishment of a regional trail system which focuses on the interconnection of primary and secondary urban settlements areas, which will serve to give people choice on how they move between urban centres, benefitting Township’s commercial sectors and advancing the Township’s tourism objectives. **Section 6.8** further describes expectations for trails by expressing a series of principles for trail planning and design that must be considered during the planning, design and construction of trails in the Township, specifically:

- Wherever possible, trails should incorporate junctions or points of interest, such as nature observation areas, along their routes.
- Road crossings should be kept to a minimum and, where viable, pedestrian overpasses/underpasses constructed where trails intersect major roads.
- The trails should be in harmony with the natural environment and compatible with adjacent land use.
- Trails should incorporate changes in elevation and direction. However, steep grades should be avoided.
- Travel surfaces should be suitable for the intended type of traffic (pedestrian/bicycle/ snowmobiles, etc.), and be of a material that requires little maintenance.
- Where trails parallel area roads, they should, as far as possible, be separated from the traveled surface of the road. For example, the space between the trail and the road might retain its natural vegetation or be replanted by trees or shrubs if no buffer exists.

3.0 Site Inventory and Analysis

3.1 Approach

Base data from the County’s Geographic Information System (GIS) was assembled and provided to the consultant team as a starting point for the BCRY Multi-use Trail Study. Data layers included the street network, property boundaries, parks and open space, natural heritage, existing and future trails, and high-resolution aerial imagery. This data informed desktop studies that were conducted in advance of field investigations. The data was also used in the preparation of the base maps used to convey observations, opportunities and constraints, and the preliminary design concept presented in this report.



Figure 7: WSP staff conducting site inventory, June 2018

Prior to the field investigation an inventory checklist was developed and was used as a reference tool for the team in the field. Field investigations were completed over a period of several days in May and June by WSP’s civil engineer, landscape architect, terrestrial and fisheries ecologists. To conduct the inventory the entire corridor was traveled on foot. Using the checklist as a reference tool, a digital photo and GPS waypoint inventory was recorded at locations where an item on the checklist was encountered, and observations were used to inform the development of recommendations for the design feasibility.

The checklist of items is outlined in Section 3.2.1. For ease of reference, checklist items were organized according into the following categories:

- General Corridor Character and Features;
- Drainage and Watercourse Crossings; and
- Pathway Crossings and Junctions.

3.2 Natural Heritage Inventory

As noted above WSP’s Ecology Group completed the natural environment component of the inventory and which informed the preliminary design of the BCRY Multi-Use Trail, encompassing preliminary characterization of the existing natural features; assessing potential impacts of the proposed works of the preferred alternative on natural environment features; developing preliminary mitigation measures to address those impacts; and developing and providing recommendations to be completed through a subsequent design assignment. The natural environment component of this work included high-level field investigations to document vegetation communities, fish and wildlife habitat, and potential Species at Risk (SAR) or their habitat within the project limits.

Prior to field surveys a detailed background review, including agency consultation, was completed to obtain a general characterization of the study site. This background review included a SAR screening conducted through consultation with the Ministry of Natural Resources and Forestry (MNRF), as well as consultation with Nottawasaga Valley Conservation Authority (NVCA) to obtain relevant natural environmental data. The field assessments then filled any data gaps identified in the background review. The terrestrial and aquatic field assessments included the following:

- Classifying and mapping vegetation communities according to the Ecological Land Classification (ELC) System for Southern Ontario (Lee et. al. 1998). Classification was completed primarily from the edge of the communities due to Permission to Enter (PTE) restrictions.
- Preliminary botanical inventory intended to screen for rare or sensitive vegetation species including the preparation of a preliminary vascular plant species list
- Evaluating the sensitivity and significance of vegetation species and vegetation communities using the MNRF’s Natural Heritage Information Centre (NHIC) database and SAR websites (updated periodically), the Central Region Significant Species List (Riley et. al. 1989), and the Natural Heritage Resources of Ontario: Vegetation Communities of Southern Ontario (Bakowsky 1996)
- Compilation of incidental wildlife observations
- Evaluating habitat potential for floral and faunal SAR known or thought to exist in the vicinity of the project area
- Compilation of photographic records documenting terrestrial habitat conditions
- Visual assessment of the fish and fish habitat conditions for 32 watercourse crossings found along the study corridor. These assessments included identifying the presence of flow, any barriers to fish movement, the structural conditions of the crossings structures, any incidental observations of fish as well as a general assessment of the habitat conditions present at each crossing (e.g., substrates, channel morphology, cover, etc.).

- Compilation of photographic records documenting aquatic habitat conditions

3.2.1 General Corridor Character and Features

Observations made by the study team included the following with regards to the general character of the BCRY corridor.

Corridor/right-of-way Cross Section

Generally, three different cross sections of the railway line within the right-of-way were expected, and observations were made where the corridor was:

- Generally flat across the entire right-of-way
- Areas where the former railway line was significantly lower than the surrounding grade, resulting steep side slopes within the corridor, and any trail development off the alignment of the former rail line would require a retaining structure.
- Areas where the former railway line was significantly higher than the surrounding grade, resulting steep side slopes within the corridor, and any trail development off the alignment of the former rail line would require a retaining structure and/or may require some form of protection for pathway users where drop-offs are significant (i.e. where a railing or guiderail should be considered).

Fencing

- Presence or absence of fencing along the right-of-way limits, in particular those locations where a safety or security issue might be anticipated (i.e. adjacent farm fields containing livestock, private access lanes that cross the corridor)
- At each road crossing observe the condition of and general extent of fencing required along each side of the right-of-way.

Ballast/base

- Locations where significant low areas were encountered (i.e. ballast had washed away and new sub-base would be required)
- Locations where ballast was excavated/removed (i.e. new sub-base would be required).

Existing Vegetation

- Location and extents where vegetation clearing or significant pruning would be required
- Locations where the construction of the trail may conflict with significant vegetation (i.e. larger diameter trees), and tree protection measures should be considered.

Obstructions

- Locations where barriers have been erected by adjacent landowners
- Locations where adjacent landowners appear to be encroaching on the right-of-way
- Locations where garbage or debris had been dumped on the right-of-way

Adjacent properties

- Locations where private residences are close to the limit of the right-of-way, and a privacy issue may be a concern for adjacent landowners, and may result in a request for privacy screening (i.e. plantings or fence)

Signs

- Locations of significant vistas, cultural and/or natural heritage features that may provide a good opportunity for future interpretation
- Locations of existing signs and potential locations for future signage associated with the trail's development

Utilities

- Locations where major utilities cross the corridor (i.e. high voltage overhead power lines, high pressure buried gas lines)

3.2.2 Drainage and Watercourse Crossings

Culverts (Visual Inspection)

- Location of existing culverts
- General condition of culverts, including notable items such as undermining of headwalls, abutments or culvert ends, and culvert blockages

Bridges (Visual Inspection)

- Location of existing bridges
- Bridge type (concrete, steel, wood)
- Bridge size/span
- Abutments/piers and superstructure construction

Drainage issues along/across corridor (i.e. water ponding on pathway bed, erosion across or along trail bed)

- Length, width and average depth
 - Possible cause/source based on visual inspection



3.2.3 Trail Crossings and Junctions

Roadway Crossings

- General angle of crossing (perpendicular vs. acute)
- Road characteristics (number of lanes, posted speed, volume, shoulder)
- Sightline issues for both the trail user and approaching motorist
- Elevation of trail approaches relative to the road (i.e. flush with road, road higher than trail, road lower than trail)
- Location of nearest controlled crossing

Connections to adjacent pathways and/or on-road routes (existing or future)

- Location and nature of existing connections
- “Desire lines” or worn footpaths connecting to the corridor from surrounding neighbourhoods, indicating the need to consider a connection to the BCRY multi-use trail

Farm access/private access crossing

- Location and nature of the crossing (driveway/laneway, farm field crossing, ATV or snowmobile crossing etc.)
- Direct or offset crossing (i.e. indicating the potential future need for farm vehicles to use a portion of the corridor).

Potential Staging Areas

- Potential locations for staging areas
- Character of location (where applicable)

Other

- Location of areas that may require further investigation and provide reasons/nature of additional investigations.

Details of the inventory are included in **Map Sheets 1 through 34 in Section 6** of this report, and further details of the natural environment inventory and recommendations are contained on map figures included with the separately bound Barrie to Collingwood Railway Multi-use Trail Natural Environment Preliminary Design Report, WSP 2018.

4.0 Planning and Design Considerations

4.1 Opportunities

The County and local municipalities recognize the significant value the BCRY corridor represents, as articulated in Official Plan, transportation and economic development policy. In addition to supporting these policy decisions, the following are some key opportunities / benefits the corridor offers.

4.1.1 A Continuous Corridor for Linear Infrastructure

Assembling land for a corridor of this length today in a greenfield location would be extremely challenging, time consuming and very expensive. Essentially, this benefit has already been realized with the BCRY corridor in place. Apart from the cost to acquire lands identified, the time and expense associated with route identification, evaluation and selection as part of an Environmental Assessment (i.e. Individual EA) for assembly of a corridor in a greenfield condition would be very costly. It would require a lengthy process with a significant amount of public engagement and no guarantee of a successful outcome.

In addition to the amenity the corridor provides as a multi-use trail, the corridor provides future opportunity as a transportation (road or rail), transmission or utility corridor. As a utility corridor it offers significant potential to house public and privately owned major utilities, and possibly generate revenue from easement(s) with private utility owners.

4.1.2 Natural and Cultural Heritage

The corridor provides the opportunity for enhancement of natural heritage resources and the recognition, interpretation and celebration of cultural heritage. Specifically:

- Improvement/enhancement of natural heritage value, vegetation community diversity which in turn supports a diverse and healthy wildlife population and enhanced wildlife movement corridors
- Interpretation of cultural heritage, in particular the industrial heritage related the railways and what they meant to communities in the past. The railway and railway station lands were important hubs and meeting places in each of the towns they traveled through. Repurposing these lands provides the opportunity to reinvigorate and animate the spaces.

4.1.3 Community and Individual Health

There is an extensive body of research that links physical activity with physical and mental health. For example, the following are a few basic facts borrowed from the Public Health Agency of Canada website.

<https://www.canada.ca/en/public-health.html>

- For children (5-11 yrs.) and youth (12-17 yrs.) physical activity is essential for healthy growth and development. Regular physical activity during childhood and youth years helps to develop cardiovascular fitness, strength and bone density. It also helps to prevent chronic diseases like cancer, Type 2 diabetes and heart disease later in life. Establishing positive habits early in childhood and adolescence can last a lifetime.
- For adults (18-64 yrs.) physical activity has been shown to reduce the risk of over 25 chronic conditions, including coronary heart disease, stroke, hypertension, breast cancer, colon cancer, Type 2 diabetes and osteoporosis. Regular physical activity and higher levels of fitness allow daily tasks to be accomplished with greater ease and comfort and with less fatigue. Research shows that as much as half the functional decline between the ages of 30 and 70 is due not to aging itself but to an inactive way of life.
- For older adults (65 yrs. and older) weight-bearing physical activity reduces the rate of bone loss associated with osteoporosis, and regular physical activity maintains strength and flexibility, balance and coordination, and can help reduce the risk of falls.
- There is also a growing body of research linking community design, walkability, opportunities for physical activity such as hiking and cycling, and commuting to work using active transportation modes with mental and physical health. With growing urban areas, cost of real estate, increasing traffic congestion and ever-improving technology for remote and 'virtual' offices, people are making decisions about where they want to live based on quality of amenities nearby. A linked system of trails is just one of those amenities that factor into a decision about where one wants to live.

4.2 Risks

4.2.1 Adjacent Land Owner Concerns

Understanding and addressing concerns of adjacent land owners can be very challenging in both the urban and rural setting. Recent research by WSP revealed that issues and concerns raised today about public trails on former rail corridors are much the same as issues and concerns raised 25-30 years ago when former railway corridors were starting to become popular for recreational trail use.

In 2014, the Ontario Federation of Agriculture (OFA) prepared a paper entitled "Rails to Trail Concerns of Adjacent Property Owners" (<https://ofa.on.ca/issues/additional-information/rails-to-trails-concerns-of-adjacent-property-owners>)

It provides an excellent summary of the key issues and concerns of typically raised by the agricultural community, and several of these are also common concerns raised by adjacent land owners in non-agricultural areas. All of these are legitimate concerns that may come to bear on any projects that involve former railway corridors, in particular when the corridors are used as a public recreational trail. Concerns raised by the agricultural community are particularly relevant to Simcoe County given that some of the corridor passes through active farmland.



Key concerns listed and explained in the OFA paper include:

- Boundary definition and fences
- Vandalism, trespass, privacy and policing
- Liability of adjacent land owners
- Farm practices such as planting and harvesting, movement of large equipment across corridors, spraying and manure spreading
- Biosecurity, including weed control
- Dogs running at large and predator control
- Drainage and drain maintenance
- Parking and litter

Most of the issues can be successfully mitigated and managed through open, patient and genuine engagement of adjacent land owners early and often in the planning and design process, proper design, signage, ongoing communication, education and fostering of mutual respect between trail users and adjacent land owners after implementation and during operation.

4.2.2 Fences

The Line Fences Act provides a procedure for the resolution of line fence disputes between the owners of adjoining properties. A Line Fence is one that marks the boundary between properties. The Act applies where one owner wants to construct, repair or maintain a fence on a property boundary line, but is unable to reach agreement with the other owner on the type of fence to be erected, the sharing of the costs of the fence, or both issues. Where there are disputes an owner can request the recommendation of a “Fence Viewer” appointed by the municipality.

The Line Fences Act does not apply to active railway lines, these are subject to regulations in the Railway Safety Act. As of January 1, 2007, the Line Fences Act is applicable in most cases to former (i.e. “abandoned”) rail lines that have been sold in their entire width to a new owner. Section 20(1) of the Act is specific to former railway line and clarifies that it is the owner’s responsibility to provide fencing when an adjacent land owner notifies the owner and municipality of their request for the repair, replacement or installation of a new fence along a property boundary line, however the liability for the cost of the fence can vary depending on the nature of the adjacent land use. Where the adjacent land use is a registered farm/agri-business, the cost is the responsibility of the owner of the former railway corridor, however, in the case of other adjacent land uses the costs may be shared.

Duties of owner of former railway land (Section 20 (1) of the Act)

20 (1) Where land that was formerly used as part of a line of railway is conveyed in its entire width by the railway company to a person, the Crown in right of Ontario, a Crown agency or a municipality who is not the owner of abutting land, the responsibility for constructing, keeping up and repairing the fences that mark the lateral boundaries of the land lies with that person, the Crown in right of Ontario, the Crown agency or the municipality, respectively, if,

(a) a farming business is carried out on the adjoining land; and

(b) the owner of the adjoining land upon which the farming business is carried out notifies the person, Crown in right of Ontario, Crown agency or municipality, as the case may be, that the owner desires that such person or entity construct, keep up and repair the fences that mark the lateral boundaries of the land. 2006, c. 32, Schedule D, s.6(1).

Fifty/Fifty Rule

Where the adjacent land owner is not a registered farming/agri-business the “Fifty/Fifty” rule applies. The general rule for fence-viewers when making their decision is to make both owners responsible for half of the line fence between their properties. This rule has been in effect since 1979 when the Line Fences Act was amended to make it more “user friendly”. In implementing the fifty/fifty rule, the fence-viewers can

- make each owner responsible for a “designated one-half of the fence”, which is most appropriate where both owners are able to work on their own.
- make the owner who applied for the viewing responsible for building the entire line fence, and to make the other owner responsible for reimbursing owner who applied for the viewing. The amount includes half the cost of the work and half of future maintenance costs.

In practice, based on research conducted it is very rare that the owner ends up having to install fences along the entire corridor right of way, unless the owner decides that fencing is needed to protect their assets or prohibit access, which may be the case if the corridor is used for some types of transportation or utility transmission purposes. In cases where the corridor is used for a recreational trail, research did not reveal any situations of owners having to install and pay for fencing along their entire corridors. Instead, the needs for fencing were addressed of a case-by-case /property by property basis. The following are some strategies that were identified through case study research and discussion with the Executive Director of the Ontario Trails Council.

- Confirm adjacent land use. Where agricultural uses are involved, confirm that it is a registered agri-business.

- Get the negotiated settlement in writing with details of the extent/location and type of fencing, both of which affect the end cost. Page wire/farm fencing is cost-effective and most widely used in rural/agricultural areas.
- Consider a phased approach where fencing is deemed necessary, dealing with the most critical areas first. For example, locations with livestock adjacent are more critical, areas such as woodlots or wetlands may not need fencing at all.
- Good relations can result in fewer fences. Meeting with adjacent land owners, listening to their concerns and working collaboratively to address the results with solutions that work for both parties. Considering and respecting the need to have access across the corridor, examining creative alternatives to fencing such as planted buffers/hedgerows, discussing which areas are critical versus less critical, and negotiating cost sharing are a few approaches that have resulted from a genuine approach to consulting with adjacent owners.
- Prepare for some cost rather than assuming there will be ways to avoid all cost related to fencing.

<http://www.mah.gov.on.ca/Page13730.aspx>

<https://www.ontario.ca/laws/statute/90l17?search=line+fences>

4.2.3 Public Liability

Through the Ontario Trails Act, there were amendments to various Acts that have a bearing on recreation trails, including the Occupiers Liability Act, Public Lands Act and Trespass to Property Act which help to protect owners of properties that contain public trails as well as adjacent land owners, and provide stiffer penalties for those that trespass on private property (i.e. go off trail property onto private lands), vandalize or cause damage.

- The Occupiers' Liability Act has been amended to clarify that the lower standard of care (responsibility) applies to occupiers of trail property which are not-for-profit or public-sector organizations, even if there is an incidental fee related to access onto or use of the land, such as for parking; or if a public benefit or payment is given to a not-for-profit trail manager.
- The Public Lands Act has been amended to
 - Make damage to Crown land and property an offence
 - Enable a court to order a person, who has been convicted of this offence, to stop the activity and/or rehabilitate lands and repair any damage to property
 - Provide the Ministry of Natural Resources and Forestry with new enforcement tools to stop vehicles, inspect documents, and arrest persons suspected or caught violating the act
 - Increase the maximum penalties for offenders and the length of time to initiate charges.
- The Trespass to Property Act has been amended to raise the maximum fine for trespassing from \$2,000 to \$10,000 and remove the limit on the amount of damages that could be recovered in a prosecution.

With respect to insurance research indicated that owners of former railway corridors typically include insurance coverage for the corridor. In the case of municipalities or agencies that own or manage corridors

as trails, the insurance coverage is often added to the liability insurance they already carry for their other public parks and open space.

4.2.4 Potential for Soil and Groundwater Contamination

The presence of contaminants in the soil below former railway lines is inherent considering the former use. Often, former railway properties have some contamination typically heavy metals, polyaromatic hydrocarbons (PAH) in the railway bedding and petroleum hydrocarbons from incidental spillage. In some locations the contaminants may exceed the acceptable Provincial guidelines and there be off rail corridor impacted soil and groundwater. Responsibility for addressing any residual soil or groundwater contamination rests with the owner of the property.

There are numerous examples of recreational trails having been developed on former rail corridors across North America, and in most cases the overall the risk to users is relatively low. The risks are further reduced once the trail surfacing is added, which provides additional cover and barrier between the trail base and former rail bed surface.

The recommended risk management measures that are likely required for this property as it might relate to trail use also include the following administrative and physical measures.

- Any previous environmental soil and groundwater testing and risk assessment should be updated to validate historical findings and reflect current MECP contaminated site regulation and risk assessment guidance (<https://www.ontario.ca/page/brownfields-redevelopment>)
- The update should also include a current conditions assessment as it relates to identification of areas of excessive off corridor and on corridor erosion and sedimentation
- Implementation of a soil testing/ management plan for any excavation, movement, and disposal of impacted soils as well as backfilling of excavations
- Implementation of a site-specific erosion and sediment control plan for the trail construction period.
- Implementation of a health and safety plan for both the trail construction and post construction maintenance / use period. The health and safety plan during construction would include a requirement for trail contractors to wear appropriate Personal Protective Equipment (PPE) when handling soils during construction in areas where contamination levels exceed Provincial guidelines
- Potential restriction on the planting of deep rooted vegetation
- Consideration for the Installation of engineered barriers that may include a combination of hard caps, and soil caps of un-impacted fill to block the direct contact to soil exposure pathways for human and ecological receptors in areas where contamination levels exceed Provincial regulations.

Subject to a favorable corridor risk assessment evaluation, the preferred design approach likely includes salvaging the railway steel, using any net proceeds to offset the trail development cost, leaving the railway



ties in place and covering them over with a granular base and top course. Railway ties that had been previously replaced or removed and piled in several locations along the corridor should be removed from the site and disposed of at an appropriate waste facility. The alternative of removing the railway ties would involve ballast/soil disturbance, and collecting the ties at staging areas for shipping to an appropriate facility for disposal. Collecting and stockpiling ties as staging areas for shipping would have the effect of concentrating the contaminants, and potential for soil contamination at and surrounding the stockpile/staging areas. Leaving the ties in place also forgoes the cost to remove, haul and dispose of the ties at an appropriate disposal facility.

4.2.5 Natural Heritage

Natural heritage value gradually increases over time as vegetation grows in along abandoned / former railway corridors. They have the potential to become a place where sensitive species and / or Species at Risk may be located, which can have a bearing on future development opportunities. In addition, timing windows for natural heritage inventories and construction need to be factored into project schedules. For example, the timing of tree removals in respect of the Migratory Birds Convention Act must be considered in project construction schedules, and any tree removals need to take place outside of the active breeding bird season (March 31 to August 30) to avoid the destruction of active nests.

Recently there have been devastating effects by the Emerald Ash Borer on all species of Ash across south, central and eastern parts of the province, leaving millions of trees dead or dying. Dying or dead trees may be hazards if within falling range of places where people frequent. A Certified Arborist should review the corridor to determine the need for hazard tree removals and the associated estimated cost.

4.3 Accessibility

The Accessibility for Ontarians with Disabilities Act, (AODA, 2005) includes the goal to make Ontario accessible for people with disabilities by 2025. Ontario Regulation 413/12 (O.Reg 413/12) made under the Accessibility for Ontarians with Disabilities Act, 2005 includes guidelines and standards that apply to new construction and extensive renovation of exterior pedestrian facilities.

O.Reg .413/12 groups outdoor pedestrian routes into one of three categories as follows:

- Paths of Exterior Travel; which includes sidewalks and exterior walkways that connect directly to buildings and facilities. Examples include walkways that connect parking lots to buildings, main walkways in parks that connect to park pavilions, playgrounds and washroom buildings.

- Beach Access Routes; which are defined as the main connecting walkway(s) to beaches intended for public use.
- Recreational Trails; which encompass a range of facility types ranging from hard surface multi-use trails in, major urban parks to natural surface walking trails in more remote areas.

The BCRY Multi-use Trail would fall under the Recreational Trail category, and sections 80.8 and 80.10 in O.Reg. 413/12 provide the technical requirements to be met by the design. Key requirements include:

- A minimum 1.0m wide trail tread free from obstructions.
- A minimum of 2.1m clear head room above trail.
- Trail surfaces that are firm and stable.
- Openings in the trail surface must not allow passage of an object with a diameter of greater than 20mm, and elongated openings must be oriented perpendicular to the direction of travel.
- Where trails are constructed adjacent to water or a drop-off the trail must have edge protection that prevents users from slipping over the edge. The top of the edge protection must be at least 50mm above the trail surface and it must be designed to not impede the drainage of the trail surface. Edge protection adjacent to water or a drop-off is not required where there is a protective barrier / railing that runs along the edge of the trail.
- Any gates / barriers at trail entrances must have an opening of between 850 mm and 1000mm.
- Trailhead signage must indicate the length of the trail; type of surface; average and minimum trail width; average maximum running/longitudinal and cross slope; and the location of amenities (where provided). Signage must have text that has a high tonal contrast with background colours to facilitate visual recognition, and text must use a sans serif font.
- Brochures and media used to describe the trail must convey the same information in the same manner as required for trailhead signs.
- Signs and brochures must contain information about the trail (e.g. maximum slope, minimum width etc.) rather than subjective information (e.g. level of difficulty rating), which allows the user to make an informed personal decision whether or not to use the trail before they set out.

This section of O.Reg. 413/12 also recognizes exceptions where accessibility requirements can be waived. The exceptions generally relate to locations where:

- The impact of trail construction would adversely affect protected natural or cultural heritage resources, and these effects cannot be reasonably mitigated.
- It is not practicable to comply with the requirements, or some of them, because existing physical or site constraints prohibit modification or addition of elements, spaces or features that would be required to meet accessibility requirements.

Duty to Consult

The legislation also requires the County / local municipalities to consult with the accessibility community as part of the design / development process for the construction of new trails and significant redevelopment of existing trails. The Simcoe County Accessibility Advisory Committee provides an effective venue for this consultation. Reporting to the Committee of the Whole, the Accessibility Committee provides advice for Council's consideration regarding the identification, removal, and prevention of barriers to persons with disabilities, including facility plans and designs that are currently in development. Engaging the committee early in the design process is an effective method of sharing information and receiving feedback to inform the design. For the BCRY project consultations typically would focus on elements of the design including:

- General feasibility to meet accessibility requirements in the design of a new trail or trail improvement, and where requirements can be practicably met, consulting on design criteria such as
 - General trail design characteristics including trail surface, slope, road crossings and the location and design of any ramps along the trail.
 - The location and design of benches and rest areas, passing areas, viewing areas, amenities such as washrooms, parking lots and trail access points and other key trail features.
 - Information related to accessibility that will be included on signage.

4.4 Environmental Assessment

The Municipal Engineers Association (MEA) Class Environmental Assessment Document (October 2000 as amended 2007) applies to municipal infrastructure projects including roads, water and wastewater projects. Recognizing projects undertaken by municipalities can vary in their environmental impact, such projects are classified in the Class EA in terms of schedules:

Schedule A or A+

- Generally, includes normal or emergency agency operational and maintenance activities; and
- The environmental effects of these activities are usually minimal and, therefore, these projects are pre-approved.

Schedule B

- Generally, includes improvements and minor expansions to existing facilities; and
- There is the potential for some adverse environmental impacts and therefore the proponent is required to proceed through a screening process including consultation with those who may be affected.

Schedule C

- Generally, includes the construction of new facilities and major expansions to existing facilities; and

- These projects proceed through the environmental assessment planning process outlined in the Class EA.

In October 2015 a number of amendments to the MCEA were approved by the provincial government, which included amendments to, and clarifications regarding the EA Schedules. Previous editions of the Municipal Class Environmental Assessment did not provide direction regarding multi-purpose pathways. This has now been clarified in "Appendix 1-Cycling Changes to Project Schedules in the March 2015 Proposed Amendments". (<http://www.municipalclassea.ca/files/Amendments/2015-10-20%20Final%20MEA%20Amendments.pdf>)

Of the amendments to the schedule, the following are relevant to the BCRY.

- Normal or emergency operation and maintenance of linear facilities now includes cycling lanes/ multi-use pathways, sidewalks and parking and related facilities located within or outside of road rights-of-way. These are considered pre-approved Schedule A
- Construction or removal of sidewalks or multi-purpose pathways or cycling facilities within existing or protected rights-of-way. These are considered pre-approved Schedule A
- Construction or removal of sidewalks, multi-purpose pathways or cycling facilities including water crossings outside existing rights-of-way identify cost thresholds. Projects valued between \$3.5 and \$9.5M should adhere to Schedule B, and over \$9.5M should adhere to Schedule C, which maintains the exemption for smaller projects and larger projects are to follow a well-accepted and proven process.

Schedule A and A+ projects are considered pre-approved and do not require a full Class EA to be completed but require formal public notification at the commencement of the project.

As previously noted in Section 2 of this report the

- County Official Plan classifies the BCRY corridor as "Railway";
- Township of Essa Official Plan schedules classify the corridor as "Transportation and Utility", and the
- Township of Clearwater Official Plan classifies the corridor as "Railway Lands / Water Transmission Line".

Therefore, it is WSP's opinion that the corridor is considered a "protected right-of-way" and would fall under Schedule A (pre-approved). However, given the Opinion of Probable Cost to construct the entire length of the trail is estimated at \$5.44M including the staging areas plus a 20% contingency it may be prudent to consider conducting a Schedule B EA, depending on how the implementation may be phased (i.e. if the project would be designed and constructed at once or broken out into two or more phases). It should be noted that the MCEA does not consider breaking a project into component parts or phases to be below the value threshold a viable reason for not carrying out an EA.



4.5 Consultation

Regardless of whether the County decides to proceed with the project as an Environmental Assessment or proceed directly to detailed design a consultation program with adjacent landowners and the public is recommended. A comprehensive consultation plan should include the following:

- Notice of project commencement, whether it be an Environmental Assessment or Detailed Design;
- Identification and contact with key stakeholder organizations, including Advisory committees of Council, active transportation and trail organizations, public agencies, interest groups;
- Notice to adjacent landowners and one-on-one meetings with individual owners if requested to discuss specific concerns or requests for mitigation (e.g. fencing, privacy plantings, specific signage, farm crossings);
- Meetings with stakeholder groups (e.g. stakeholder workshops with representatives of various stakeholder organizations invited to attend);
- Information posted on line via the County, Essa and Clearwater websites for public review and comment;
- Public Information Centres with advance advertising to inform residents about the project and invite comment on the development of designs;
- It is suggested that two rounds of public and stakeholder outreach be considered, one at the early stage of the design to understand opportunities, constraints, issues and wishes from the public, and a second to review and receive comments on the proposed design.

4.5.1 Engaging Indigenous Communities

As part of due diligence or an Environmental Assessment process it is recommended that the County undertake Indigenous Engagement for the project.

Engaging with Indigenous communities is an important aspect of all projects proposed on traditional lands. Engagement during the archaeological process demonstrates respect for Indigenous interests, knowledge and heritage. As archaeological assessments and their results are of particular interest, it is considered best practice to engage with local Indigenous communities as early in the assessment process as possible. Local First Nations communities and communities whose traditional lands encompass the study corridor have expressed an interest in gaining a thorough understanding and participating in the archaeological and environmental studies required for similar development projects.

As each community is unique, WSP recommends that a meeting be scheduled with each identified and interested community independently to address any questions or concerns they may have with the project. While Indigenous communities have expressed a preference for engagement to be led by the proponent (i.e. County), engagement with Indigenous communities for this project can be led by a consultant archaeologist, a representative of the County, or another consultant.

It is recommended that each participating community be provided with an information package about the project, be provided an opportunity to request any additional information about the project, and be invited by the County to provide archaeological and ecological monitors or Field Liaison Representatives during the various studies required for this project. Additionally, it is recommended that results be provided to each community for review and comment, prior to a meeting to present the results.

4.6 Other Studies

Moving forward as part of due diligence or Environmental Assessment process the following studies/reports should be completed for the Barrie-Collingwood Railway project:

- **Stage 1 Archaeological Assessment:** The objective of a Stage 1 background study is to evaluate in detail the property's archaeological potential, which will support recommendations for a Stage 2 Archaeological Assessment / survey for all or parts of the property and to recommend appropriate strategies for Stage 2. In support of the determination of archaeological potential, the Stage 1 will provide information about the property's geography, history, previous archaeological fieldwork, and current land condition. As part of the Stage 1 scope the archaeologist reviews pertinent provincial and federal government files, specifically the Ontario Archaeological Sites Database (OASD).
- **Cultural Heritage Resource Assessment (CHRA):** A CHRA identifies recognized and potential heritage properties within and/or adjacent to the proposed alignment. Once these are identified, fieldwork is undertaken to confirm existing conditions and inform a preliminary assessment of impacts. General mitigation measures are then recommended and can include suggested alterations to the alignment, identification of a preferred alignment, and/or additional reporting.
- **Cultural Heritage Evaluation Report (CHER) for individual railway bridges:** A CHER uses background historical research, engineering documents, comparative analysis, and a site visit to determine the cultural heritage value of the subject bridge. The evaluation is completed using Ontario Heritage Act Regulation 9/06 to determine any design, historical/associative, and/or contextual value of the subject bridge. If the structure is determined to retain heritage value, a Statement of Cultural Heritage Value or Interest (CHVI) is produced and physical attributes that support the statement will be identified. Recommendations are used to inform any modifications to the bridge to repurpose its use / function as a multi-use trail (e.g. addition of railings and decking, potential for interpretation of the original bridge design etc.)

- **Heritage Impact Assessment (HIA):** An HIA is required if a bridge/property has the potential to be negatively impacted and has been
 - determined to retain cultural heritage value; or
 - identified by a cultural heritage professional, community, municipality, the province, or the federal government as having the potential to retain cultural heritage value.
- The HIA determines the extent of impacts to the resource and provides recommendations on how to mitigate negative effects on cultural heritage attributes.
- **Environmental Impact Study (EIS):** Based on discussions with the Nottawasaga Valley Conservation Authority (NVCA) a permit and scoped EIS will be required. The scope of the EIS will require further confirmation with NVCA Regulations staff as the project advances into the next stage. At the time this report was prepared it is anticipated that the scope would include the following:
 - Verify that the existing background information database is current. Since the Detailed Design phase is anticipated to occur soon after the Preliminary Design was completed, it is not anticipated that additional site investigations will be required.
 - Consult with NVCA (via phone / conference call) to determine the need for a permit under O. Reg. 172/06 and the supporting studies and documentation required for permit application (e.g., confirm whether an EIS or other documentation is required). It is assumed that a permit will be required and that a Scoped Environmental Impact Statement (or similar report) will be required to document the natural heritage impacts and identify mitigation approaches to inform the detailed trail design and/or construction.
 - Consult with the MNRF (via phone / conference call) to determine the need for additional SAR surveys based on the detail design and to obtain input on mitigation approaches (i.e., for SAR bats and turtles, Bobolink, Eastern Meadowlark). SAR surveys and permitting/registration under the ESA are not included in the cost estimate for additional studies (refer to Section 6.3.1) as it is not known if they will be required at the time this report was prepared. Notwithstanding, it is anticipated that these surveys will not be required based on the preferred alternative (i.e., no grading required in sensitive habitats). If impacts to SAR or their habitat are identified during detail design, consult with MNRF on the need for permits or registration under the Endangered Species Act or a Letter of Advice.
 - It is also currently unknown whether there will be any works that involve work below the high-water mark of any watercourse (i.e., culvert rehabilitation or replacement, or infilling of aquatic habitat to accommodate an expansion of the rail / trail embankment). This will be confirmed during detail design. If these works are proposed, it will require detailed investigations (including fish community sampling, specifically on watercourses with limited fish community information) and impact assessments. If it is determined that serious harm to fish cannot be avoided, a Request for Review by Fisheries and Oceans Canada (DFO) will also be required. The estimated cost for this work (field investigations, impact assessments, Request for Review) is not included in the cost estimate for additional studies as it is not known if they will be required at this time.

- **Bridge Structural Assessment:** This involves a visual inspection of the former railway bridges by a structural engineer to examine structural integrity and appropriateness to repurpose them for trail use. The review would note any items that require upgrading or repair, and/or items that may require further detailed investigation. This review would also inform design modifications needed to retrofit the former rail structures for trail purposes.
- **Hazard Tree Assessment:** The hazard tree assessment identifies trees along the sides of the corridor that are dead, dying or structurally deficient, and pose a risk of falling on the trail. It includes an action plan for trees that are identified as hazards, which typically involves removal at ground level if within the fall zone of the trail. Alternatively, some hazard trees may be retained as habitat by reducing them to an appropriate height. Recent devastation of Ash tree populations by the Emerald Ash Borer combined with the fact that corridor has not been maintained for a number of years suggests that there are a substantial number of trees that require examination.

Estimated costs for these additional studies are included in Section 6.3.1.



5.0 Potential Trail Development Scenarios

5.1 Comparison of the Potential Scenarios

As part of the potential trail development five alternative routes were explored within the rail corridor. They are as follows:

Alternative #1 – On Existing Rail Bed (Salvage railway steel, dispose of rails and rail ties)

- Existing railway steel would be removed and salvaged while the rail ties would be removed disposed of at an Environmental facility. A new 3.0m wide trail would be located on the same alignment as the former railway.

Alternative #2 – On Existing Rail Bed (Salvage railway steel)

- Existing railway steel would be removed and salvaged while the existing rail ties would be buried with granular material. The new 3.0m wide trail would be located on top of the buried rail ties.

Alternative #3 – Bench Trail on side of existing Rail Bed

- Existing rails and ties would remain untouched and the new 3.0m wide trail would be cut into / benched into the edge of the existing rail bed. This alternative may require the use of retaining walls and will require extra grading along the length of the corridor.

Alternative #4 – Bench Trail on side of Existing Rail Bed (Salvage railway steel)

- Existing railway steel would be removed and salvaged while the rail ties would remain untouched. The new 3.0m wide trail would be cut into / benched into the edge of the existing rail bed. This alternative may require the use of retaining walls and will require extra grading along the length of the corridor.

Alternative #5 – Off Existing Rail Bed Beside Property Line

- Existing rails and ties would remain untouched and the new 3.0m wide trail would be located close to/adjacent to the limit of the right-of-way. This alternative may require the use of boardwalks through wet areas and potentially require the removal of many existing trees.

Each of these alternative routes were evaluated using a common set of criteria as further described below:

Constructability

- The ease of construction (i.e. site access, removals, earth works, utility impacts, etc.)
- Existing infrastructure and vegetation that is required to be removed or relocated
- Including but not limited to significant changes in grade, existing structures that result in constrained widths or ‘pinch points’
- The ability to accommodate the trail

Comfort and Accessibility

- Challenges and constraints to be addressed in making the route accessible and meeting accessibility requirements for recreational trails. This factor considers features such as road and railway crossings, significant changes in grade.
- Consideration for personal security and Crime Prevention Through Environmental Design (CPTED) Principles.

Private Property Impacts

- Impacts to adjacent property owners – including consideration for any necessary land acquisitions, easements, leases or other types of access arrangements.

Natural Environment

- Potential impacts on woodlots / vegetation and wildlife, including consideration of any Species at Risk (SAR), within or adjacent to the corridor.
- Potential impacts to riparian and aquatic habitat for any trail sections that follow or cross watercourses.

Capital Cost

- The cost of construction of the ultimate design and any interim solutions, including consideration of ‘throw-away costs’ associated with interim solutions.

Maintenance Cost

- Maintenance cost on an average annual basis.

Table 1 on the following page presents each of the alternatives with a score and comments as they pertain to each of the evaluation criteria. A score of 1 to 5 was assigned each criterion as it relates to each alternative, where 1 is the lowest score and 5 is the highest. The Natural Environment and Capital Cost criteria were assigned a double weighting due to their relative importance as compared with the other 5 criteria.

Table 1: Evaluation of Alternatives		Alternative 1: On Existing Rail Bed (salvage rails and dispose of ties)		Alternative 2: On Existing Rail Bed (salvage rails and bury ties)		Alternative 3: Bench Trail on Side of Existing Rail Bed		Alternative 4: Bench Trail on Side of Existing Rail Bed (Salvage Rails)		Alternative 5: Off Existing Rail Bed Beside Property Line	
Individual Criterion	Description of Considerations	Score ⁽¹⁾	Comments	Score	Comments	Score	Comments	Score	Comments	Score	Comments
Constructability	<ul style="list-style-type: none"> The ease of construction. Existing infrastructure and vegetation that is required to be removed or relocated. Including but not limited to significant changes in grade, existing structures that result in constrained widths or 'pinch points'. The ability to accommodate the trail. 	4	<ul style="list-style-type: none"> Removal of existing rail ties and rails required before construction commences. Hard compact surface for trail. Only very minor grading and drainage requirements. 	5	<ul style="list-style-type: none"> Removal of existing rails required before construction commences. Bury existing rail ties Hard compact surface for trail. Only very minor grading and drainage requirements. 	2	<ul style="list-style-type: none"> Do not have to disturb the existing rail ties and rails. Significant grading and drainage requirements to fit trail along edge of rail ballast. May require retaining wall on one or both sides of the trail. May have to design around existing culvert crossings. Small amount of vegetation and trees would require removal. 	3	<ul style="list-style-type: none"> Do not have to remove the existing rail ties, but rail lines would be removed. Significant grading and drainage requirements to fit trail along edge of rail ballast. May require retaining wall on one or both sides of the trail. May have to design around existing culvert crossings. Small amount of vegetation and trees would require removal. 	1	<ul style="list-style-type: none"> Do not have to disturb the existing rail ties and rails Significant grading and drainage requirements to implement trail along edge of property line. May require ditching, fill material, retaining walls and boardwalks in certain locations. Large areas of trees and vegetation would require removal.
Comfort and Accessibility	<ul style="list-style-type: none"> Challenges and constraints to be addressed in making the route accessible and meeting City and Provincial AODA requirements for recreational trails. This factor considers features such as road and railway crossings, significant changes in grade. Consideration for personal security and Crime Prevention Through Environmental Design (CPTED) Principles. 	5	<ul style="list-style-type: none"> No accessibility issues. Existing rail line is flat and meets all road and bridge crossings at grade. Being located on top of existing rail line allows for maximum visibility for trail users. 	5	<ul style="list-style-type: none"> No accessibility issues. Existing rail line is flat and meets all road and bridge crossings at grade. Being located on top of existing rail line allows for maximum visibility for trail users. 	3	<ul style="list-style-type: none"> The implementation of accessible slopes would be required at all transitions to road and bridge crossings. Being lower on the rail line limits views of the surrounding areas for trail users. 	3	<ul style="list-style-type: none"> The implementation of accessible slopes would be required at all transitions to road and bridge crossings. Being lower on the rail line limits views of the surrounding areas for trail users. 	3	<ul style="list-style-type: none"> The implementation of accessible slopes would be required at all transitions to road and bridge crossings. Being lower and close to existing mature/large trees, views of the surrounding area would be non-existent for trail users.
Private Property Impacts	<ul style="list-style-type: none"> Impacts to adjacent property owners – including consideration for any necessary land acquisitions, easements or leases. 	5	<ul style="list-style-type: none"> Entire corridor is owned by the County, however implementing the trail in the middle of the corridor provides the largest setback from adjacent properties and their owners. Implementing the trail in the middle of the corridor will also deter trail users from entering the adjacent properties. 	5	<ul style="list-style-type: none"> Entire corridor is owned by the County, however implementing the trail in the middle of the corridor provides the largest setback from adjacent properties and their owners. Implementing the trail in the middle of the corridor will also deter trail users from entering the adjacent properties. 	3	<ul style="list-style-type: none"> Entire corridor is owned by the County, however implementing the trail cut into the edge of one side of the rail bed decreases the setback from the adjacent properties and their owners on one side. Implementing the trail cut into the edge of one side of the rail bed could also increase the potential of trail users entering properties. 	3	<ul style="list-style-type: none"> Entire corridor is owned by the County, however implementing the trail cut into the edge of one side of the rail bed decreases the setback from the adjacent properties and their owners on one side. Implementing the trail cut into the edge of one side of the rail bed could also increase the potential of trail users entering properties. 	1	<ul style="list-style-type: none"> Entire corridor is owned by the County, however implementing the trail right along the edge of one property owner could lead to a higher frequency of trail users entering the adjacent property illegally. May require the use of a heavy duty fence to eliminate trespassing.
Natural Environment⁽²⁾	<ul style="list-style-type: none"> Potential impacts on woodlots / vegetation, trees in parks or open space, and boulevard / street trees (i.e. for route options within road rights-of-way). Potential impacts to riparian and aquatic habitat for any trail sections that follow or cross watercourses. 	8	<ul style="list-style-type: none"> Implementation of the trail on top of the existing rail bed would result in no impact to existing woodlots. Only required to remove existing vegetation that has overgrown the rail line. 	10	<ul style="list-style-type: none"> Implementation of the trail on top of the existing rail bed would result in no impact to existing woodlots. Only required to remove existing vegetation that has overgrown the rail line. 	6	<ul style="list-style-type: none"> No impacts to woodlots would occur along the side of the rail line, however more impacts to existing vegetation would be required to accommodate grading works. May require further investigation at culvert crossings. 	4	<ul style="list-style-type: none"> No impacts to woodlots would occur along the side of the rail line, however more impacts to existing vegetation would be required to accommodate grading works. May require further investigation at culvert crossings. 	2	<ul style="list-style-type: none"> May impact adjacent woodlots along the rail corridor. A few locations may impact wetlands and may require further investigation at culvert crossings.
Capital Cost⁽²⁾	<ul style="list-style-type: none"> The cost of construction of the ultimate design and any interim solutions, including consideration of 'throw-away costs' associated with interim solutions. 	8	<ul style="list-style-type: none"> Cost of construction would include the removal and disposal of the existing rail ties. 23km of rail line is approximately 50,000 ties at a weight of 3,840 tonnes. Disposal costs are approximately \$200/tonne Potential for revenue from salvage of rails to fund portion of trail or offset rail tie disposal cost. 23km of rail weighs approximately 3,500 tonnes. (Salvage cost = \$250-\$350/tonne of rail) Once rails and ties are removed construction cost would be quite minimal. 	10	<ul style="list-style-type: none"> Cost of construction would include fill/granular material to bury the existing rail ties. Potential for revenue from salvage of rails to fund portion of trail. 23km of rail weighs approximately 3500 tonnes. (Salvage cost = \$250-\$350/tonne of rail) Does not require disposal costs for the existing rail ties 	4	<ul style="list-style-type: none"> Cost of construction would not require removal and disposal of rail ties or removal of rails. Construction costs would be higher, associated with the additional grading works and the potential retaining walls. 	6	<ul style="list-style-type: none"> Cost of construction would not require removal and disposal of rail ties. Potential for revenue from salvage of rails to fund portion of trail. 23km of rail weighs approximately 3500 tonnes. (Salvage cost = \$250-\$350/tonne of rail) Construction costs would be higher, associated with the additional grading works and the potential retaining walls. 	2	<ul style="list-style-type: none"> Cost of construction would not require removal and disposal of rail ties or removal of rails. Construction costs would be higher associated with the additional grading works, tree removals, fencing, and the potential for retaining walls and boardwalks.
Maintenance Cost	<ul style="list-style-type: none"> Maintenance cost during the entire year, including snow clearing in winter. 	5	<ul style="list-style-type: none"> Maintenance would be minor with occasional top ups of trail surfacing. 	4	<ul style="list-style-type: none"> Maintenance would be minor with occasional top ups of trail surfacing. Possibility of minor cave-ins should rail ties break down. 	3	<ul style="list-style-type: none"> Moderate maintenance costs, will require granular surfacing top ups, may have to fix washouts, and repairs to retaining walls. 	3	<ul style="list-style-type: none"> Moderate maintenance costs, will require granular surfacing top ups, may have to fix washouts, and repairs to retaining walls. 	2	<ul style="list-style-type: none"> Higher maintenance costs, will require granular surfacing top ups, may have to fix washouts, and repairs to retaining walls and boardwalks.
Overall Score			35		39		21		22		11

NOTE:

- Each alternative has been ranked on a scale from 1-5. 1 being least desirable and 5 being most desirable.
- The Natural Environment and Capital Cost criteria have been noted as key determining factors in selecting the most desirable alternative. As such they have both been weighted (x2).

5.2 A Preferred Scenario for Consideration

Based on the results of the evaluation **Alternative #2** – On Existing Rail Bed (salvage of existing rails) is preferred. Key reasons for selecting Alternative #2 as the preferred are as follows:

- Existing rail bed already has a substantial granular base which is well-drained and compacted, therefore ready to accept a finished trail surfacing material with minimal regrading and importing of new base material. The majority of “rail to trail” conversions follow this approach.
- Existing rail bed is relatively flat (i.e. railway lines generally have longitudinal slopes under 2%) and meets all road and bridge crossings at-grade, therefore accessibility requirements can be easily met;
- Implementing the trail in the middle of the corridor provides the largest setback from adjacent properties, therefore minimizing potential disturbance to adjacent owners, and potentially reducing requests for mitigation;
- Only vegetation that has overgrown the former rail line would require removal, therefore aiding in screening of adjacent properties from the trail, and minimizing impacts on established vegetation;
- Potential of financial gains for salvage of existing railway steel, which may assist in offsetting some of the cost of trail construction;
- Burial of the existing rail ties eliminates cost for removal and disposal; and
- The assumption that the existing watercourse crossings can be used, eliminating the need for new, separate trail bridges or culvert extensions.



6.0 Preliminary Design

Using **Alternative #2** as the preferred approach the WSP team developed the preliminary design and opinion of construction cost. The following sections provide details of the preliminary design and associated design guidelines. The preliminary design and design guidelines will inform future detailed design of the BCRY multi-use trail.

6.1 Overview of Preliminary Design

Key features of the Preliminary Design are described below and **Map Sheets 1 to 34** provide location-specific observations and recommendations.

- Surfacing - 3.0m wide limestone screening surface (150mm depth)
- Bury existing rail ties with 200mm Granular 'A' base
- Trail Length – 23km
 - New Trail – 19km
 - Existing Trail (beside rail line) – 4km
- Road Crossings – twenty (20) locations, none of which are currently signalized. Most of the road crossings (17 of 20) are low volume rural roads that will require advance warning signage, and the remaining three (3) will require higher order crossings, such as a pedestrian crossover or mid-block pedestrian signal. These three locations are
 - Highway 26 (Stayner),
 - County Road 9 (New Lowell) and
 - Mill Street (Angus) possible.
- Driveway Crossings – four (4) locations, all of which are along Warrington Road. Signage to be put in place to alert trail users of these vehicular crossings.
- Staging Area Locations (3 Proposed)
 - Stayner (Highway 26)
 - New Lowell (County Road 9)
 - Angus (Alma Street)

An existing granular trail from Highway 26 (N King St.) to Highway 26 in downtown Stayner runs through an existing park and parallel to the existing rail corridor. This trail should continue to be utilized as the main trail instead of constructing a new trail on the existing rail line for this portion of the proposed route. Once across Highway 26 there is an ideal location for a proposed trailhead. The existing corridor is wider in this location

to allow for a large parking area. This location is also adjacent to a small parkette and parking lot that can be expanded. The trail itself would continue along through the existing corridor to Superior Street.

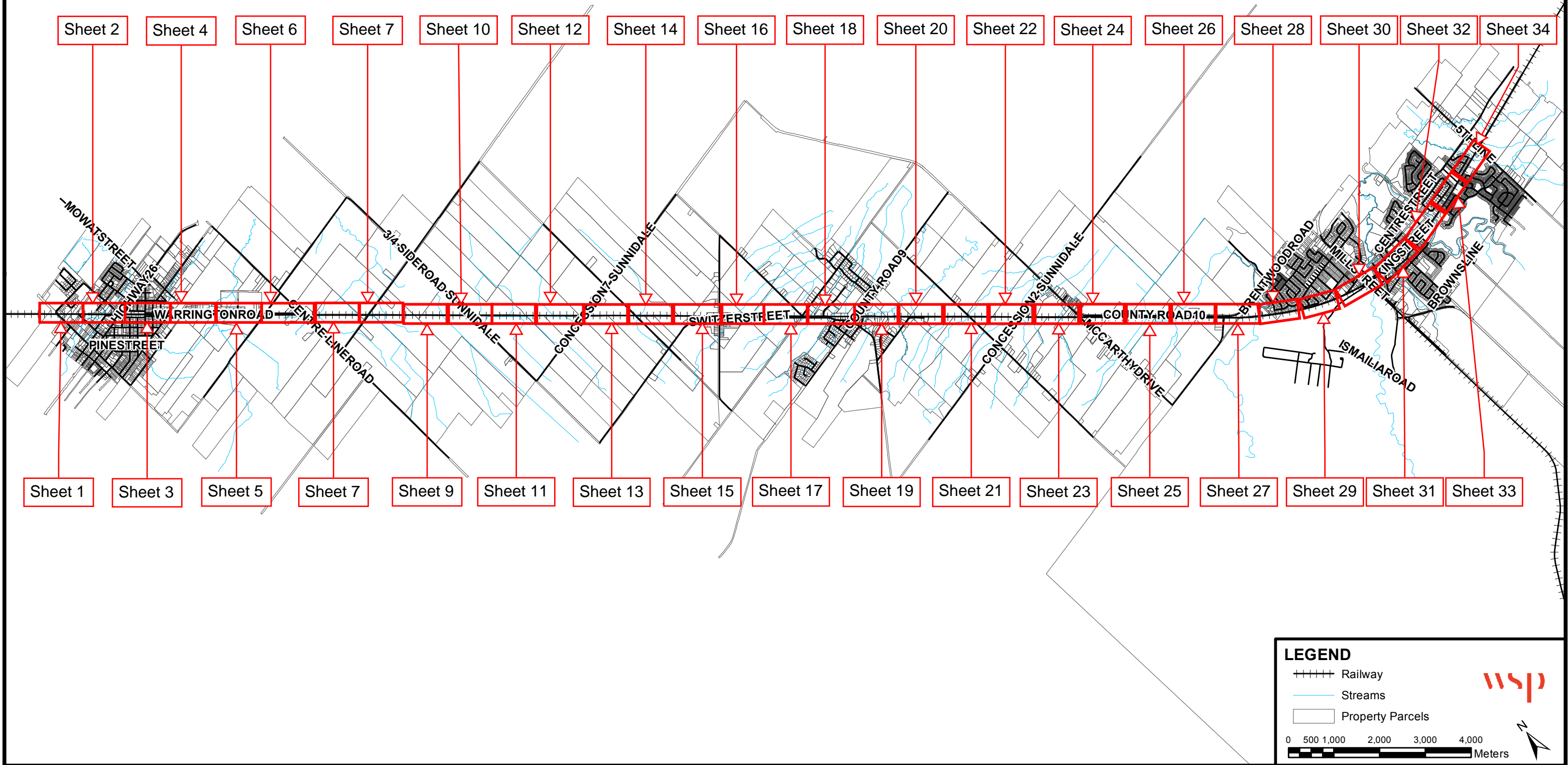
Once across Superior Street an existing granular trail runs parallel to Warrington Road and the rail corridor to Centre Line Road. To avoid the extra costs of clearing the existing rail line, this existing trail route should be utilized as the main trail. The trail then transitions into the existing rail corridor as it crosses Centre Line Road and runs through lands that are primarily agricultural on both sides of the corridor the next 6km to Sunnidale. Three existing farm crossings are present through this stretch and signage will need to be installed to alert trail users of farm equipment crossing in these locations.

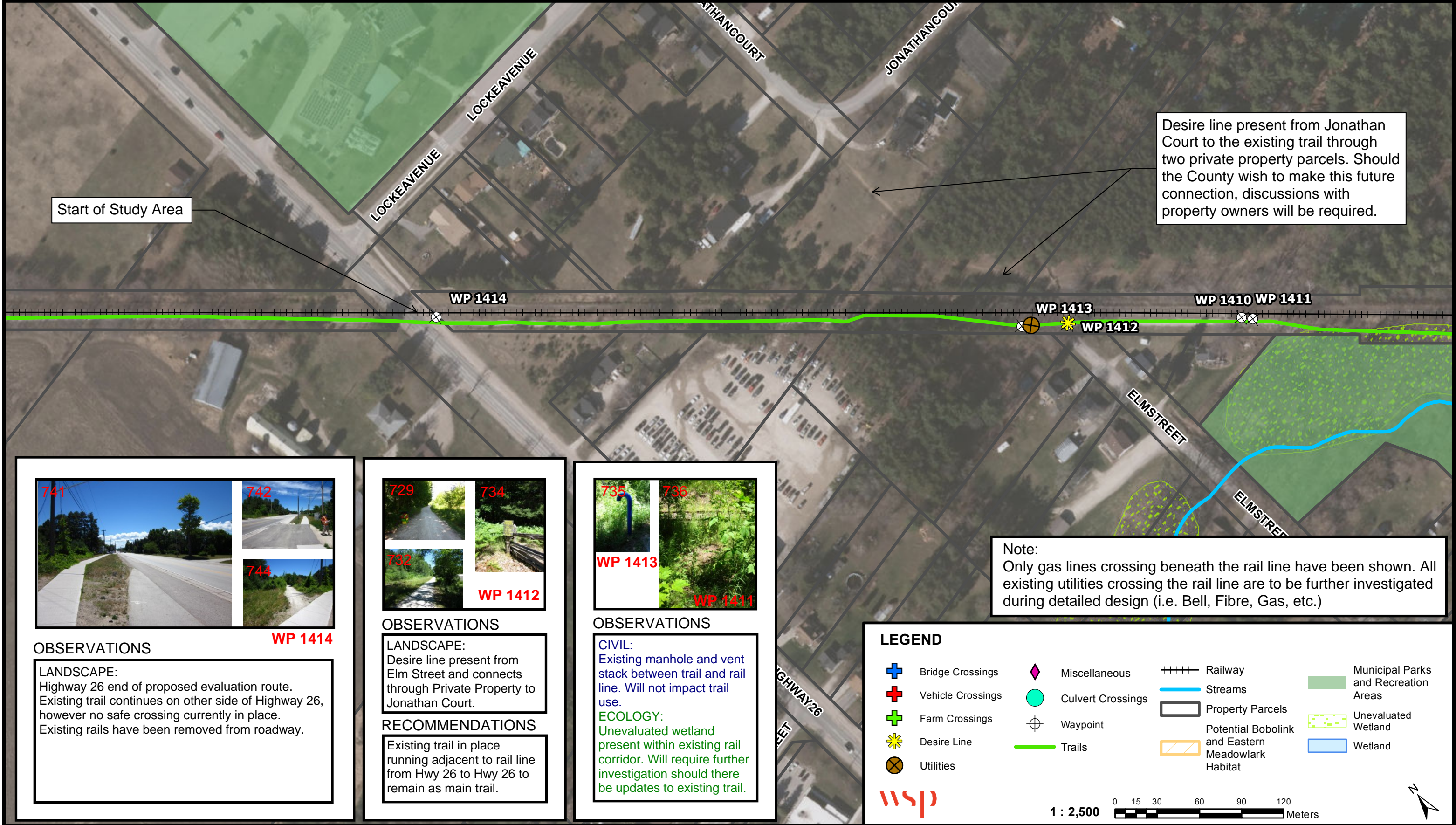
The existing rail line runs adjacent to several residential homes through Sunnidale and then through agricultural lands to New Lowell. In New Lowell the corridor passes adjacent to New Lowell Recreation Park, which presents an opportunity for a Staging Area where the rail corridor intersects with County Road 9.

Heading east the trail then continues along the existing rail line to Angus. The proposed road crossing at Mill Street will require further investigation to determine the most appropriate design for the crossing. Two options are presented for consideration; a Mid-Block Pedestrian signal, or directing users to the existing signalized intersection at Pine River Road by way of a multi-use trail in the east boulevard along Mill Street.

There are three (3) existing rail bridges in Angus that will require a structural assessment to determine their suitability for use as a trail bridge. Within Angus a third Staging Area has been proposed at Alma Street. This portion of the corridor is close to double the width at approximately 60m and will provide extra space for parking. The trail will then continue along the rail line ending at 5th Line.

Based on historical records provided to WSP by the County at the beginning of the project there are a significant number of utilities that cross the corridor. Records indicate that there are approximately 140 residential Bell / communication lines crossing the corridor, and a number of these date back to the 1950's and 60's. These were not added on the preliminary design drawings and will require further investigation during detailed design as to their viability. Records and field observations also noted a number of major utilities such as gas lines and overhead hydro transmission lines in addition to those typically found within road rights-of-way where the rail corridor crosses roads. Major utilities in mid-block areas that were encountered in the field and those from records provided were noted on the preliminary design drawings, and will require confirmation further investigation during detailed design.





Start of Study Area

Desire line present from Jonathan Court to the existing trail through two private property parcels. Should the County wish to make this future connection, discussions with property owners will be required.



WP 1414

OBSERVATIONS

LANDSCAPE:
Highway 26 end of proposed evaluation route. Existing trail continues on other side of Highway 26, however no safe crossing currently in place. Existing rails have been removed from roadway.



WP 1412

OBSERVATIONS

LANDSCAPE:
Desire line present from Elm Street and connects through Private Property to Jonathan Court.

RECOMMENDATIONS

Existing trail in place running adjacent to rail line from Hwy 26 to Hwy 26 to remain as main trail.



WP 1413

WP 1411

















OBSERVATIONS

CIVIL:
Existing manhole and vent stack between trail and rail line. Will not impact trail use.

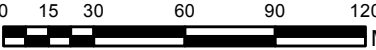
ECOLOGY:
Unevaluated wetland present within existing rail corridor. Will require further investigation should there be updates to existing trail.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

-  Bridge Crossings
-  Vehicle Crossings
-  Farm Crossings
-  Desire Line
-  Utilities
-  Miscellaneous
-  Culvert Crossings
-  Waypoint
-  Trails
-  Railway
-  Streams
-  Property Parcels
-  Potential Bobolink and Eastern Meadowlark Habitat
-  Municipal Parks and Recreation Areas
-  Unevaluated Wetland
-  Wetland



1 : 2,500  Meters





Existing rail line elevation raises very high over existing park. Very steep edges. Construction of trail along rail line through this stretch would be a challenge.

County to consider use of Pedestrian Cross Over for road crossing. Further investigation will be required to determine appropriate crossing measures.

Existing trail veers off rail line through existing park.

Potential to create large staging area for trail with parking and trail head. Refer to Stayner Major Trailhead Concept for further details.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS
ECOLOGY:
Unevaluated wetland present within existing rail corridor. Will require further investigation should there be updates to existing trail.



OBSERVATIONS
LANDSCAPE:
Multiple desire lines present and make shift crossings over existing rail line.



OBSERVATIONS
LANDSCAPE: Highway 26 does not have safe pedestrian crossing. **CIVIL:** Existing rail signals still present and rail lines still within road surface.




OBSERVATIONS
LANDSCAPE: Existing parking lot on rail lands owned by County.
RECOMMENDATIONS
Existing parking lot has potential to be main staging area for trail.

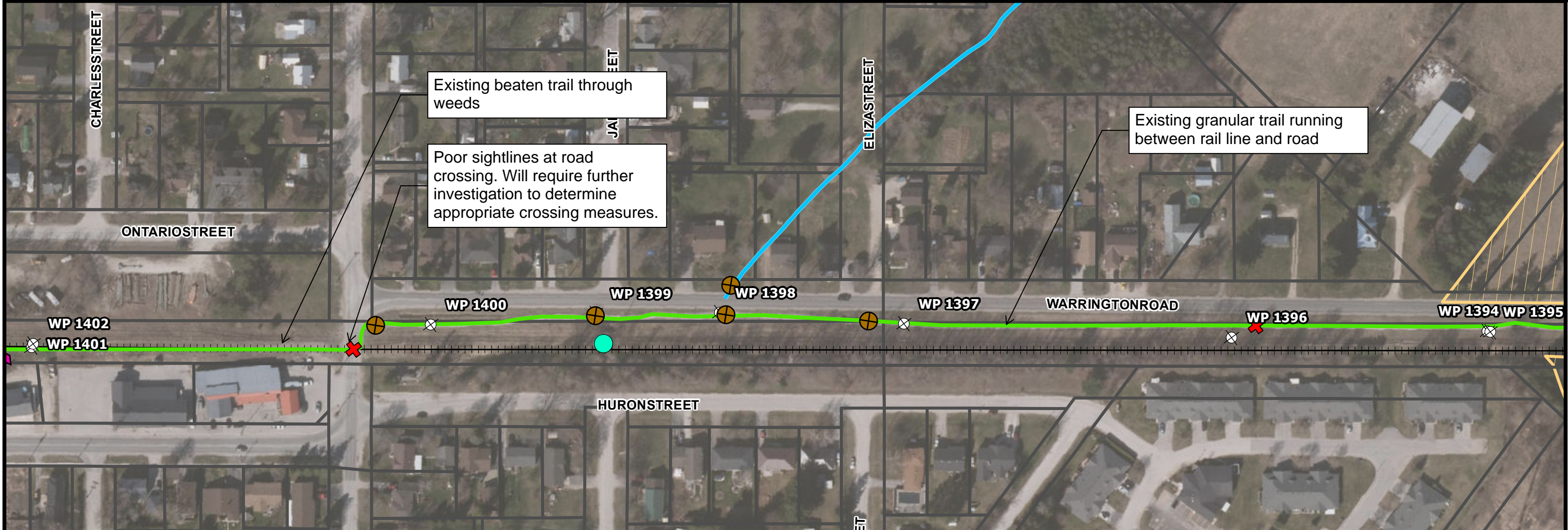
LEGEND

- + Bridge Crossings
- + Vehicle Crossings
- + Farm Crossings
- * Desire Line
- ⊗ Utilities
- ◆ Miscellaneous
- Culvert Crossings
- ⊕ Waypoint
- Existing Trails
- ++++ Railway
- Streams
- ▭ Property Parcels
- ▭ Potential Bobolink and Eastern Meadowlark Habitat
- ▭ Municipal Parks and Recreation Areas
- ▨ Unevaluated Wetland
- ▭ Wetland



1 : 2,500  Meters







OBSERVATIONS


LANDSCAPE: No safe pedestrian crossing at Superior Street. Existing rail lines still in roadway.

CIVIL: Existing Bell Pedestal beside trail



OBSERVATIONS

CIVIL: Existing rail infrastructure for dumping grain. Possible interpretive sign location.



OBSERVATIONS

LANDSCAPE: Existing granular trail runs adjacent to railway.

RECOMMENDATIONS

Maintain existing trail adjacent to rail line.



OBSERVATIONS

LANDSCAPE: Existing rail line in location shown is well maintained. Possibility for interpretive sign. Existing tree to be trimmed.

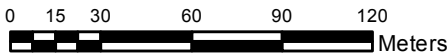

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



Existing granular trail running between rail line and road

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS

LANDSCAPE: Multiple driveway crossings. Existing rails in place and filled to allow for smooth transition.
ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat



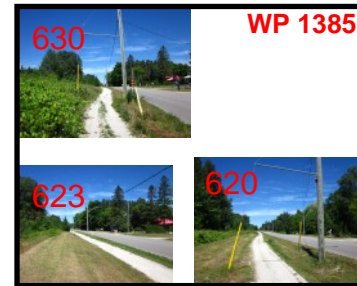
OBSERVATIONS

CIVIL: Existing catch basins running beside and within trail. Maintenance of trail granulars around basins required to prevent tripping hazards



OBSERVATIONS

CIVIL: Multiple culverts running between road and trail. May be collapsed and no longer working. Will require further investigation.



OBSERVATIONS

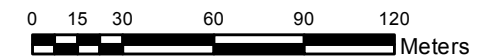
CIVIL: Existing guy wire strutting along trail. No further action required at this time.
ECOLOGY: Unevaluated wetland present within existing rail corridor. Will require further investigation should there be updates to existing trail.

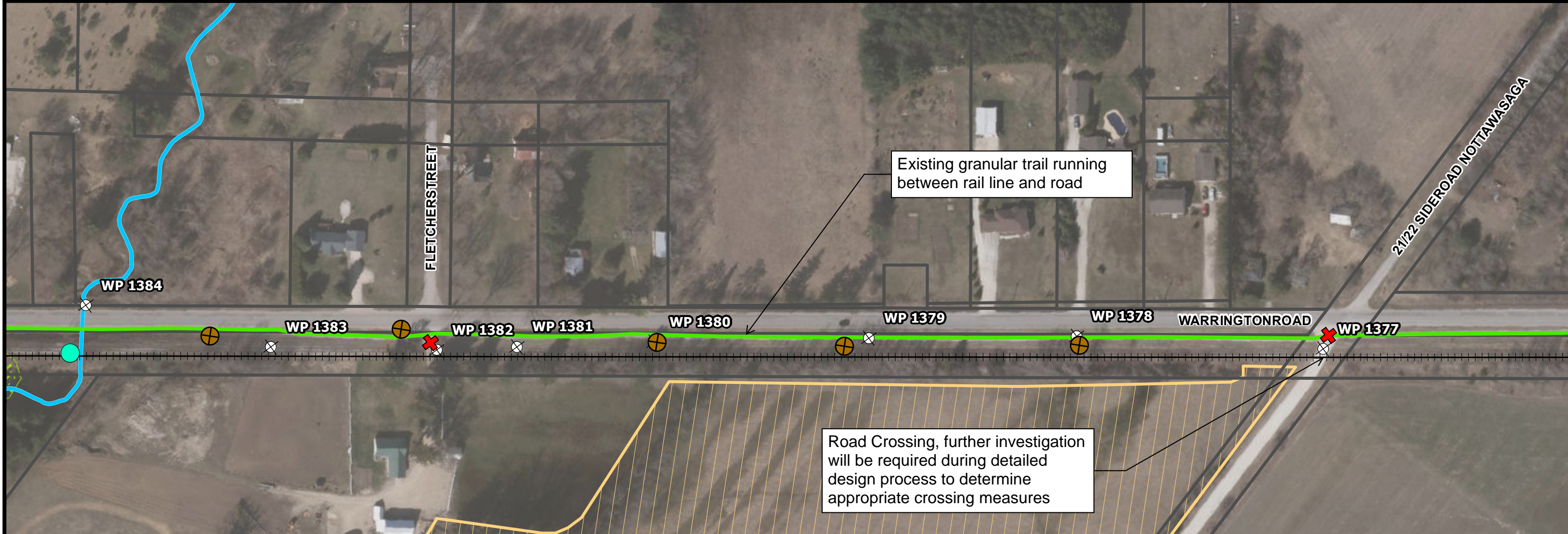
LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



1 : 2,500





OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO.
 Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS

LANDSCAPE: Multiple driveway crossings. Existing rails in place and filled to allow for smooth transition.
ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat



OBSERVATIONS

LANDSCAPE: Existing rail line overgrown with vegetation. Multiple rail ties seeping oil.



OBSERVATIONS

CIVIL: Existing electrical boxes located at similar intervals along edge of rail line.

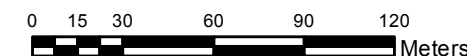
Note:
 Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

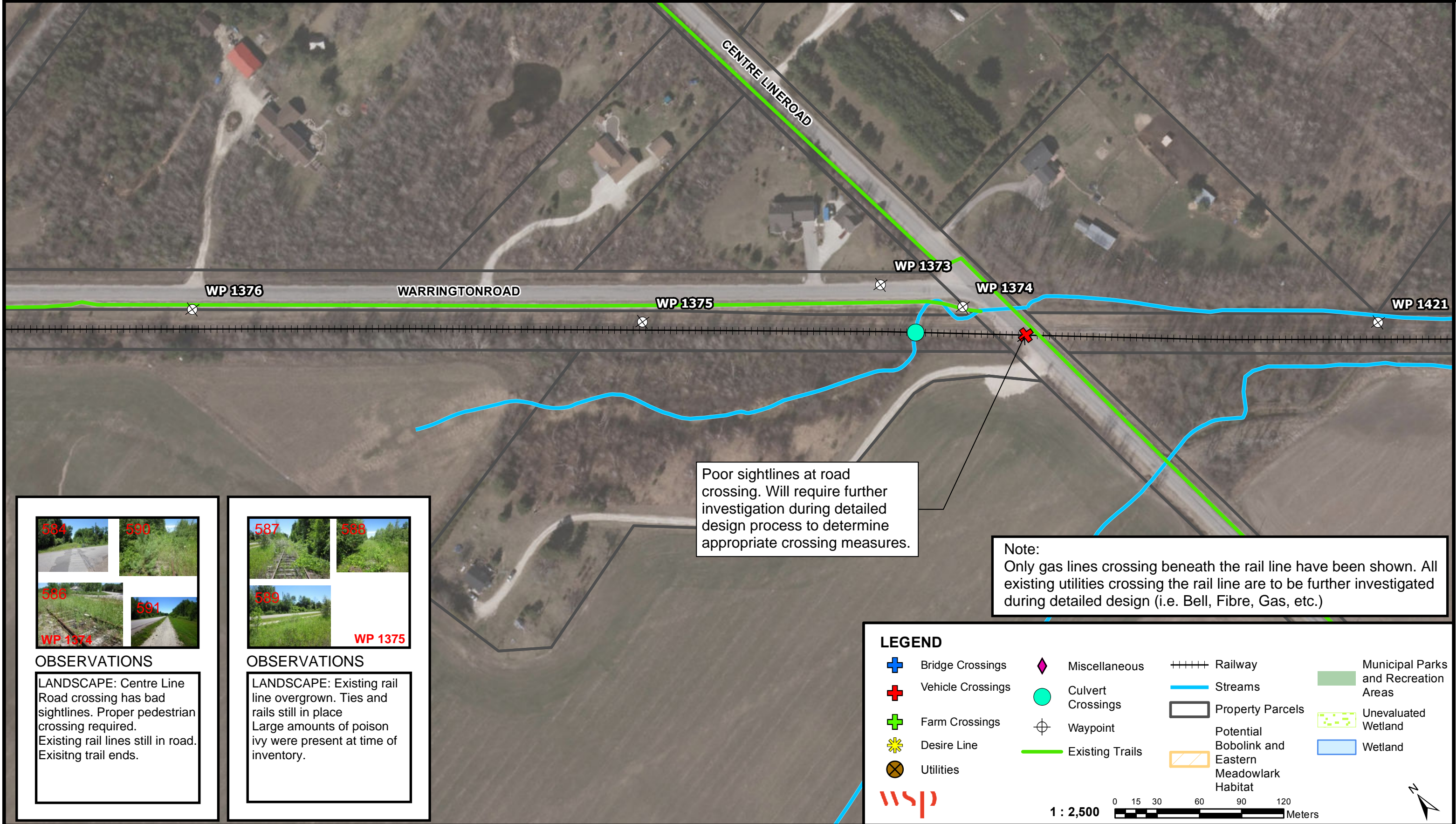
LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



1 : 2,500





Poor sightlines at road crossing. Will require further investigation during detailed design process to determine appropriate crossing measures.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS
LANDSCAPE: Centre Line Road crossing has bad sightlines. Proper pedestrian crossing required. Existing rail lines still in road. Existing trail ends.



OBSERVATIONS
LANDSCAPE: Existing rail line overgrown. Ties and rails still in place. Large amounts of poison ivy were present at time of inventory.

LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



1 : 2,500 Meters





Pile of old rail ties to be removed from site



OBSERVATIONS

LANDSCAPE: Existing rail line overgrown with vegetation. (Poison Ivy) Rail ties and rails still in place. Some ties have rotted over time.



OBSERVATIONS

LANDSCAPE: Pile of old rail ties along edge of corridor.



OBSERVATIONS

Multiple Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO.
 Any culvert repairs will require fish and mussel relocations and permit from MNRF.

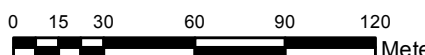

Note:
 Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



Existing farm crossing, refer to farm crossing detail for further information. County to discuss crossing with landowner during consultation process

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS

LANDSCAPE: Existing rail line overgrown with vegetation. (Poison Ivy)
Rail ties and rails still in place. Some ties have rotted over time.
Existing rails still within road surfacing.



OBSERVATIONS


LANDSCAPE: Existing farm crossing will need to be maintained after trail construction. May require access gates.



OBSERVATIONS

Multiple Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO.
Any culvert repairs will require fish and mussel relocations and permit from MNRF.

LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |
- 1 : 2,500
- 0 15 30 60 90 120 Meters
- 






Existing farm crossing, refer to farm crossing detail for further information. County to discuss crossing with landowner during consultation process

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

778 **780**




WP 1424

OBSERVATIONS

ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction.

776 **777**




WP 1424

OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO.
Any culvert repairs will require fish and mussel relocations and permit from MNRF.

772 **775**



774

WP 1423

OBSERVATIONS

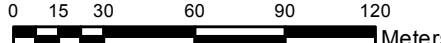

LANDSCAPE: Existing farm crossing will need to be maintained after trail construction. May require access gates.

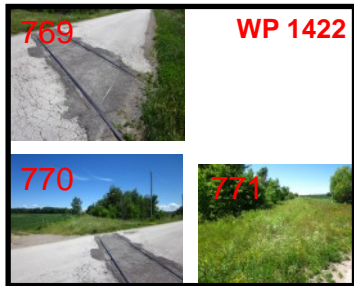
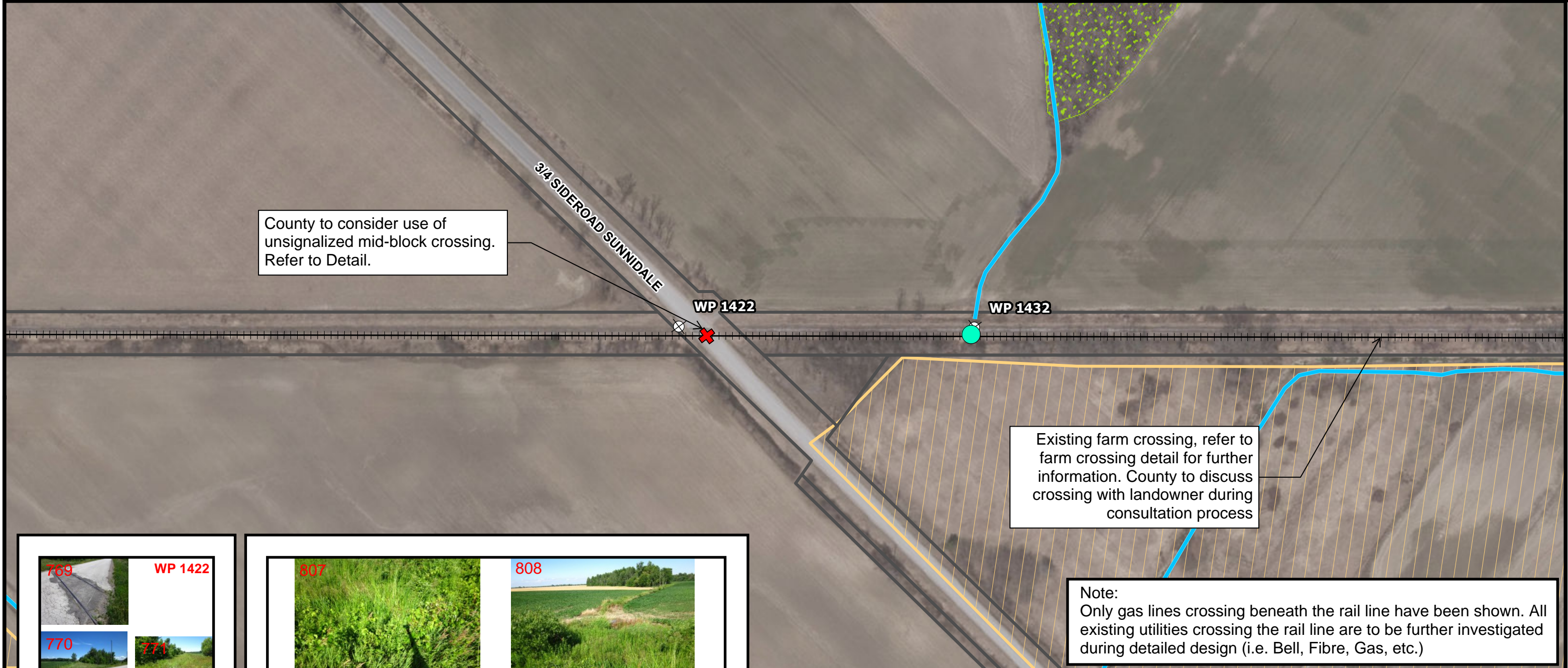
LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



OBSERVATIONS

LANDSCAPE: Existing rail line overgrown with vegetation. (Poison Ivy) Rail ties and rails still in place. Some ties have rotted over time. Existing rails still within road surfacing.



OBSERVATIONS

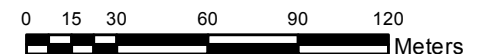
<p>Culvert Crossing ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.</p>	<p>ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction.</p>	<p>ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.</p>
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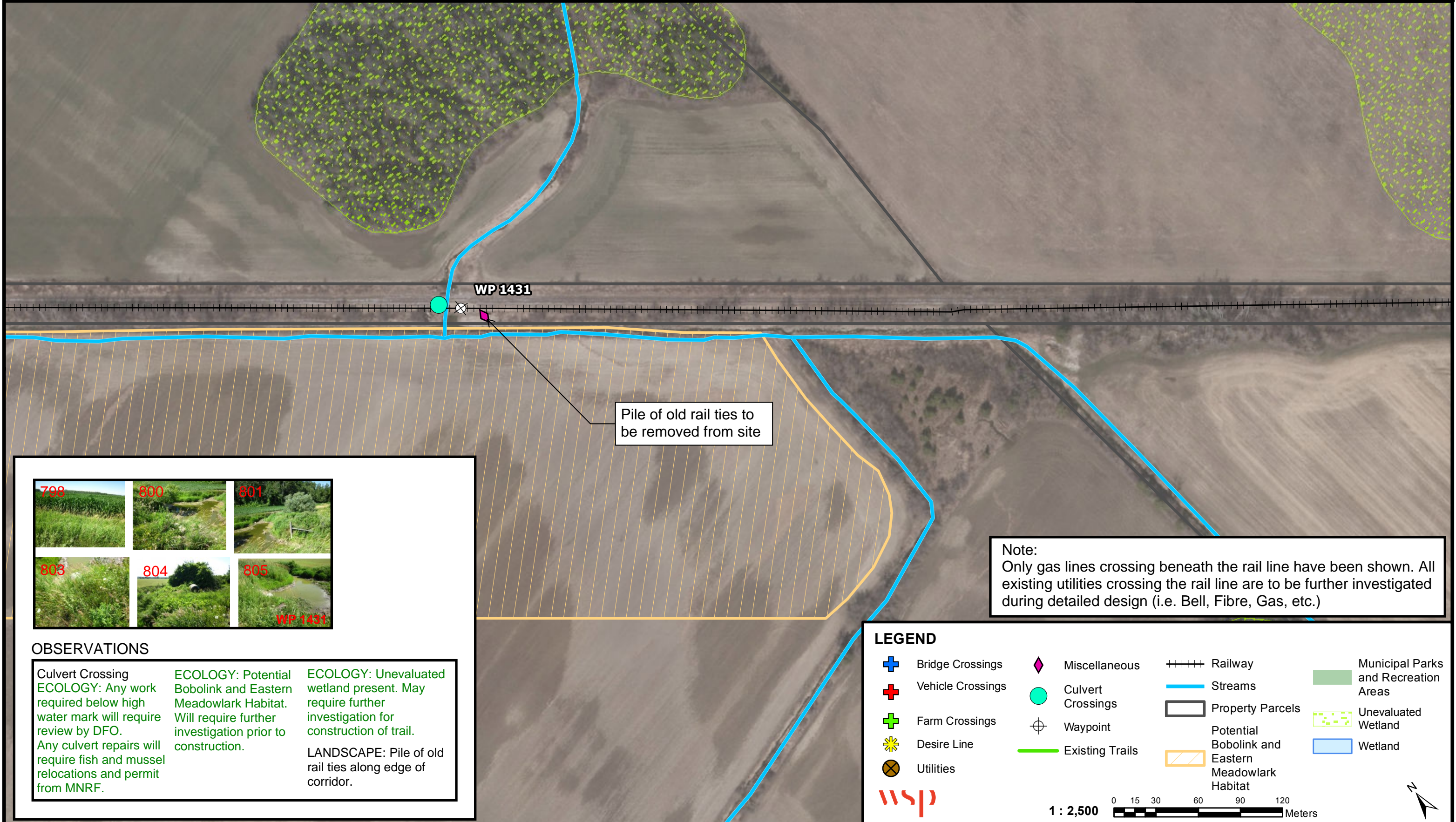
LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



1 : 2,500





WP 1431

Pile of old rail ties to be removed from site

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS

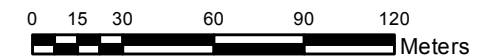
<p>Culvert Crossing ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.</p>	<p>ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction.</p>	<p>ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail. LANDSCAPE: Pile of old rail ties along edge of corridor.</p>
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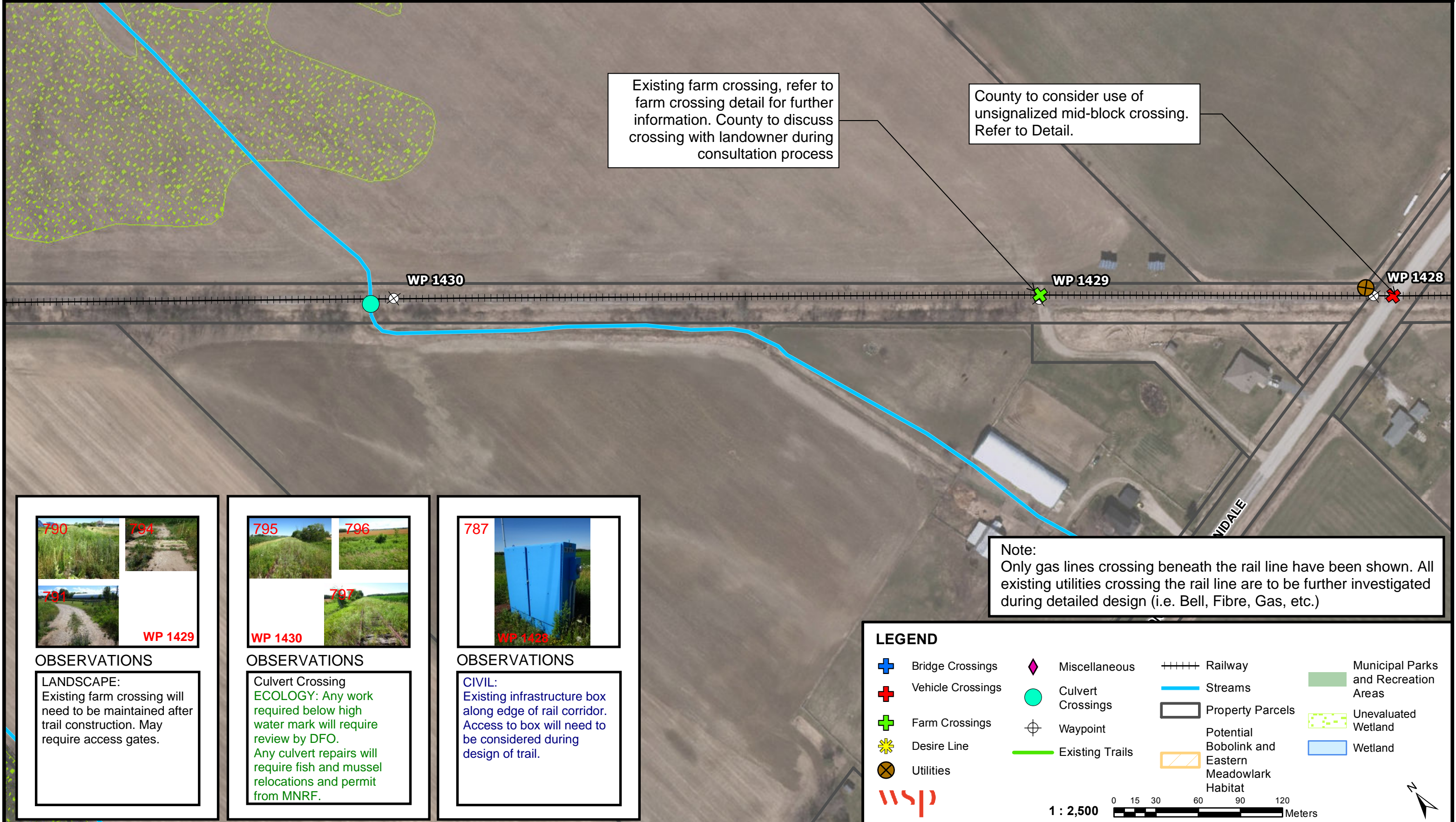
LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



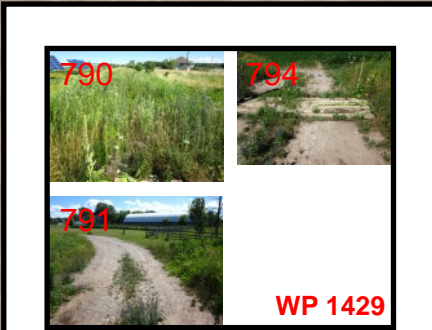
1 : 2,500





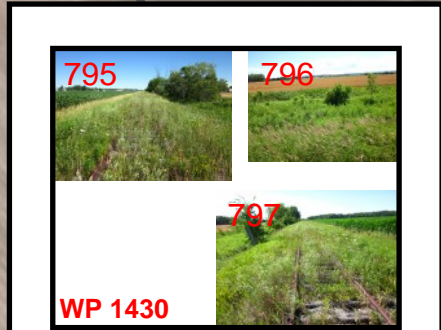
Existing farm crossing, refer to farm crossing detail for further information. County to discuss crossing with landowner during consultation process

County to consider use of unsignalized mid-block crossing. Refer to Detail.



OBSERVATIONS

LANDSCAPE:
Existing farm crossing will need to be maintained after trail construction. May require access gates.



OBSERVATIONS

CULVERT:
Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS

CIVIL:
Existing infrastructure box along edge of rail corridor. Access to box will need to be considered during design of trail.

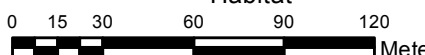
Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND


Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

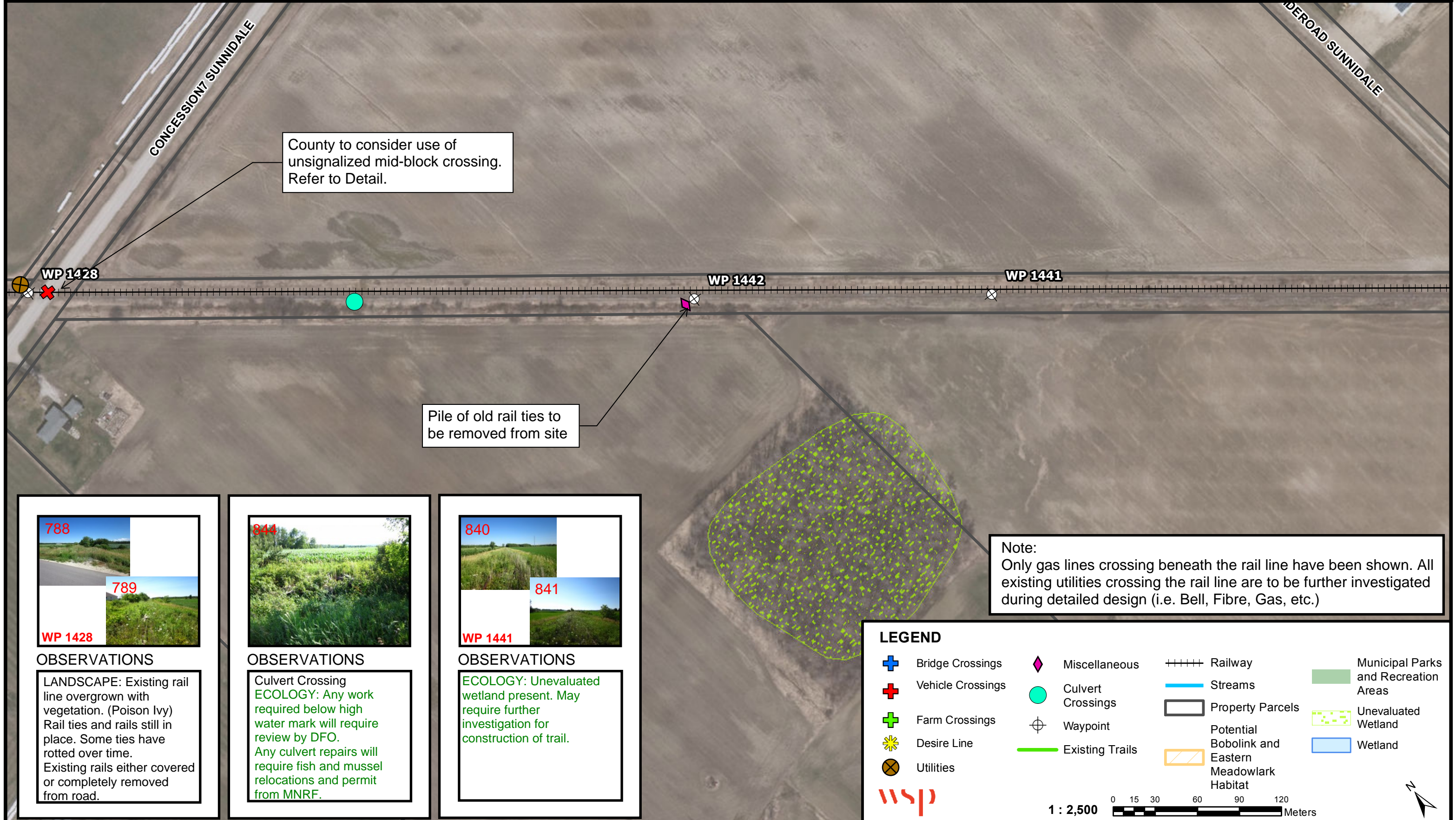
wsp

1 : 2,500



0 15 30 60 90 120 Meters





County to consider use of unsignalized mid-block crossing. Refer to Detail.

Pile of old rail ties to be removed from site

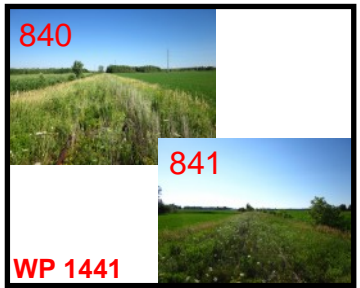
Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS
LANDSCAPE: Existing rail line overgrown with vegetation. (Poison Ivy) Rail ties and rails still in place. Some ties have rotted over time. Existing rails either covered or completely removed from road.



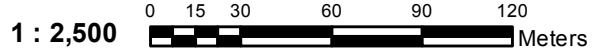
OBSERVATIONS
Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS
ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

LEGEND

- + Bridge Crossings
- + Vehicle Crossings
- + Farm Crossings
- * Desire Line
- ⊗ Utilities
- ◇ Miscellaneous
- Culvert Crossings
- ⊕ Waypoint
- Existing Trails
- +++++ Railway
- Streams
- ▭ Property Parcels
- ▭ Potential Bobolink and Eastern Meadowlark Habitat
- ▭ Municipal Parks and Recreation Areas
- ▭ Unevaluated Wetland
- ▭ Wetland





OBSERVATIONS

LANDSCAPE: Existing rail line overgrown with vegetation. (Poison Ivy) Rail ties and rails still in place. Some ties have rotted over time. Existing rails may be still within road surfacing. New granulars installed.



OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS

ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.



OBSERVATIONS

CIVIL: Hydro corridor runs through rail line. Consultation with Hydro One will be required during design of trail.

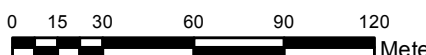

Note: Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

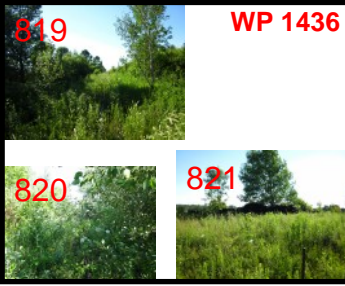
1 : 2,500



Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

819 **WP 1436**



820 **821**

OBSERVATIONS

ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction.

LANDSCAPE: Pile of old rail ties along edge of corridor.

816 **817**




818 **WP 1435**

OBSERVATIONS

LANDSCAPE: Desire line present from existing property.

ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

813 **814**



815 **WP 1433**

OBSERVATIONS

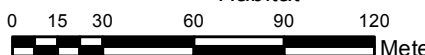
LANDSCAPE: Existing rail line overgrown with vegetation. Grass mown up to edge of rail line. Rail ties and rails still in place. Some ties have rotted over time. Existing rails still within road surfacing.

LEGEND


Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



0 15 30 60 90 120 Meters





OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF. Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction. Unevaluated wetland present. May require further investigation for construction of trail.



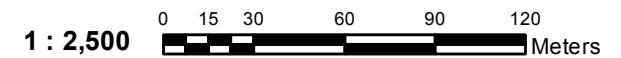
OBSERVATIONS

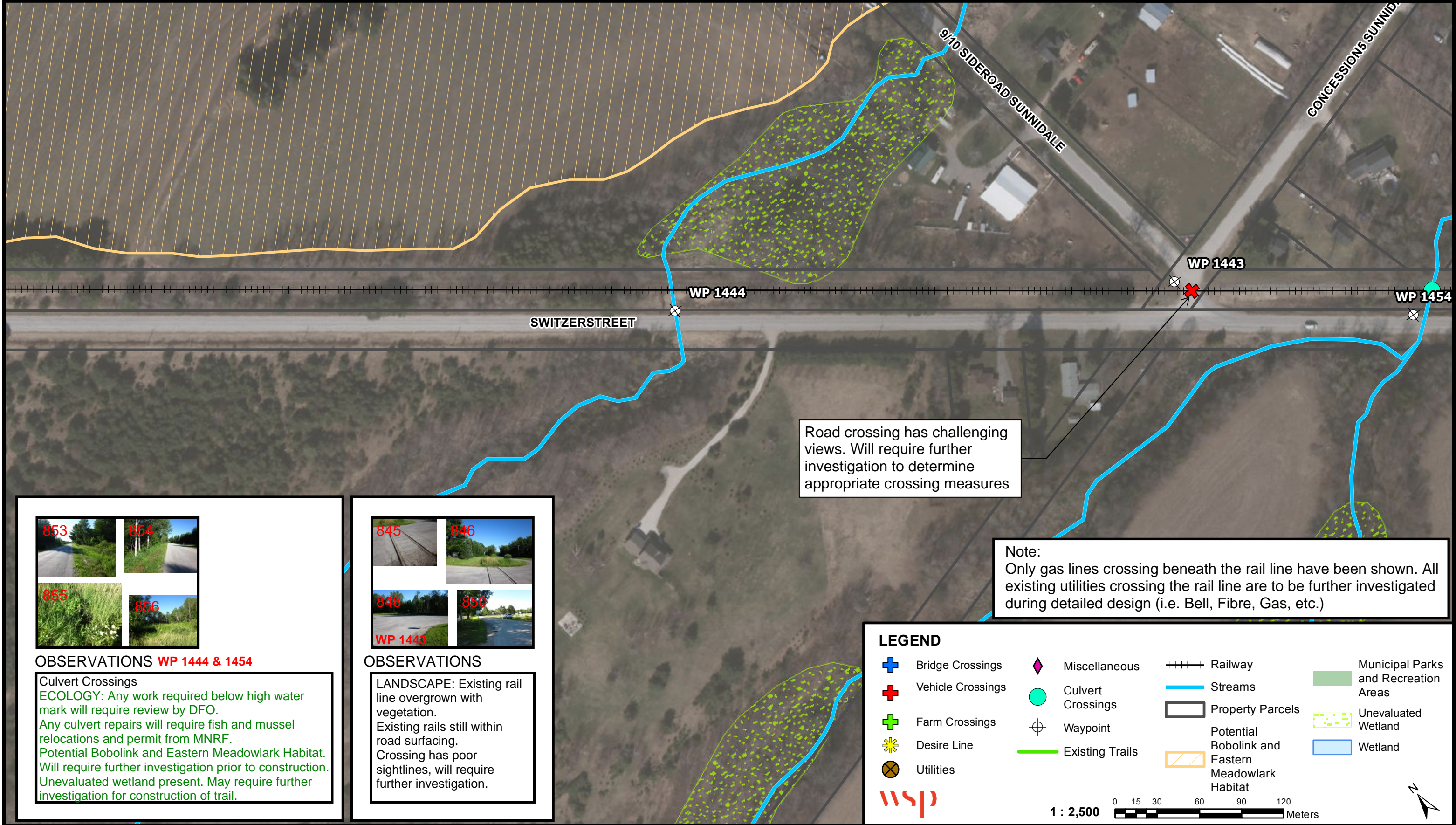
LANDSCAPE: Existing rail line very heavily overgrown with vegetation. (Poison Ivy) Rail ties and rails still in place. Some ties have rotted over time.

Note:
 Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |





Road crossing has challenging views. Will require further investigation to determine appropriate crossing measures

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS WP 1444 & 1454
Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNR. Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction. Unevaluated wetland present. May require further investigation for construction of trail.




OBSERVATIONS WP 1443
LANDSCAPE: Existing rail line overgrown with vegetation. Existing rails still within road surfacing. Crossing has poor sightlines, will require further investigation.

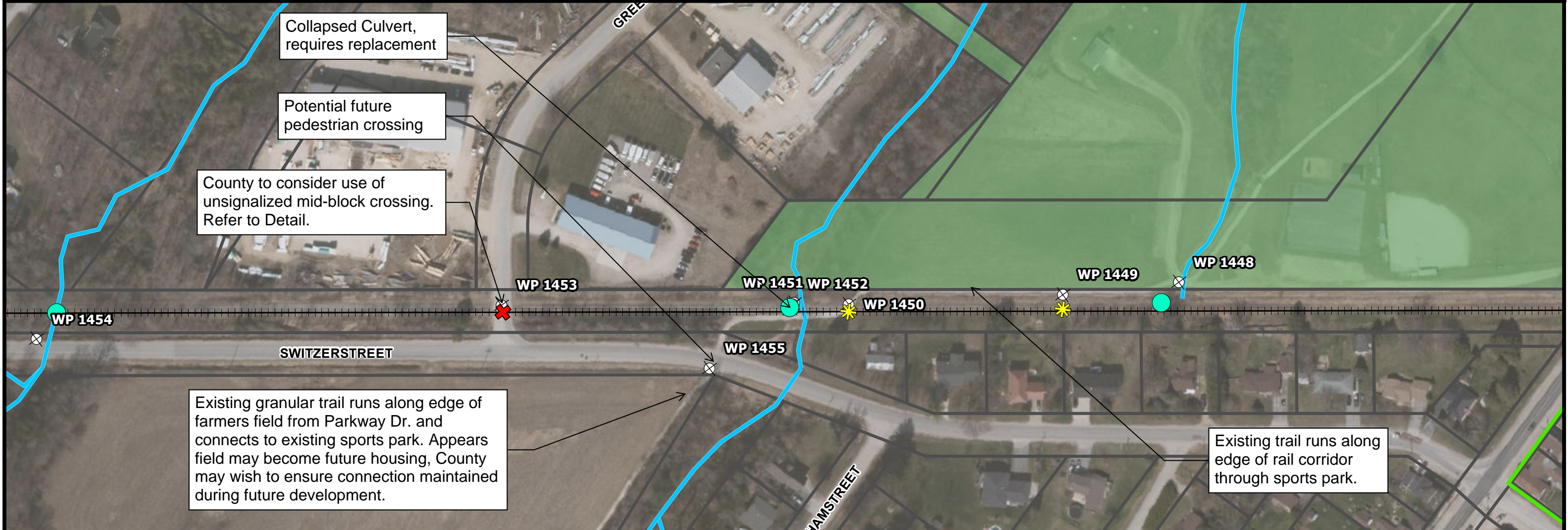
LEGEND

- Bridge Crossings
- Vehicle Crossings
- Farm Crossings
- Desire Line
- Utilities
- Miscellaneous
- Culvert Crossings
- Waypoint
- Existing Trails
- Railway
- Streams
- Property Parcels
- Potential Bobolink and Eastern Meadowlark Habitat
- Municipal Parks and Recreation Areas
- Unevaluated Wetland
- Wetland



1 : 2,500  Meters





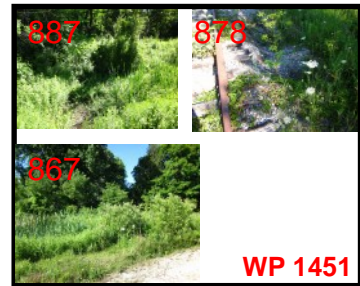
Collapsed Culvert, requires replacement

Potential future pedestrian crossing

County to consider use of unsignalized mid-block crossing. Refer to Detail.

Existing granular trail runs along edge of farmers field from Parkway Dr. and connects to existing sports park. Appears field may become future housing, County may wish to ensure connection maintained during future development.

Existing trail runs along edge of rail corridor through sports park.



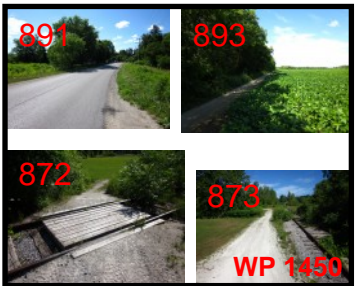
OBSERVATIONS
Collapsed Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS
LANDSCAPE: Road crossing close to intersection. Existing rails still within road surfacing. Existing trail overgrown with vegetation both sides of road crossing.



OBSERVATIONS
LANDSCAPE: Make shift desire line crossing over tracks to trail running along edge of rail line.

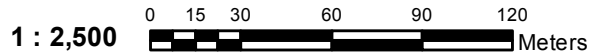


OBSERVATIONS
LANDSCAPE: Existing trail running adjacent to rail line with multiple desire lines to other trails. One desire line crosses Switzer Street and continues along edge of farmers field.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

- Bridge Crossings
- Vehicle Crossings
- Farm Crossings
- Desire Line
- Utilities
- Miscellaneous
- Culvert Crossings
- Waypoint
- Existing Trails
- Railway
- Streams
- Property Parcels
- Potential Bobolink and Eastern Meadowlark Habitat
- Municipal Parks and Recreation Areas
- Unevaluated Wetland
- Wetland





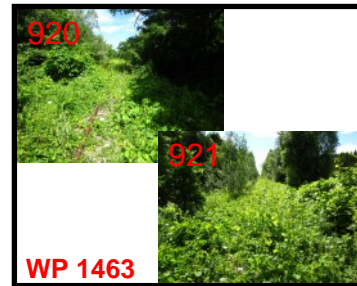
OBSERVATIONS

LANDSCAPE: Road crossing (County Road 9). Will require safe pedestrian crossing. Existing rails still within road surfacing and crossing lights still present.



OBSERVATIONS

Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS

LANDSCAPE: Elevation of existing rail line increases high above surrounding area. Safety rails should be considered during design process.



OBSERVATIONS

LANDSCAPE: Existing rail tie pile present along edge of corridor.

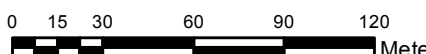

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



New construction across rail present at time of field review. County to investigate further.



OBSERVATIONS

LANDSCAPE: New granular crossing of rail line with culverts. New access road for future development?

Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNR.



















OBSERVATIONS


ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

Note: Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

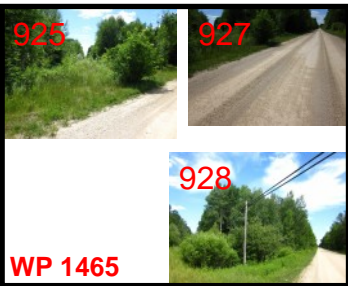
LEGEND

-  Bridge Crossings
-  Vehicle Crossings
-  Farm Crossings
-  Desire Line
-  Utilities
-  Miscellaneous
-  Culvert Crossings
-  Waypoint
-  Existing Trails
-  Railway
-  Streams
-  Property Parcels
-  Potential Bobolink and Eastern Meadowlark Habitat
-  Municipal Parks and Recreation Areas
-  Unevaluated Wetland
-  Wetland



1 : 2,500  Meters





OBSERVATIONS

LANDSCAPE: Road crossing (granular surfacing) Will require safe pedestrian crossing. Existing rails may have been removed or are buried under granular road surfacing.

















OBSERVATIONS

ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

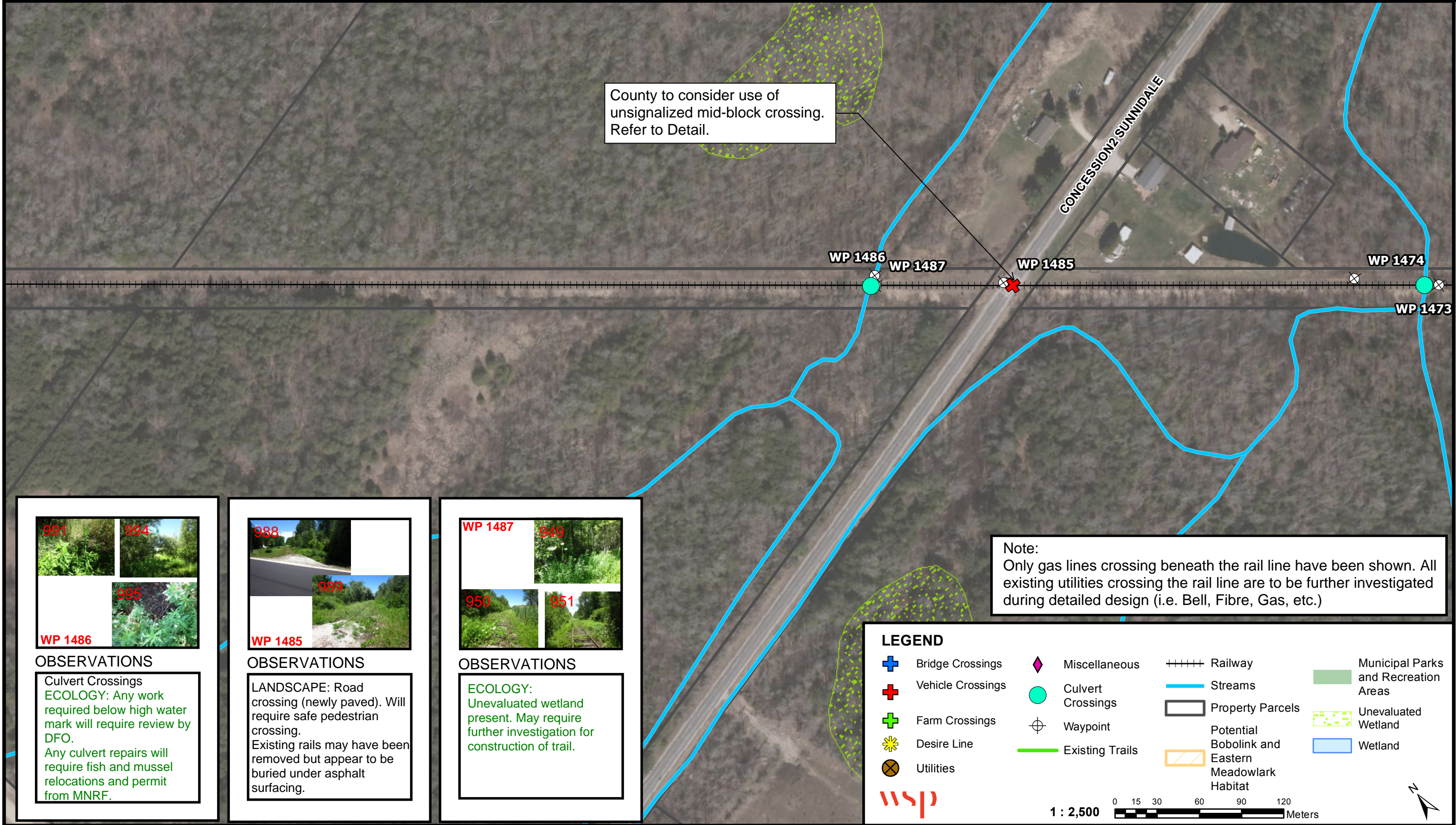
LEGEND

-  Bridge Crossings
-  Vehicle Crossings
-  Farm Crossings
-  Desire Line
-  Utilities
-  Miscellaneous
-  Culvert Crossings
-  Waypoint
-  Existing Trails
-  Railway
-  Streams
-  Property Parcels
-  Potential Bobolink and Eastern Meadowlark Habitat
-  Municipal Parks and Recreation Areas
-  Unevaluated Wetland
-  Wetland



1 : 2,500  Meters





County to consider use of unsignalized mid-block crossing. Refer to Detail.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

WP 1486



OBSERVATIONS
Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO.
Any culvert repairs will require fish and mussel relocations and permit from MNR.

WP 1485



OBSERVATIONS
LANDSCAPE: Road crossing (newly paved). Will require safe pedestrian crossing.
Existing rails may have been removed but appear to be buried under asphalt surfacing.

WP 1487



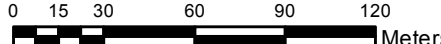

OBSERVATIONS
ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

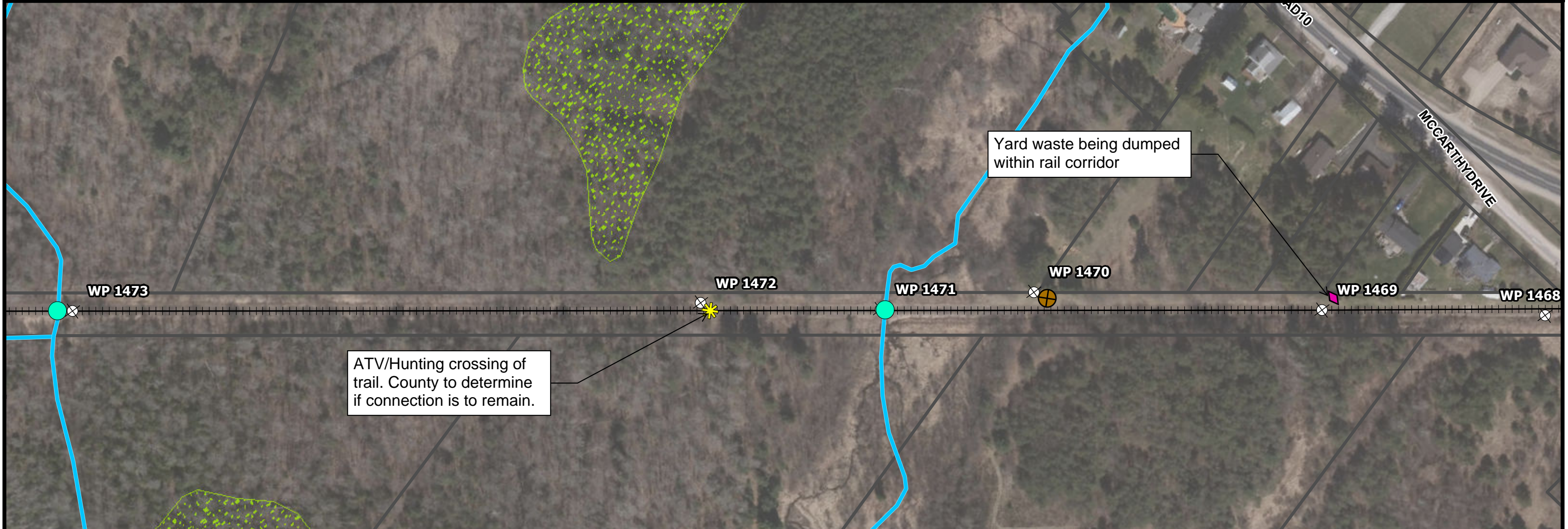
LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



OBSERVATIONS

LANDSCAPE: Desire lines present with make shift crossing. Likely hunting route. Pile of rail ties present along edge of rail corridor.



OBSERVATIONS

Culvert Crossings
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS

CIVIL: Water valve and spigot noted along edge rail corridor.
LANDSCAPE: Dumping of vegetation along edge of rail corridor.



OBSERVATIONS

ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

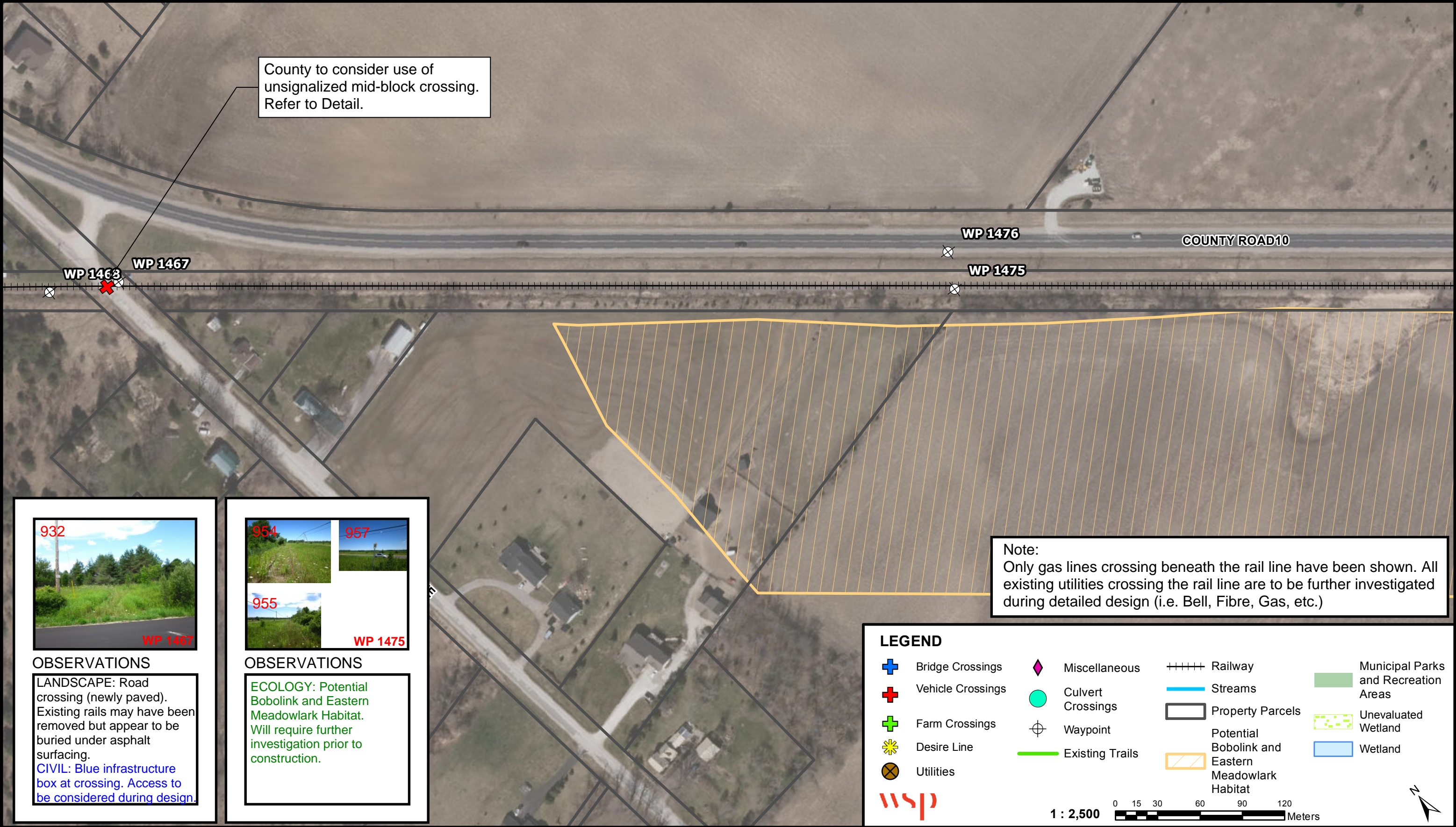
LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



1 : 2,500 Meters





County to consider use of unsignalized mid-block crossing. Refer to Detail.

WP 1476

COUNTY ROAD 10

WP 1467

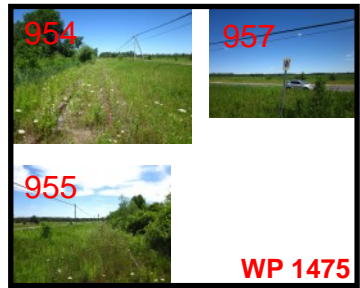
WP 1475

WP 1463



OBSERVATIONS

LANDSCAPE: Road crossing (newly paved). Existing rails may have been removed but appear to be buried under asphalt surfacing.
CIVIL: Blue infrastructure box at crossing. Access to be considered during design.



OBSERVATIONS

ECOLOGY: Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction.

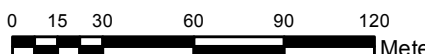

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

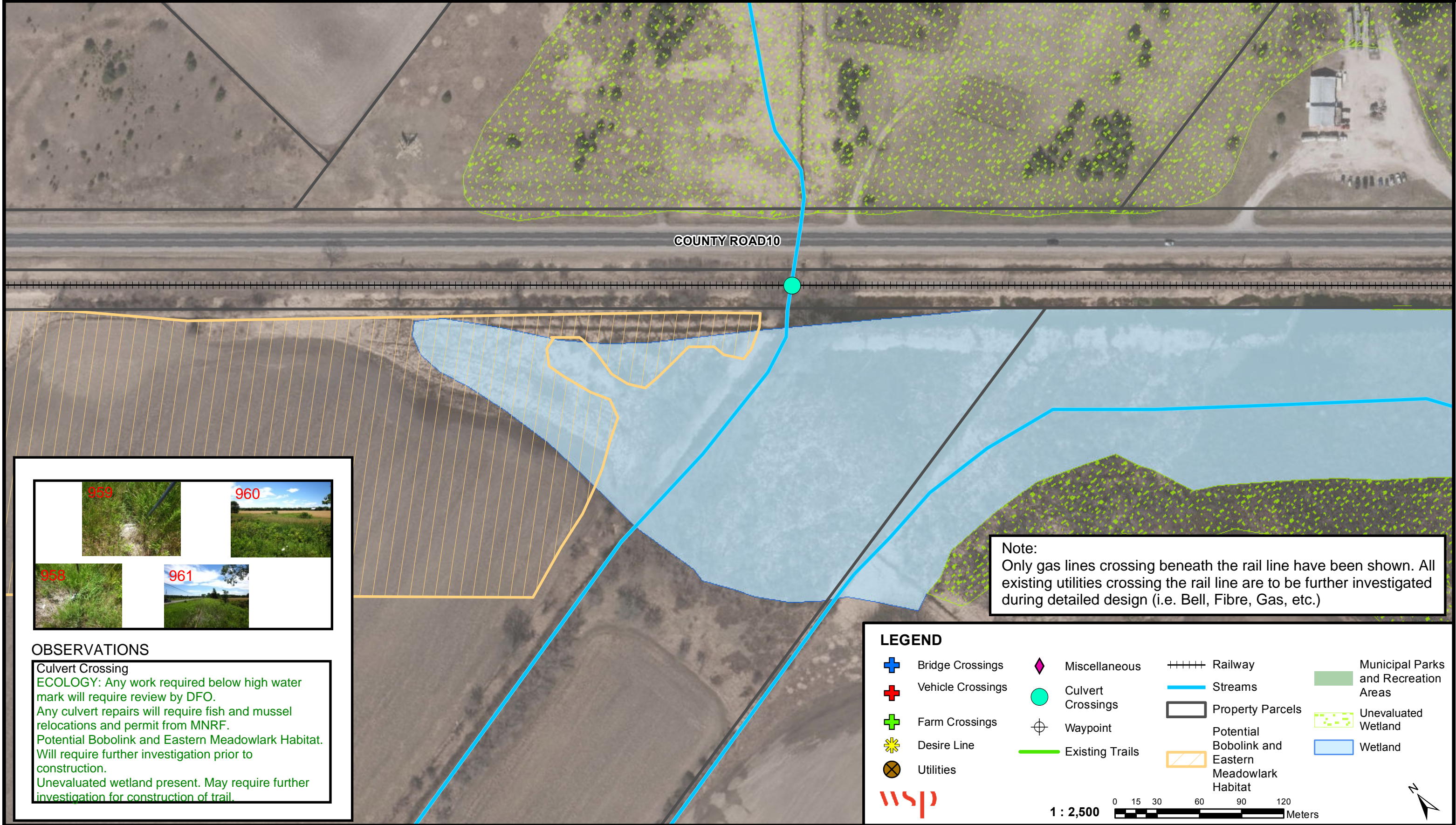
LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

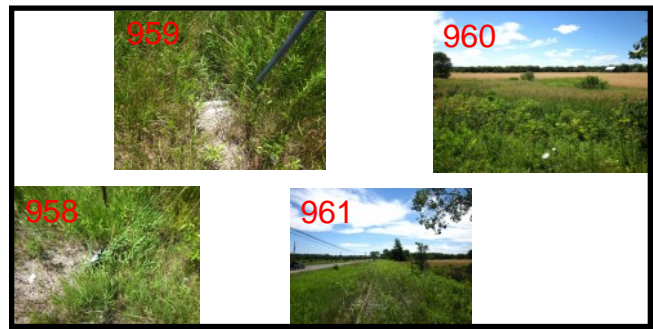
1 : 2,500



COUNTY ROAD 10



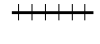













Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO.
 Any culvert repairs will require fish and mussel relocations and permit from MNR.
 Potential Bobolink and Eastern Meadowlark Habitat. Will require further investigation prior to construction.
 Unevaluated wetland present. May require further investigation for construction of trail.

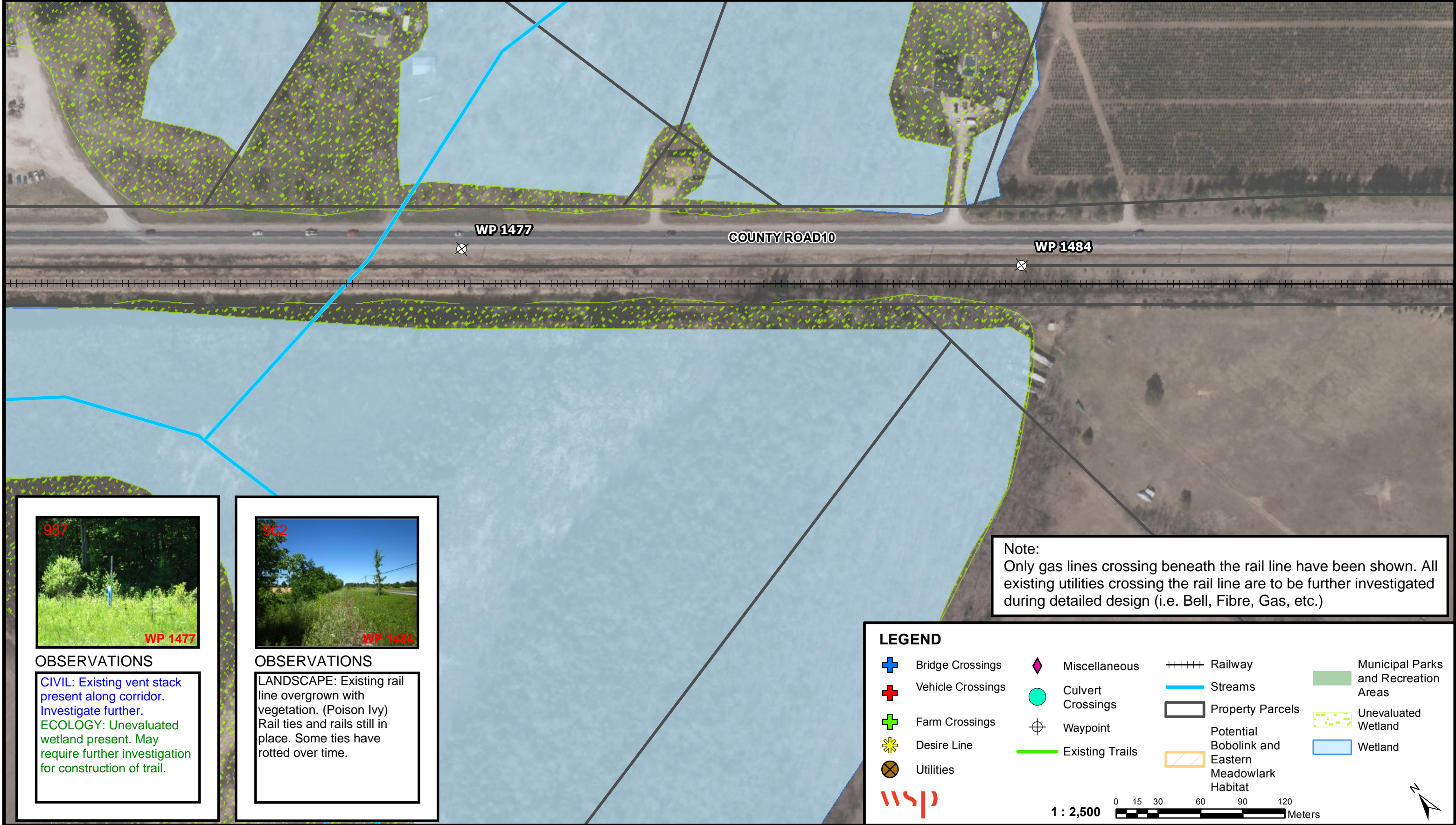
LEGEND

- | | | | |
|---|---|---|--|
|  Bridge Crossings |  Miscellaneous |  Railway |  Municipal Parks and Recreation Areas |
|  Vehicle Crossings |  Culvert Crossings |  Streams |  Unevaluated Wetland |
|  Farm Crossings |  Waypoint |  Property Parcels |  Wetland |
|  Desire Line |  Existing Trails |  Potential Bobolink and Eastern Meadowlark Habitat | |
|  Utilities | | | |



1 : 2,500  Meters





WP 1477

COUNTY ROAD 10

WP 1484



987
WP 1477

OBSERVATIONS
CIVIL: Existing vent stack present along corridor. Investigate further.
ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.



962
WP 1484

OBSERVATIONS
LANDSCAPE: Existing rail line overgrown with vegetation. (Poison Ivy) Rail ties and rails still in place. Some ties have rotted over time.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)


LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500

0 15 30 60 90 120 Meters





County to consider use of unsignalized mid-block crossing. Refer to Detail.

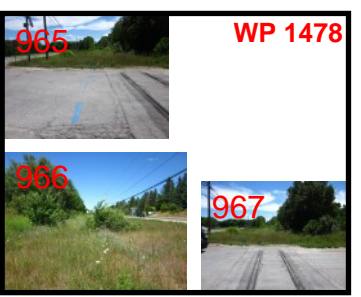
Downed trees on rail corridor require removal

COUNTY ROAD 10

WP 1478

WP 1479

WP 1480 WP 1481



WP 1478

OBSERVATIONS

LANDSCAPE: Road crossing close to County Road 10 intersection. Will require safe pedestrian crossing. Existing rails still within road surfacing and crossing lights still present.



WP 1479

OBSERVATIONS

LANDSCAPE: Signs of pedestrian use along edge of rail line. Two downed trees on rail line will need to be removed.



WP 1480

OBSERVATIONS

ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

Note: Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

- Bridge Crossings
- Vehicle Crossings
- Farm Crossings
- Desire Line
- Utilities
- Miscellaneous
- Culvert Crossings
- Waypoint
- Existing Trails
- Railway
- Streams
- Property Parcels
- Potential Bobolink and Eastern Meadowlark Habitat
- Municipal Parks and Recreation Areas
- Unevaluated Wetland
- Wetland



1 : 2,500 Meters





OBSERVATIONS

ECOLOGY:
Unevaluated wetland present. May require further investigation for construction of trail.



OBSERVATIONS

LANDSCAPE: Desire lines down to small beach area on both sides of bridge. Bridge crossing not currently safe for pedestrian use.



OBSERVATIONS

LANDSCAPE: Pile of rail ties along edge of rail corridor.

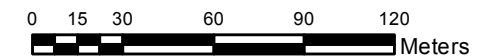
Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

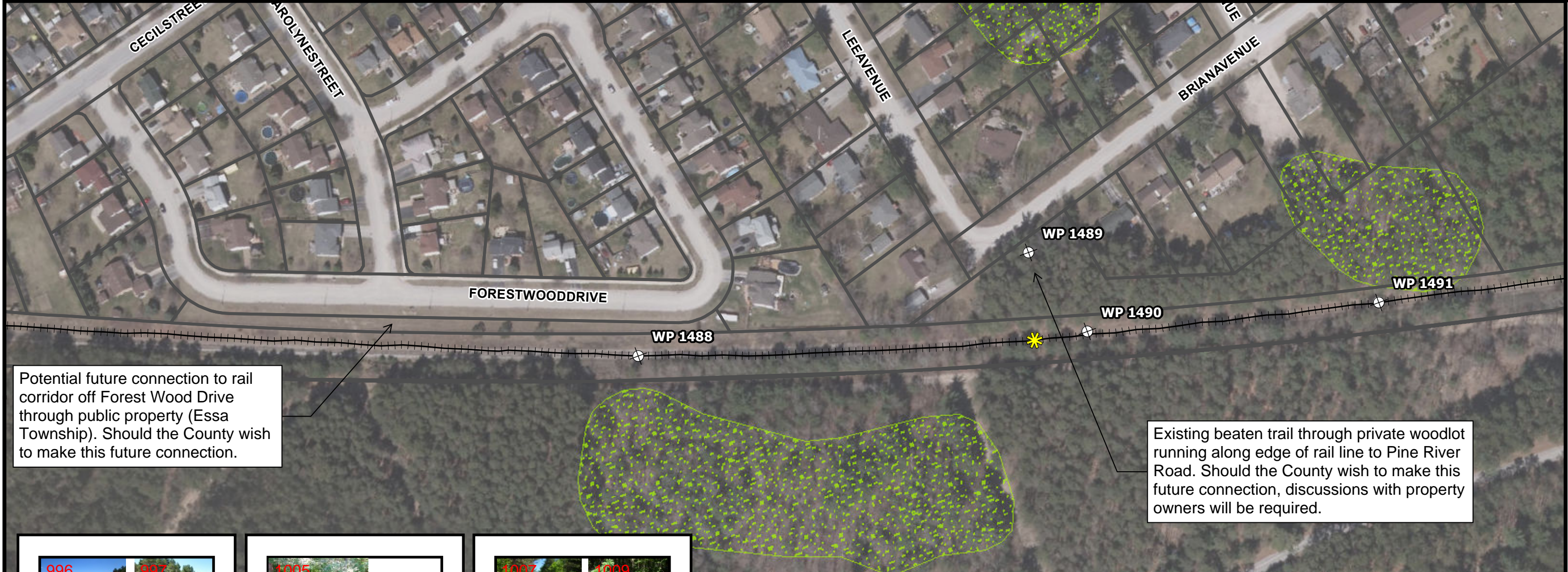
LEGEND

- | | | | |
|-------------------|-------------------|---|--------------------------------------|
| Bridge Crossings | Miscellaneous | Railway | Municipal Parks and Recreation Areas |
| Vehicle Crossings | Culvert Crossings | Streams | Unevaluated Wetland |
| Farm Crossings | Waypoint | Property Parcels | Wetland |
| Desire Line | Existing Trails | Potential Bobolink and Eastern Meadowlark Habitat | |
| Utilities | | | |



1 : 2,500

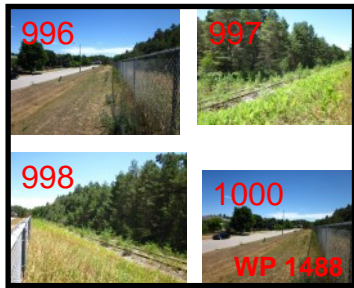




Potential future connection to rail corridor off Forest Wood Drive through public property (Essa Township). Should the County wish to make this future connection.

Existing beaten trail through private woodlot running along edge of rail line to Pine River Road. Should the County wish to make this future connection, discussions with property owners will be required.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS

LANDSCAPE: Rail corridor currently fenced off through residential neighbourhood. Potential future connection to rail line trail.



OBSERVATIONS














LANDSCAPE: Beaten trail through woodlot beside Brian Avenue connects to well used path along rail line. Pedestrians using to get to bridge/beach area.



OBSERVATIONS

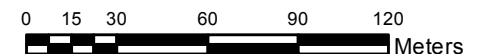
LANDSCAPE: Visible pedestrian pathway along edge of rail line.
ECOLOGY: **Unevaluated wetland present. May require further investigation for construction of trail.**

LEGEND

-  Bridge Crossings
-  Vehicle Crossings
-  Farm Crossings
-  Desire Line
-  Utilities
-  Miscellaneous
-  Culvert Crossings
-  Waypoint
-  Existing Trails
-  Railway
-  Streams
-  Property Parcels
-  Potential Bobolink and Eastern Meadowlark Habitat
-  Municipal Parks and Recreation Areas
-  Unevaluated Wetland
-  Wetland



1 : 2,500





Existing road right-of-way allows direct access to rail corridor

Rail bridge crossing. Structural engineer bridge assessment required to determine future use.

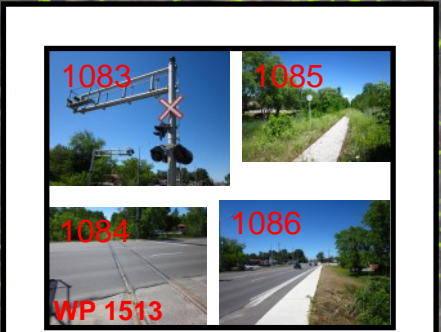
Pile of old rail ties to be removed from site

Major Road Crossing
Option #1
Install Mid-Block Pedestrian Signal
Option #2
Direct users to signalized intersection at Pine River Road

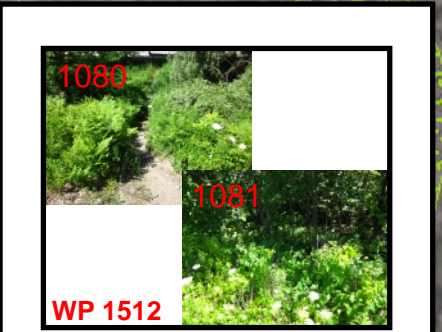
Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



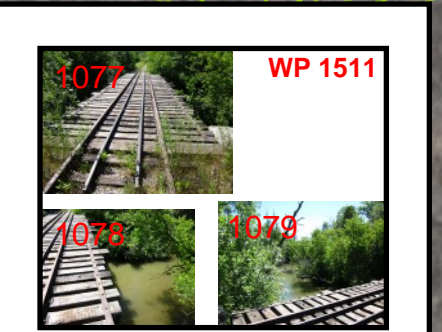
OBSERVATIONS
LANDSCAPE: Desire line present from Pine River Road cul de sac however beaten path along rail corridor only goes north in this location.



OBSERVATIONS
LANDSCAPE: Existing rail crossing signals still in place and rails still within road at crossing. Lights could be converted to pedestrian crossing lighting or have pedestrians cross further east at the signalized intersection.



OBSERVATIONS
ECOLOGY:
Unevaluated wetland present. May require further investigation for construction of trail.





OBSERVATIONS
LANDSCAPE: Bridge crossing not currently safe for pedestrian use. Desire line from King Street present.

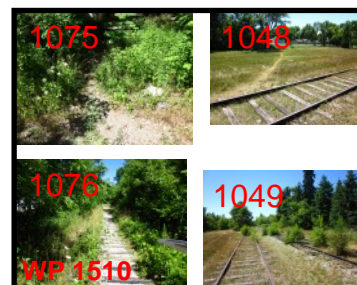
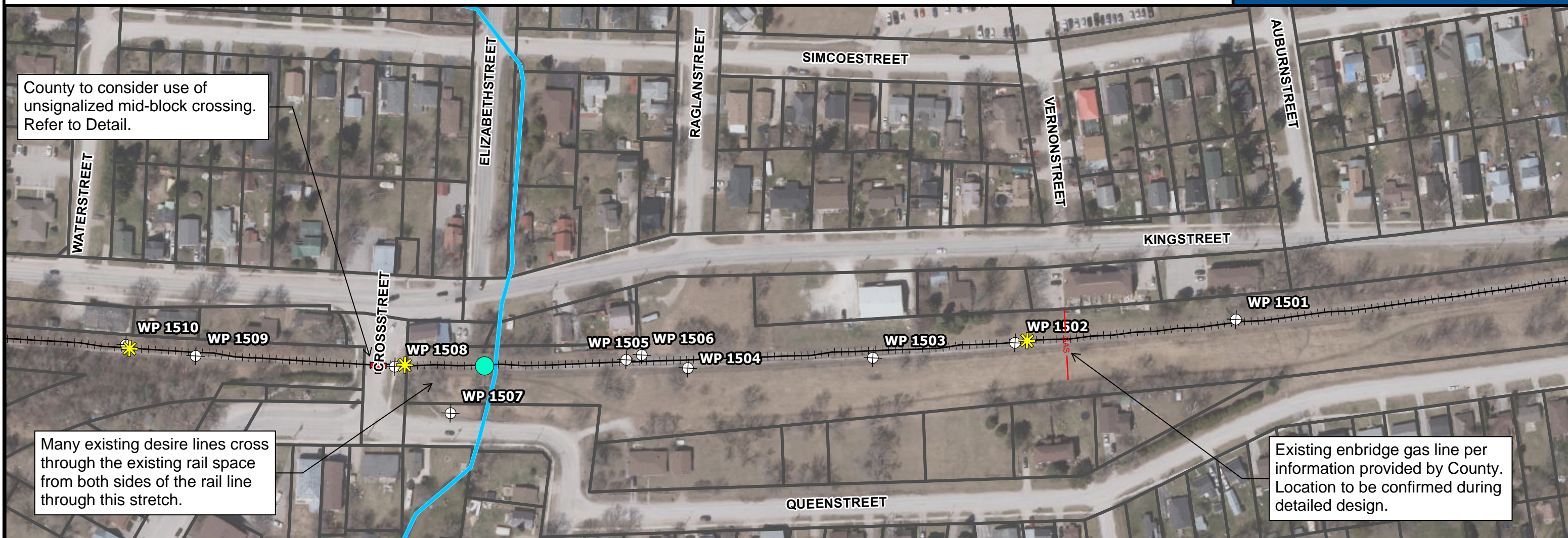
LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500



OBSERVATIONS

LANDSCAPE: Multiple desire lines connect to the rail corridor from the residential area west of the rail line.
Rail corridor flat through this section, potential to place trail beside rails to avoid fill or removals.



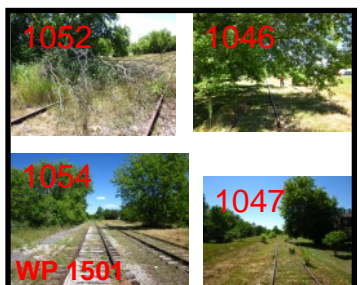
OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO.
Any culvert repairs will require fish and mussel relocations and permit from MNR.



OBSERVATIONS

LANDSCAPE: Road crossing (Cross Street). Will require safe pedestrian crossing as current sightlines are unfavourable. Existing rails still within road surfacing and crossing lights still present.



OBSERVATIONS

LANDSCAPE: Landscape around existing rail line maintained throughout this section. Existing rail lines and ties still in ground. Signs of pedestrian use along this portion of rail line.

Note: Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

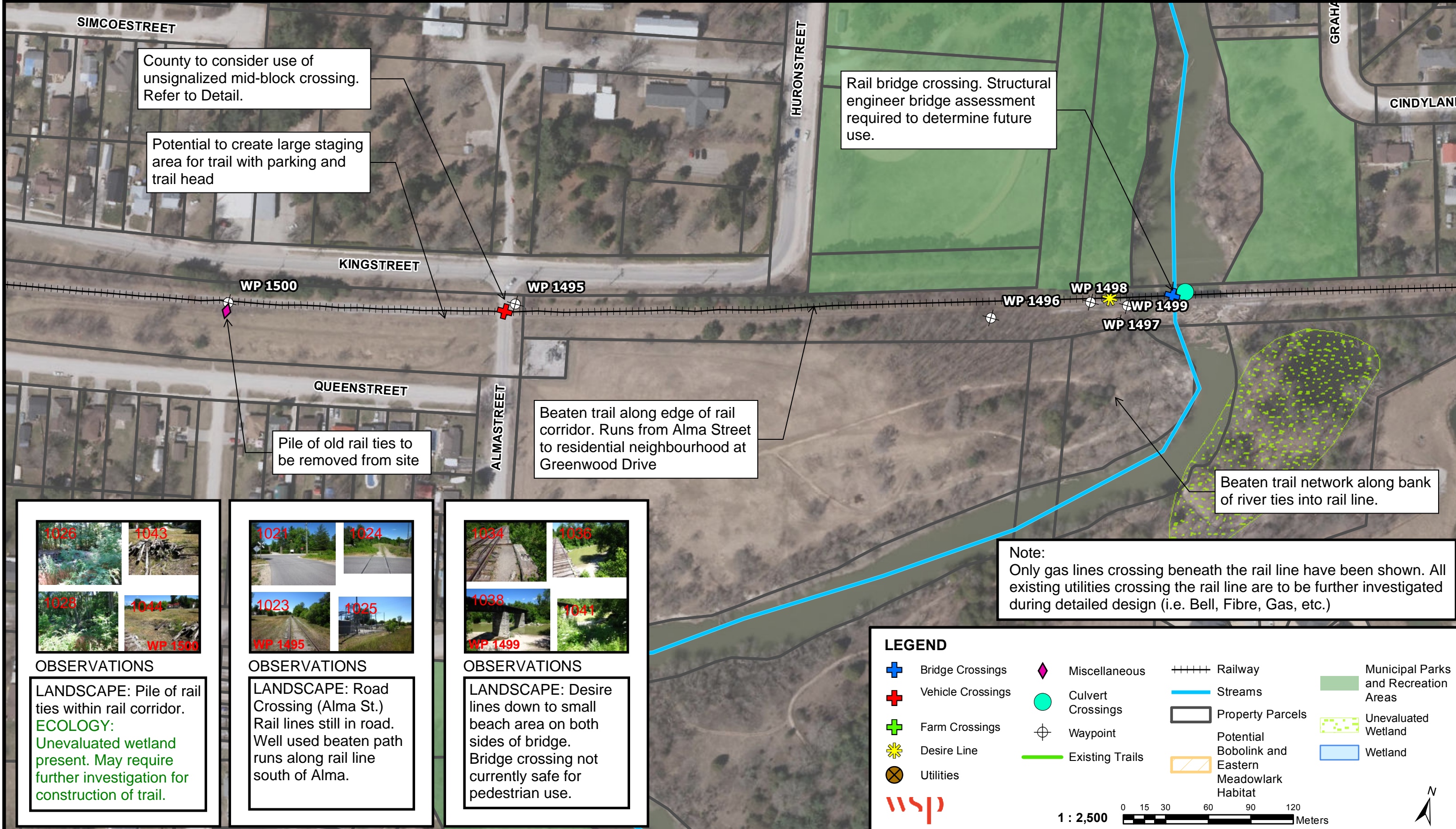
Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500

0 15 30 60 90 120 Meters

N



County to consider use of unsignalized mid-block crossing. Refer to Detail.

Potential to create large staging area for trail with parking and trail head

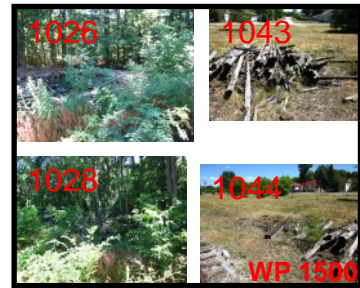
Rail bridge crossing. Structural engineer bridge assessment required to determine future use.

Pile of old rail ties to be removed from site

Beaten trail along edge of rail corridor. Runs from Alma Street to residential neighbourhood at Greenwood Drive

Beaten trail network along bank of river ties into rail line.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS
LANDSCAPE: Pile of rail ties within rail corridor.
ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.



OBSERVATIONS
LANDSCAPE: Road Crossing (Alma St.) Rail lines still in road. Well used beaten path runs along rail line south of Alma.



OBSERVATIONS
LANDSCAPE: Desire lines down to small beach area on both sides of bridge. Bridge crossing not currently safe for pedestrian use.

LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	Waypoint	Property Parcels	Wetland
Desire Line	Existing Trails	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities			

wsp

1 : 2,500

0 15 30 60 90 120 Meters



Beaten trail along edge of rail corridor. Runs from Alma Street to residential neighbourhood at Greenwood Drive

Residential neighbourhood currently under construction. Greenwood Drive will cross over existing rail line.

County to consider use of unsignalized mid-block crossing. Refer to Detail.

Note:
Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)



OBSERVATIONS
LANDSCAPE: Beaten path runs along side of rail line to Greenwood Dr. Multiple desire lines from adjacent residences.



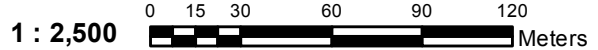
OBSERVATIONS
LANDSCAPE: Road crossing (Greenwood Dr.) Currently a closed subdivision but will require proper trail crossing when development complete

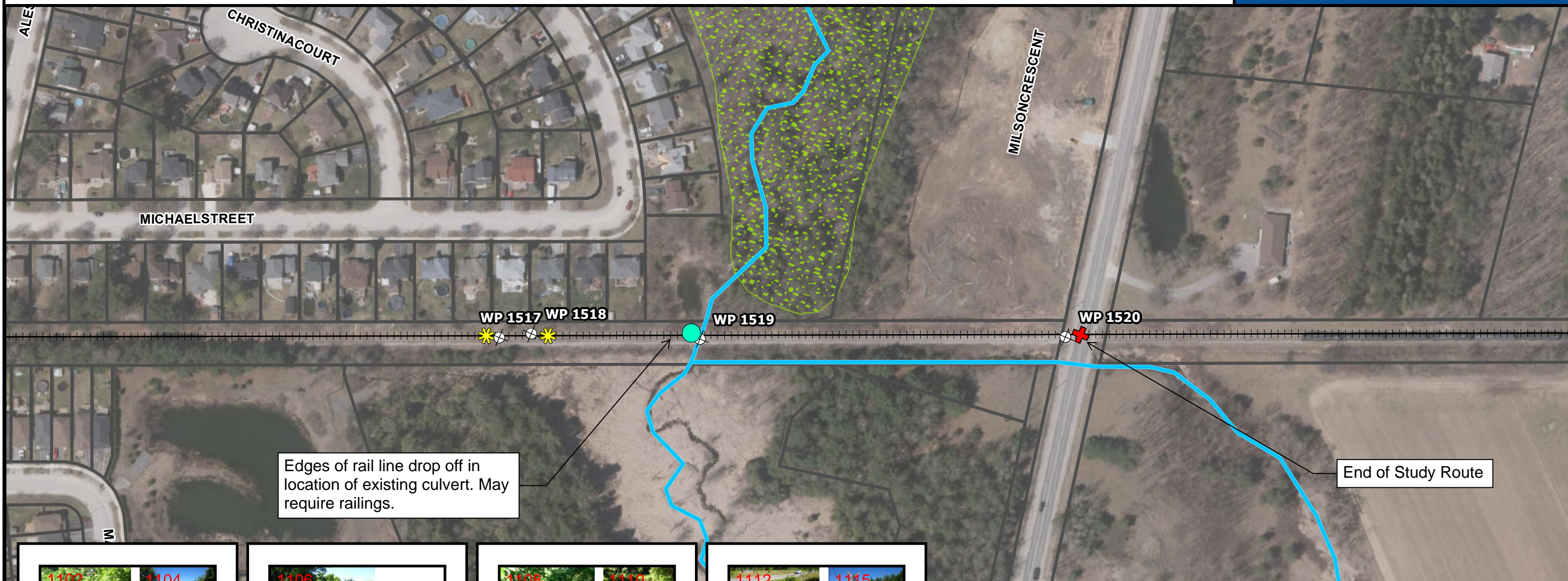


OBSERVATIONS
ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.

LEGEND

- Bridge Crossings
- Vehicle Crossings
- Farm Crossings
- Desire Line
- Utilities
- Miscellaneous
- Culvert Crossings
- Waypoint
- Existing Trails
- Railway
- Streams
- Property Parcels
- Potential Bobolink and Eastern Meadowlark Habitat
- Municipal Parks and Recreation Areas
- Unevaluated Wetland
- Wetland





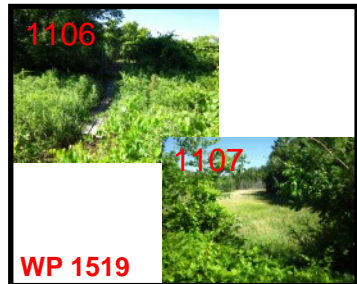
Edges of rail line drop off in location of existing culvert. May require railings.

End of Study Route



OBSERVATIONS

LANDSCAPE: Existing rail line overgrown. Deep ditches on either side of rail line. Potential trail would need to stay on existing rail bed.



OBSERVATIONS

ECOLOGY: Unevaluated wetland present. May require further investigation for construction of trail.



OBSERVATIONS

Culvert Crossing
ECOLOGY: Any work required below high water mark will require review by DFO. Any culvert repairs will require fish and mussel relocations and permit from MNRF.



OBSERVATIONS

LANDSCAPE: 5th Line end of proposed evaluation route. Potential location for trail head sign as start of trail.

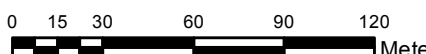

Note: Only gas lines crossing beneath the rail line have been shown. All existing utilities crossing the rail line are to be further investigated during detailed design (i.e. Bell, Fibre, Gas, etc.)

LEGEND

Bridge Crossings	Miscellaneous	Railway	Municipal Parks and Recreation Areas
Vehicle Crossings	Culvert Crossings	Streams	Unevaluated Wetland
Farm Crossings	SymbolID	Property Parcels	Wetland
Desire Line	Waypoint	Potential Bobolink and Eastern Meadowlark Habitat	
Utilities	Existing Trails		

wsp

1 : 2,500

6.2 Design Guidelines

The following design guidelines should be read in conjunction with Maps Sheets 1 to 34, and provide guidance for key elements of the multi-use trail construction including trail width and surface, structures and reuse of the former rail bridges, road crossings, staging areas, signage and amenities.

6.2.1 Pathway Width, Clear Zones, and Surface

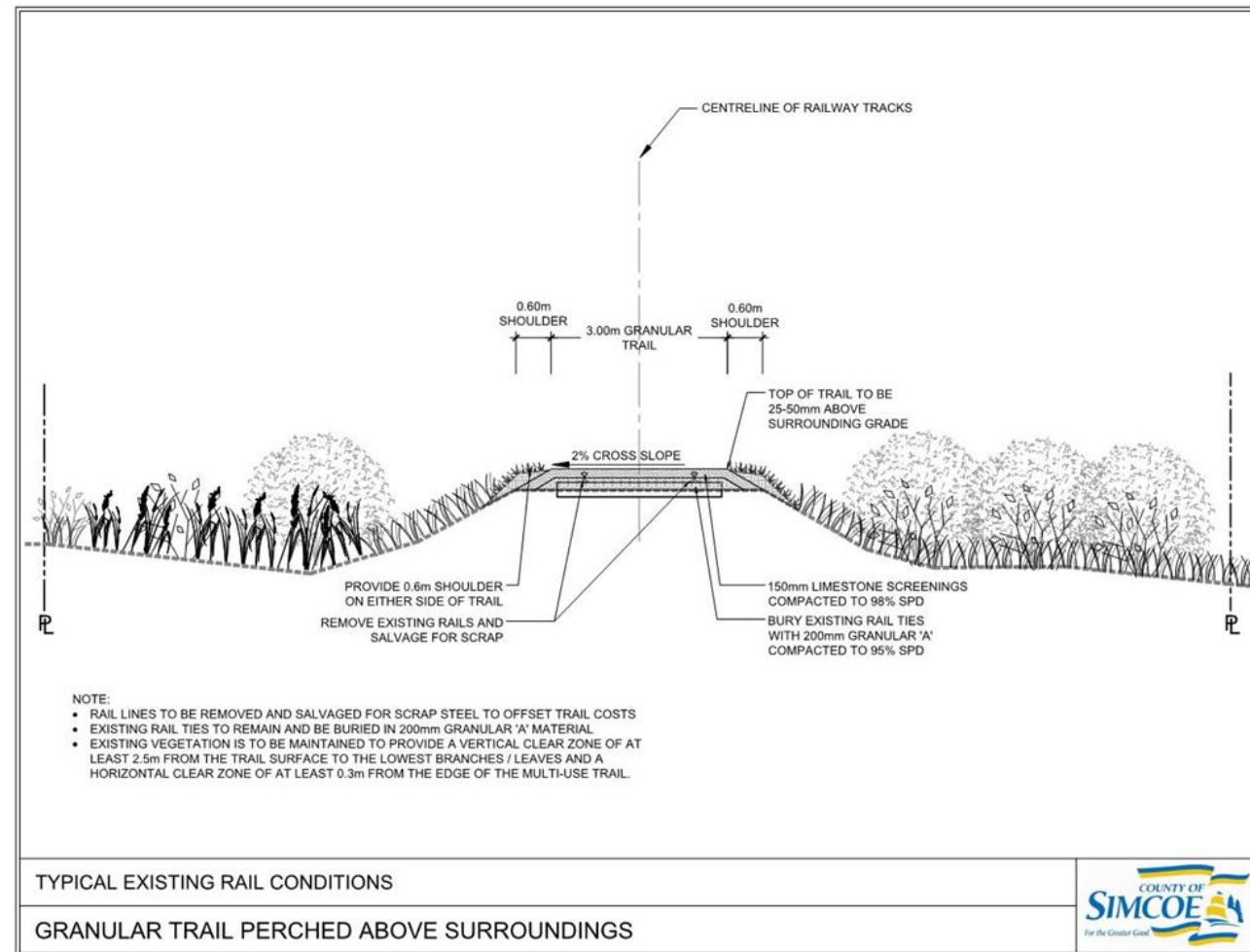
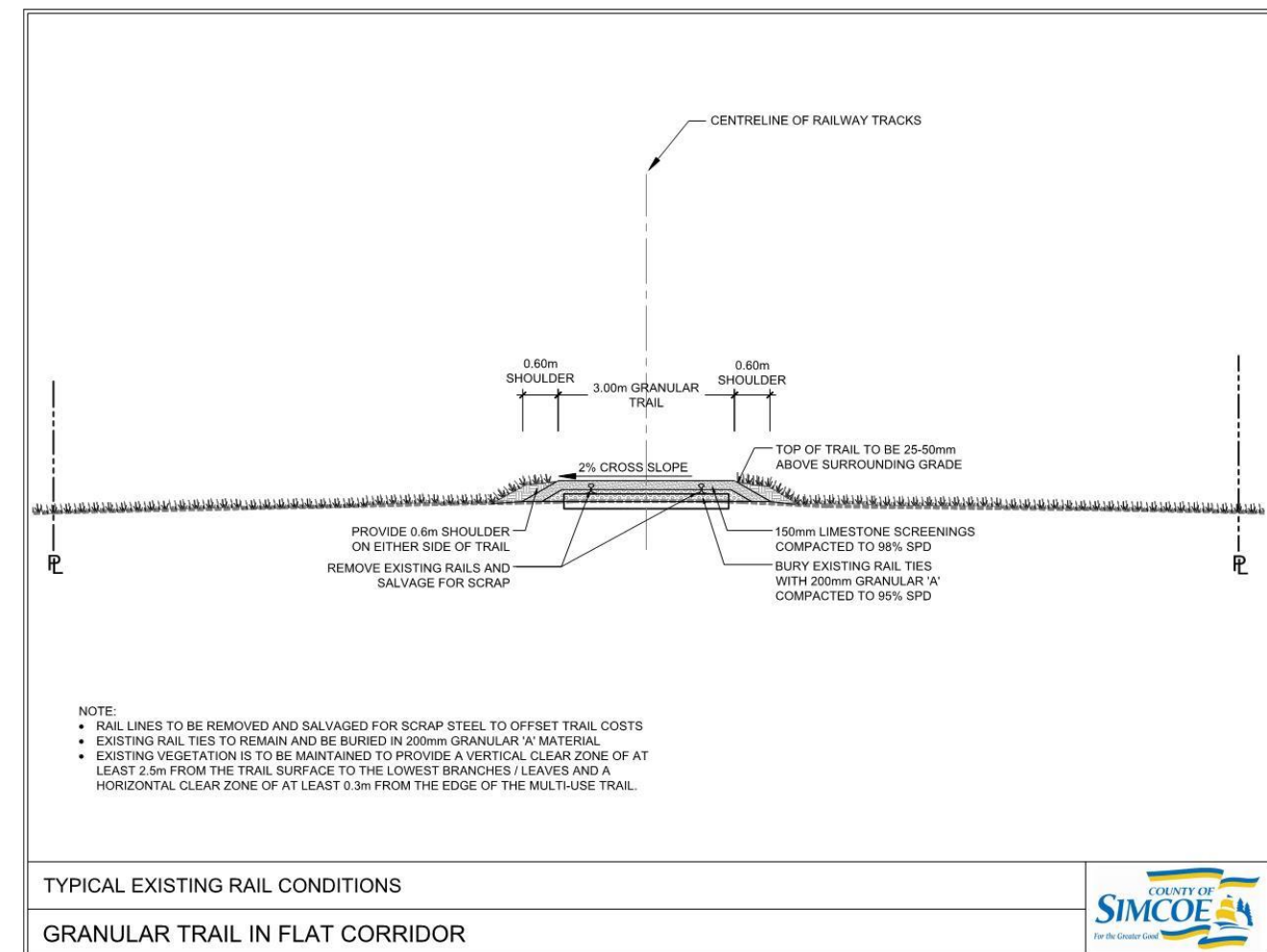


Figure 8: Trail on former railway bed – elevated condition

Figures 8 to 10 illustrate the trail construction cross section in 3 different railway conditions; where the right-of-way is generally level and the former rail line is generally level with the surrounding area; where the former rail line is lower than the remainder of the lands within the right-of-way; and where the former rail line is higher than the former railway right of way. Trail construction involves salvage of the railway steel, leaving

the railway ties undisturbed in place and covering them with a 200mm layer of compacted granular A, followed by a 150mm layer of compacted limestone screenings or stonedust screenings. Once compacted, the top course of limestone screenings / stonedust will provide a firm and stable surface that meets accessibility needs. The granular surface is appropriate in both the rural and urban areas, though consideration may be given to asphalt surfacing in the urban areas depending on the context of the trail in the immediate surroundings. Existing railway ties should be removed for any sections of trail where an asphalt surface has been selected. A horizontal clear zone of a minimum 0.6m wide beside the trail and 3.0m overhead will provide the necessary trail envelope for all user groups.

Figure 9: Trail on former railway bed – flat condition



Pathway Radii, Design Speed and Sight Lines

For granular surfaced off-road pathways, a design speed around 30km/h is usually adequate, whereas a design speed of 35 to 40km/h should be considered for hard surfaced pathways, and this may be increased for steep descents. Cautionary signing should be used to warn of upcoming steep grades, sharp curves and trail narrowings.

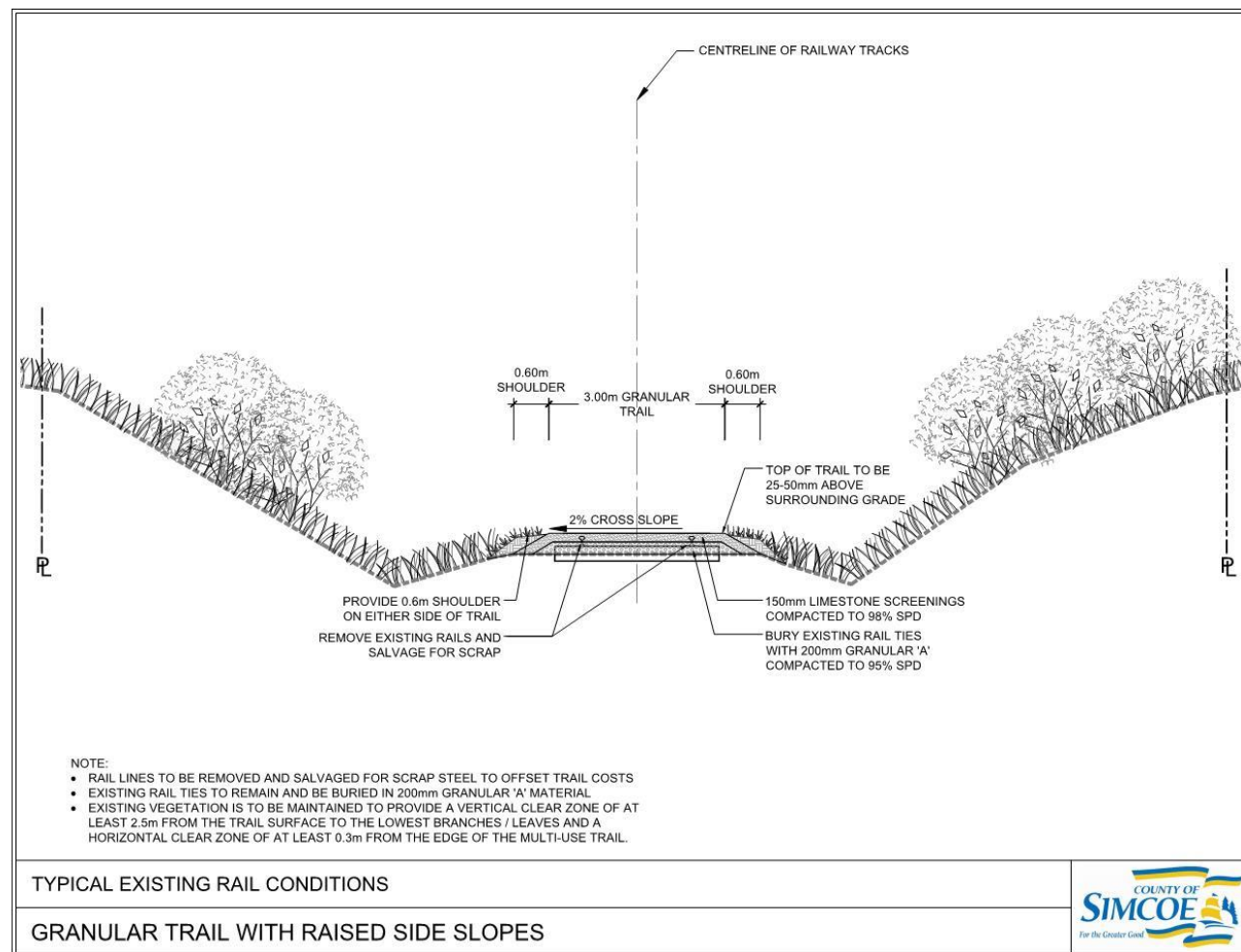


Figure 10: Trail on former railway bed – lowered condition

Figure 11: (right): K&P Rail trail near Kingston ON (source WSP)



Although the corridor is very straight, any horizontal curves and pathway intersections with roadways and private laneways should also be checked to ensure that sightlines are adequate for pathway users, and in the case of roadway crossings, adequate sight lines for motor vehicle operators. See section 6.2.4 for further guidance on roadway crossings.

6.2.3 Natural Heritage Considerations

Several sensitive Natural Heritage Features are present within and adjacent to the study area, as identified in the County of Simcoe Official Plan (2016), Township of Essa Official Plan (2001), and the Township of Clearview Official Plan (2001). These include Significant Woodlands, a portion of the Minesing Swamp Complex Provincially Significant Wetland (PSW), multiple unevaluated large wetlands that are likely to be considered locally significant, as well as natural areas designated as 'Greenlands' or 'Natural Heritage System' within the various official plans.

The vegetation communities and vascular plants observed during field investigations are all common and expected for the region. Seven wildlife SAR were confirmed within the study area, and an additional nine were deemed to be likely to occur within or adjacent to the project area. The majority of these species are not anticipated to be impacted by the preferred trail design alternative, however some (e.g. multiple endangered bat species), may require further consultation with the MNR at detailed design to determine if further surveys or compensation will be required. Six types of candidate (unconfirmed) Significant Wildlife Habitat (SWH) have been identified during field investigations within the project limits, as well as three confirmed SWH types. As with the SAR, many of these are not anticipated to be affected by the preferred trail design alternative, however some (e.g., Turtle overwintering and nesting habitat) may require further consultation with the MNR and the implementation of best practices such as timing windows to avoid impacts to certain species.

Widening the pathway will require the removal of vegetation in some locations, and this may include the removal of some larger trees. In locations where the retention of larger trees is desirable (i.e.

appropriate/desirable species, vigorous and healthy condition, to provide shade for pathway users), a gentle meander in the pathway alignment may permit the preservation of select trees. If compensation plantings are required, there are many opportunities to provide new plantings using appropriate species near the removals and/or elsewhere along the pathway corridor where they will enhance wildlife habitat.

Of the 32 watercourse crossings assessed:

- 13 were confirmed to support direct fish habitat within the study corridor.
- 6 were determined to support fish habitat indirectly (no direct fish habitat within the study corridor). These watercourses conveyed roadside and agricultural drainage and had no defined banks or evidence of refuge habitat. These watercourses are classified as indirect fish habitat as they may provide nutrients and allochthonous (e.g., insects and plant debris) material to receiving waterbodies downstream of the study corridor.
- The remaining 13 watercourse crossings have fish habitat potential to support fish within the study corridor, however direct fish use could not be confirmed through the background review or visual assessments.

Full characterization of the result of the field surveys is available in the separately bound Barrie to Collingwood Railway Multi-use Trail Natural Environment Preliminary Design Report, WSP 2018.

6.2.3 Potential Impacts on Neighbouring Residences

In some locations where the pathway is near adjacent residences and vegetation removals are required for pathway improvements there may be some concerns regarding disruption of privacy. It is anticipated that this may occur in only a few locations along the entire length of the corridor. Where applicable the County should consult those property owners who may be impacted to develop a mutually agreeable solution. In some locations this may include replacement plantings and/or privacy screening/fencing.

6.2.4 Road Crossings

The type of crossing treatment selected generally depends on the type of road being crossed (e.g., low volume local street vs. urban arterial); number of lanes being crossed (e.g., 2-lane vs. multi-lane); traffic volume and vehicle operating speeds; sight lines (e.g., horizontal and vertical road alignment); and the anticipated volume of trail users. More significant improvements are recommended for crossings of with multiple lanes, higher traffic volumes and higher operating speeds. **Figure 12** describes a range of crossing types that correspond with roadway classification and character, and includes typical considerations for their application. They are arranged in order from crossings of low volume rural roads to high volume multi-lane urban roads.





	<p>Advance Warning Sign</p> <ul style="list-style-type: none"> ▪ 2-lane road cross-section ▪ Good sight lines (no horizontal or vertical curves in road that obstruct visibility of trail users or oncoming vehicles) ▪ Low motor vehicle traffic volume ▪ Low to moderate pedestrian volume (consider existing conditions and potential future demand) ▪ Rural setting, or residential neighbourhood in urban setting
	<p>Median Refuge</p> <ul style="list-style-type: none"> ▪ Multi-lane cross-section ▪ Good sight lines (no horizontal or vertical curves in road that obstruct visibility of trail users or oncoming vehicles) ▪ Moderate motor vehicle traffic volume and Low to moderate pedestrian volume (consider existing conditions and potential future demand) ▪ Rural, urban fringe or urban setting (e.g., collector or minor arterial road in urban setting)
	<p>Pedestrian Crossover</p> <ul style="list-style-type: none"> ▪ 2-lane or multi-lane cross-section ▪ Type 'A', 'B' or 'C' as per Ontario Traffic Manual Book 15 ▪ Good sight lines (no horizontal or vertical curves in road that obstruct visibility of trail users or oncoming vehicles) ▪ Moderate motor vehicle traffic volume ▪ Low to moderate pedestrian volume (consider existing conditions and potential future demand) ▪ Rural, urban fringe or urban setting (e.g., collector or minor arterial road in urban setting)
	<p>Mid-Block Pedestrian Signal with Crossride</p> <ul style="list-style-type: none"> ▪ 2-lane or multi-lane cross-section ▪ Applied in areas with good sight lines or compromised sight lines (other factors have greater influence on decision than sight lines) ▪ Moderate to high motor vehicle traffic, pedestrian and cyclist volume (consider existing conditions and potential future demand) ▪ Rural, urban fringe or urban setting (e.g., arterial road in urban setting) ▪ No signal-controlled intersection nearby (e.g. within 200 m of trail crossing point) ▪ Includes bicycle crossing signal head

Figure 12: Roadway crossing approaches

The following are some of the trail crossing considerations for off-road or in-boulevard trail linkages:

- Provide an open sight triangle at the crossing point to allow trail users to see approaching vehicles and for vehicles to see approaching trail users.
- Provide gates or barriers at off-road trail access points outside of the road right-of-way to prevent unauthorized users (e.g. vehicles) from entering the trail and to act as a visual cue to trail users that they are approaching an intersection with a road.
- Place caution signs along the roadway in advance of the crossing point in both directions to warn approaching vehicles of the upcoming crossing and along the trail to advise the trail users of the upcoming crossing.
- Align crossing points on both sides of a roadway or natural feature to achieve a perpendicular crossing and a shorter crossing distance.
- Where barrier curbs are present, provide curb ramps on both sides of the crossing for accessibility.
- In urban locations provide a concrete apron immediately behind the curb and include detectable warning plates.
- Consider the application of Crossrides in urban locations. Details for Crossrides can be found in Ontario Traffic Manual Book 18-Cycling Facilities.
- Provide pavement markings at controlled crossings such as stop signs and traffic signals. Pavement markings should not be used at crossings that are not controlled – this may give trail users the false impression that they have the right of way, and they may begin to cross without waiting for a gap in traffic.
- “Stop ahead” signs along the trail in advance of the crossing point and stop signs at the crossing point;
- In rural areas provide an adequate length of wire fencing from the edge of the road right-of way along the limits of the right-of-way so that unauthorized access can be prevented. A length of 50m should be adequate in most locations.

Figures 13 to 15 illustrate the key design principles for road crossings in both urban and rural locations.

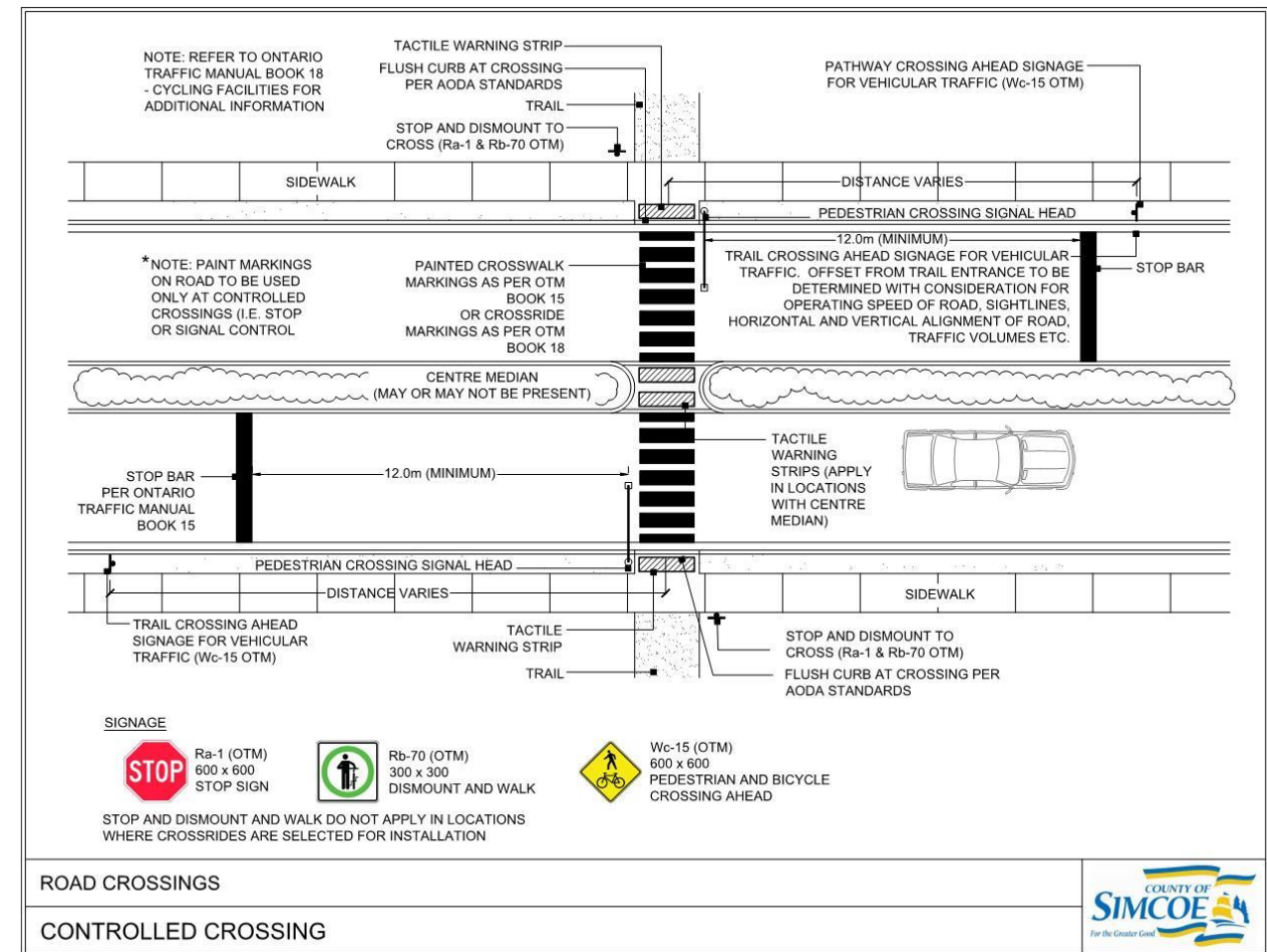


Figure 13: Urban trail crossing at a controlled location.

Trail Access and Barrier Gates

Access barriers are intended to allow free flowing passage by permitted user groups, and prohibit access by others. Barriers typically require some mechanism to allow access by service and emergency vehicles. Depending on site conditions, it may also be necessary to provide additional treatments between the ends of the access barrier and limit of the multi-use pathway right of way to prevent bypassing of the barrier altogether. Each access point should be evaluated to determine if additional treatments are necessary. Additional treatments can consist of plantings, boulders, fencing or extension of the barrier treatment

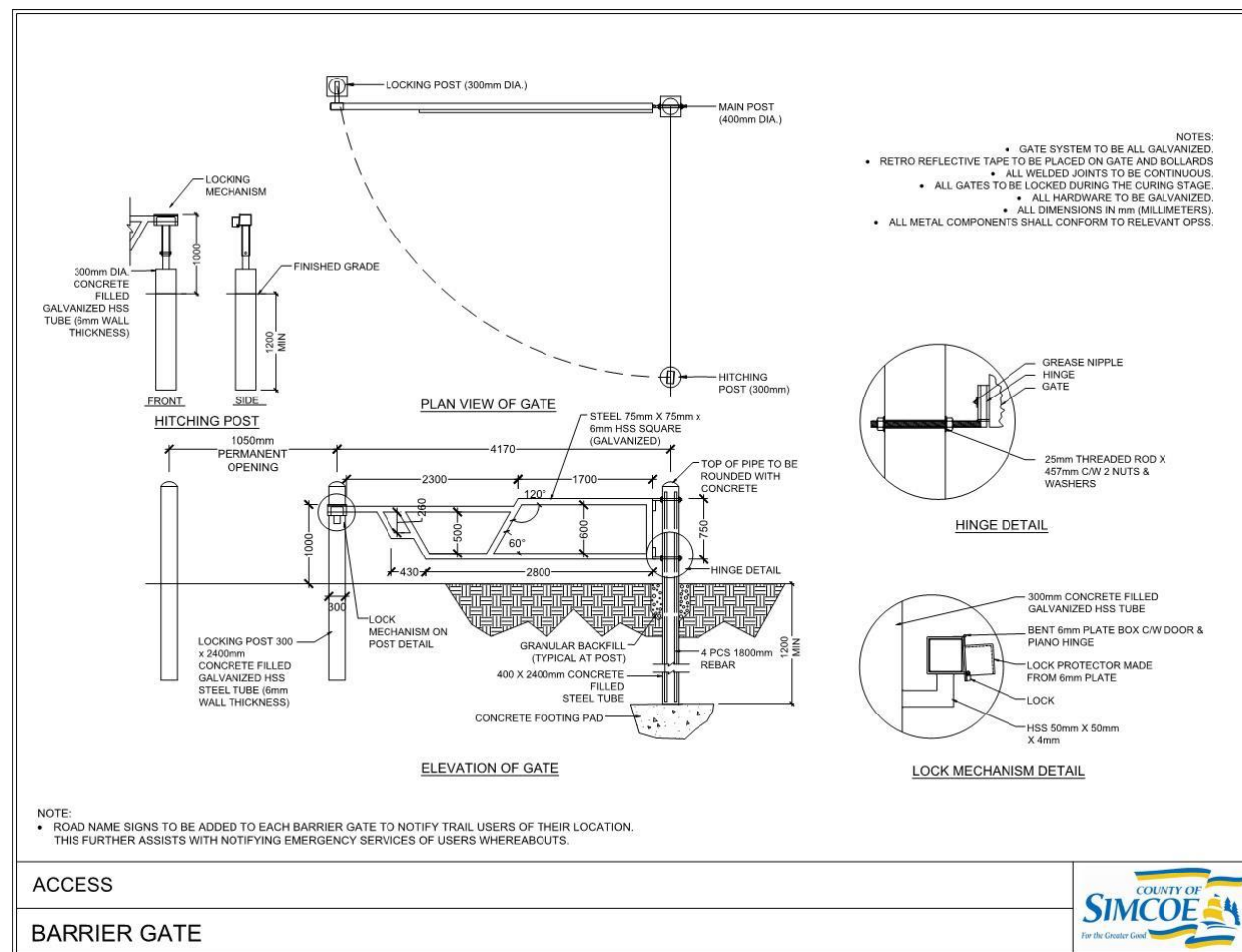


Figure 16: Heavy duty access control gate.

depending on the location. Figure 16 illustrates a robust single swing gate that is modelled after those used on many rail trails in Ontario.

The single swing gate combines the ease of opening for service vehicle access, with the ease of passage of the bollard. Gates also provide a surface/support for mounting signage. The swing gate must provide a permanent opening to allow permitted users to flow freely through the barrier. The width of the permanent opening must be carefully considered so that it will allow free passage by wheelchairs, wide jogging and double strollers and bicycle trailers and electric scooters, yet not allow passage by unauthorized vehicles.

Retro-reflective tape or plates on the barrier will aid in visibility after sunset. Signage fixed to the gate provides emergency contact information, reminds users of permitted uses and can help orient users by identifying the name of the road being crossed (refer to Figure 17).



Figure 17: Information signing on rural trail access gates in New Tecumseth, ON (source WSP)

6.2.5 Farm Crossings

There are several locations along the BCRY where agricultural operations straddle the corridor and farmers have historically crossed the rail line / corridor to access fields on both sides of the track. Farm crossings should be permitted in locations where adjacent land owners have cropland on both sides of the corridor, and traveling between the lands using a trail crossing is more convenient and efficient than following the road network. Individual crossing agreements should be developed for each location based on a standard template.

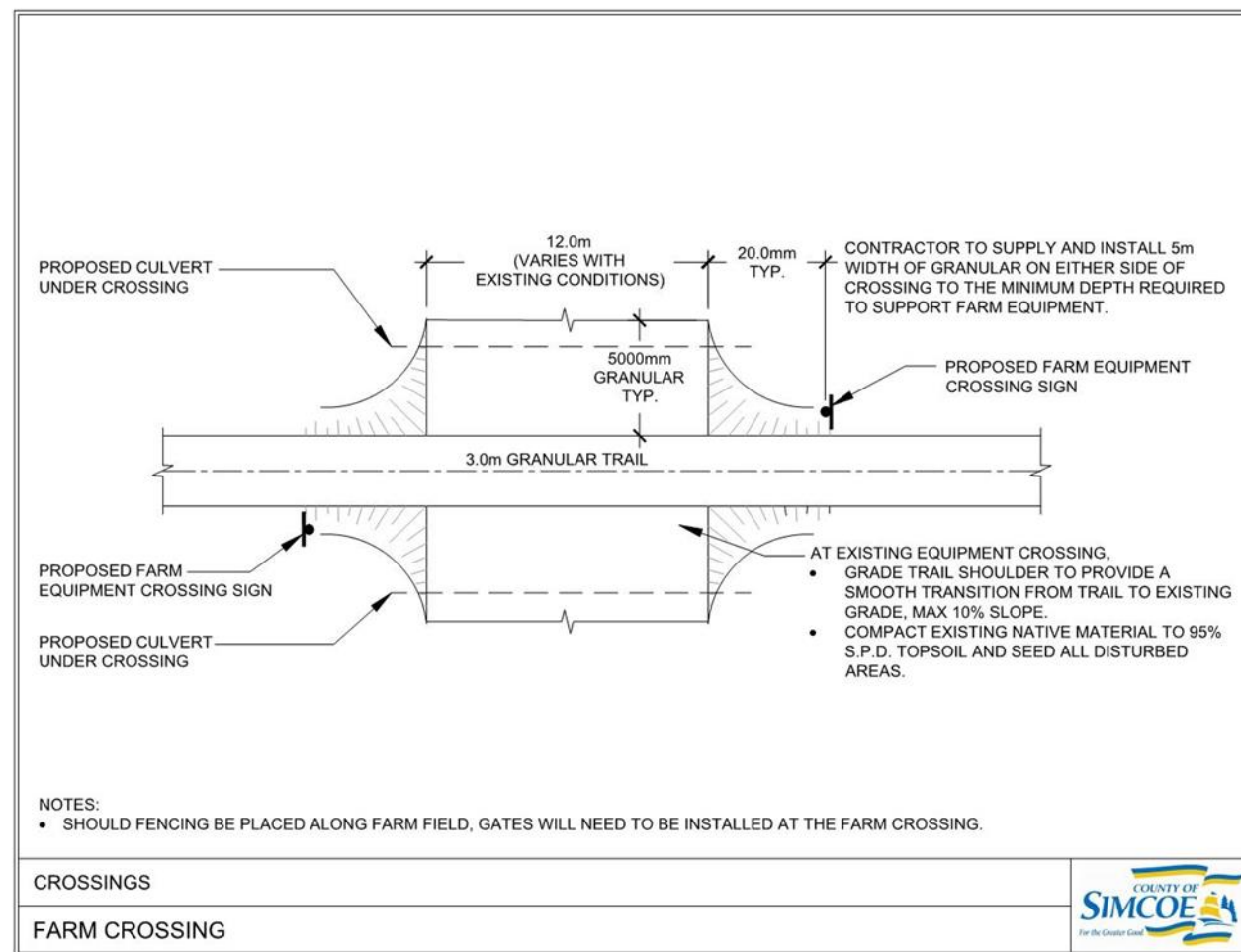


Figure 18: Typical farm crossing of the trail.

Key design features of the farm crossing are illustrated in **Figure 18** and include the following:

- a sight triangle to improve visibility for both the trail user and farm operator

- Advance warning signs along the trail to caution users they may encounter farm vehicles crossing over the trail
- Signage at the crossing to indicate adjacent lands are private and to remind users to stay on the trail
- A culvert on each side of the trail where there are drainage swales present
- Gates with the farm owner's lock or a permanent opening depending on the farm owner's preference.

6.2.6 Staging Areas

Staging areas can be constructed within the corridor right-of-way by offsetting the multi-use trail and allowing for a vehicle driveway. Staging areas should include parking for 8 to 10 cars, trash receptacles, bicycle parking, and a trailhead kiosk. Other amenities include landscaping and benches / picnic tables and washrooms (e.g. portable toilets, either all year or during peak trail user season). Trail staging areas along the BCRY were identified in Stayner, New Lowell and Angus. **Figures 20 to 22** illustrate a conceptual design for each location. The staging area concepts for Angus and New Lowell are designed to fit within the former railway corridor, therefore on land owned by the County. The staging area concept for Stayner is designed to be within the former railway corridor, abutting a small municipal park and parking lot. An agreement between the County and Local Municipality would be required for use of the parking lot.



Figure 19: Trail staging areas. Left – Fort Erie Friendship Trail, Ridgeway ON. Right – Seaton Trail, Durham ON (source WSP)

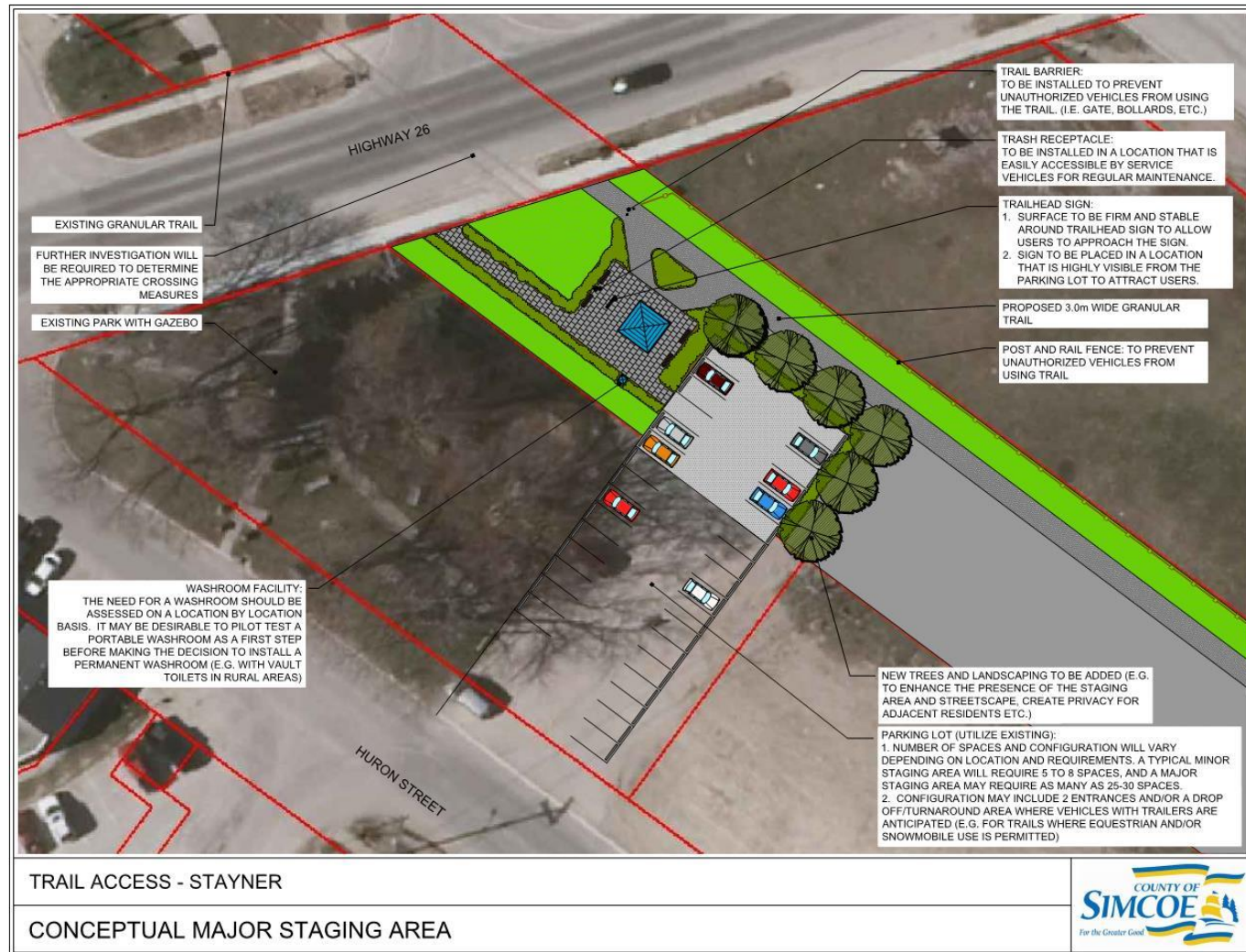


Figure 20: Staging Area - Stayner

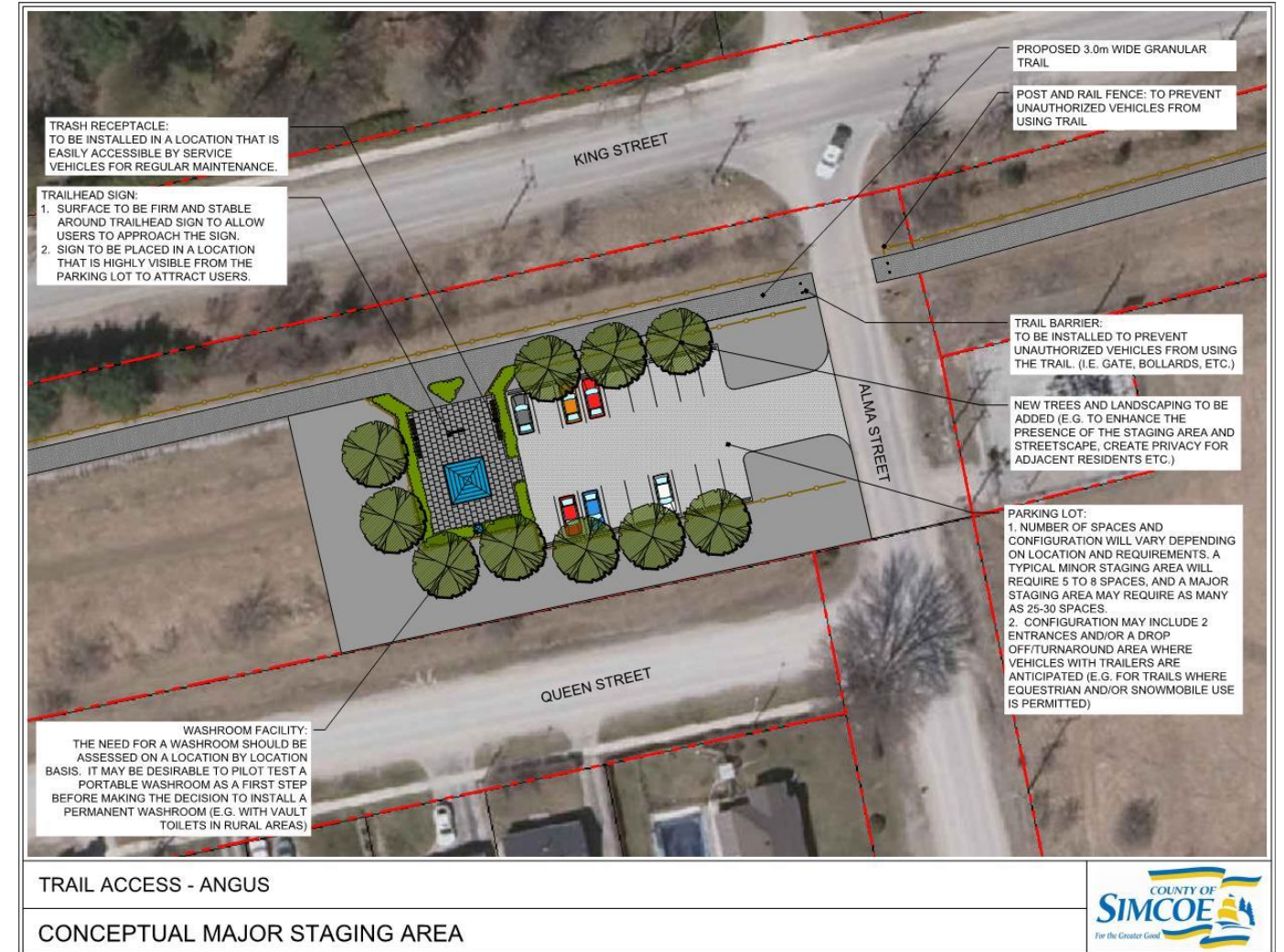


Figure 21: Staging Area - Angus

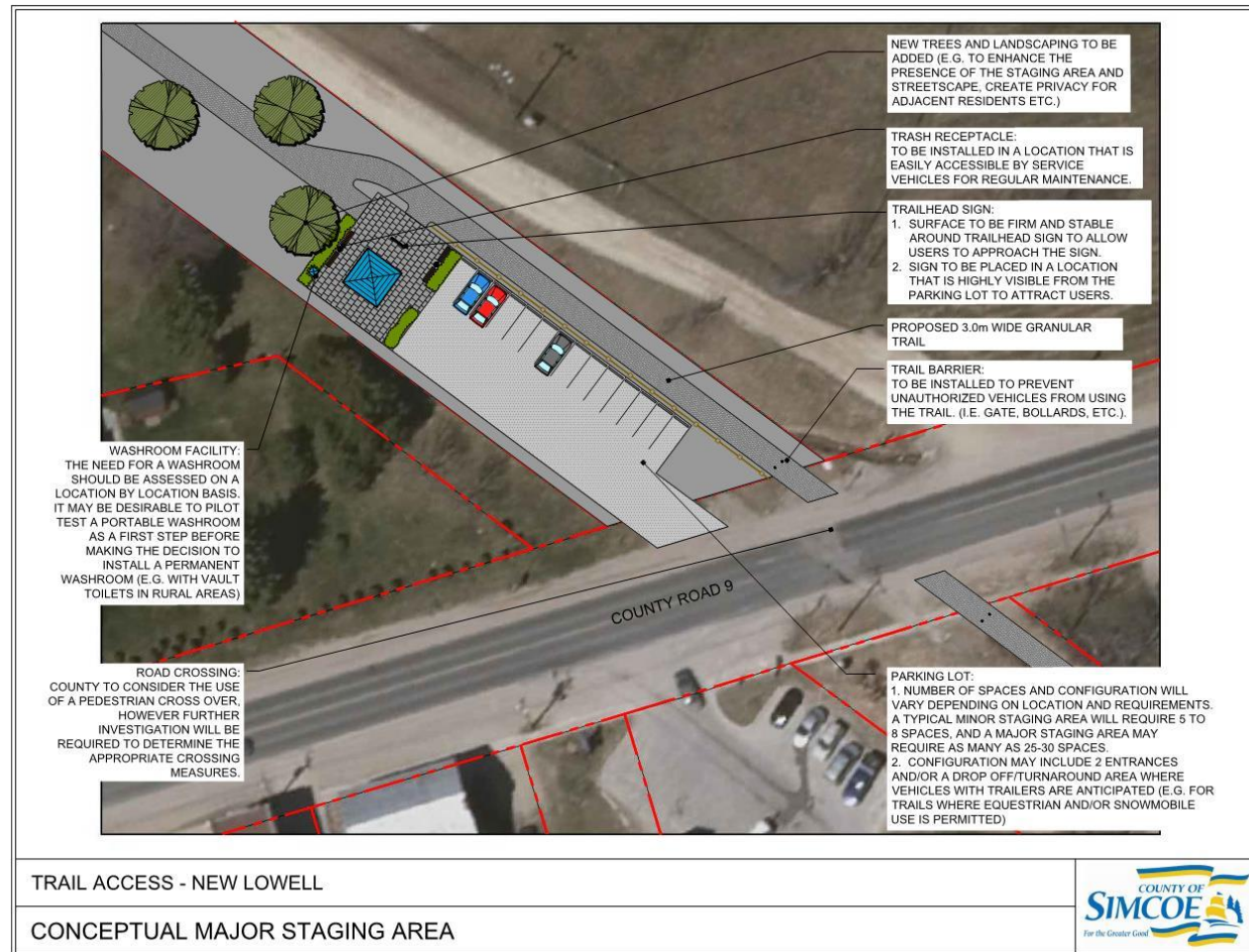


Figure 22: Staging Area – New Lowell

6.2.7 Structures

There are structures associated with all the water crossings. Structures range in design and size from individual steel culverts to cast-in-place concrete culverts, and bridges. The function and physical condition of each of the culverts was reviewed in the field by way of a visual assessment. Based on the visual inspection all culverts appeared to be functioning, apart from one culvert that has collapsed. The location of all culverts is noted on **Map Sheets 1 to 34**.

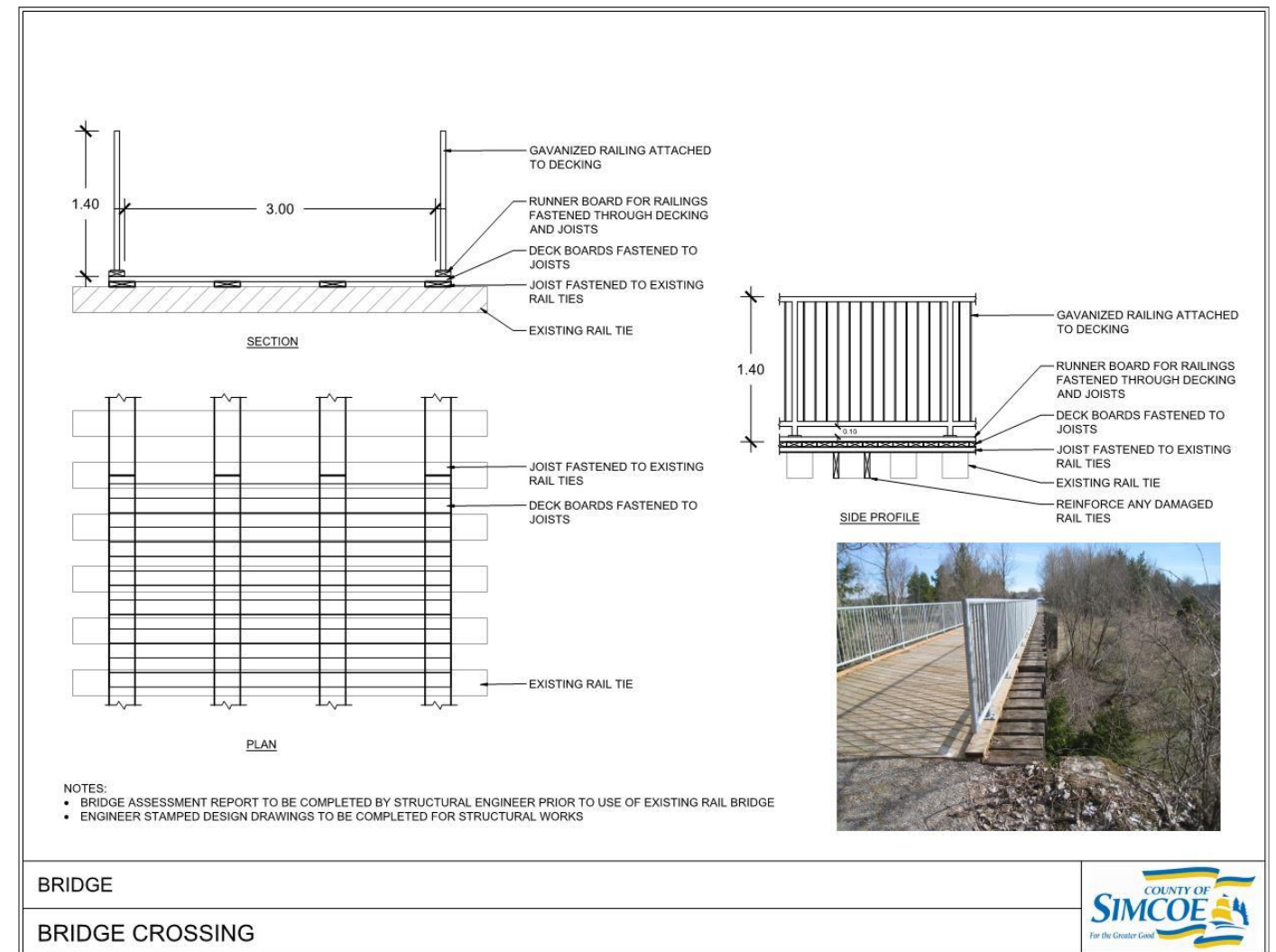


Figure 23: Trail bridge – retrofitting former railway structure:



Figure 24: Left – New trail bridge using former railway abutments, K&P Trail Kingston, ON. Right – Trail bridge retrofit onto former railway structure, Caledon Trailway Caledon East ON (source WSP)

A structural assessment of the existing bridges will be required to determine if the existing bridges can be repurposed for the BCRY. Based on rail trail precedents elsewhere in Ontario and across the country, and the fact that the bridges were designed originally to support railway traffic it is highly likely the existing bridges can be reused for the trail once any necessary structural repairs are completed for the bridge and/or abutments; and modifications to add decking and railings are completed. The photo in **Figure 23** illustrates one of the former railway bridges on the Trans Canada Trail in New Tecumseth that has been retrofitted for trail use. Decking should be laid so that gaps run perpendicular to the path of travel. Safety rails/railings should be added at watercourse crossing locations or adjacent to drop-offs where the difference in elevation between the trail bed and bed and water line exceeds 60cm. Railings should be a minimum 1.37m high to improve safety for cycling.

6.2.8 Trail Amenities

Trail amenities can help to enhance trail continuity and connectivity but primarily have an influence on the overall experience. These enhancements help to make the route comfortable and meet a variety of accessibility needs. There are a number of trail amenities which could be incorporated into the overall design of the trail. The following are some examples of different types of trail amenities and best practice considerations for selecting trail amenities:

- Provide trail amenities in strategic locations along the trail route (e.g. break up long distances between destinations with rest areas, interpretive nodes).
- Cluster trail amenities around key destinations to enhance comfort and enjoyment at trip generators (e.g. around trailheads and staging areas).
- Lighting is not recommended for the BCRY trail overall, however, consideration may be given to lighting along the trail in the urban areas where it may be needed to provide guidance during periods of low light (e.g. fall and winter when days are shorter), and at night. Lighting can create a false perception of safety at night if appropriate measures are not in place (e.g. emergency response capabilities, etc.). Lighting is also costly to install and maintain.
- Consider maintenance requirements for amenities, including whether or not seasonal or year-round use is planned.
- Where consultation and coordination is required with other parties or agencies prior to the installation of amenities, ensure that consultation occurs early in the process to seek agreement over amenity location and design.
- The design should consider opportunities for vegetation compensation and enhancement plantings. This can include plantings of native trees, shrubs and perennial species at staging areas to add to the quality of the space, aesthetics and user comfort. Consideration should be given to nectar producing plants and pollinator species such as milkweed in seed mixtures



Figure 25: Lower left – Trail wayside shelter on the Confederation Trail PEI. Lower right – Trailside lookout on the Ottawa Carleton Trail, Stittsville ON. Upper left – Bench with accessible space for wheelchair beside. Guelph ON. Upper right – stone bench along the Caledon Trailway, Caledon ON (source WSP).

6.2.9 Trail Signage

The design and implementation of trail signage plays a significant role in enhancing the safety and comfort of users. Trail sign types typically include trailhead / etiquette signs, regulatory signs, gateway signs, and directional / interpretive / informational signs.

The following are some design considerations for trail signage

- Trails require clear information about how to navigate the route, how to use the trail infrastructure, and how to observe proper trail etiquette.
- Trail design should incorporate a “family” of signs with different purposes and messages. Wayfinding signs should be designed with a unified theme to ensure navigability.
- All trail signs should be clearly visible and follow a consistent visual theme to give the user a sense of connectivity and assist with wayfinding.
- Other types of signs or sign elements to consider include warning signs to provide information (e.g. narrow paths, accessibility conflicts).

- Allowing advertisements or company sponsorships may be useful to offset costs of trail maintenance and improvement.

Family of Signs.

Trailhead signs (Figure 26 and 27) are typically placed at key destinations to orient users upon arrival. These orient users to the network through mapping and other trail information, including trail etiquette. They also serve the important function of communicating trail characteristics such as width, surface type, slope and rest stops as required under the AODA. Trailhead signs should be placed so they are clearly visible and provide landmarks for trail users, and where visible from nearby roadways they also serve as a form of branding for the trail.

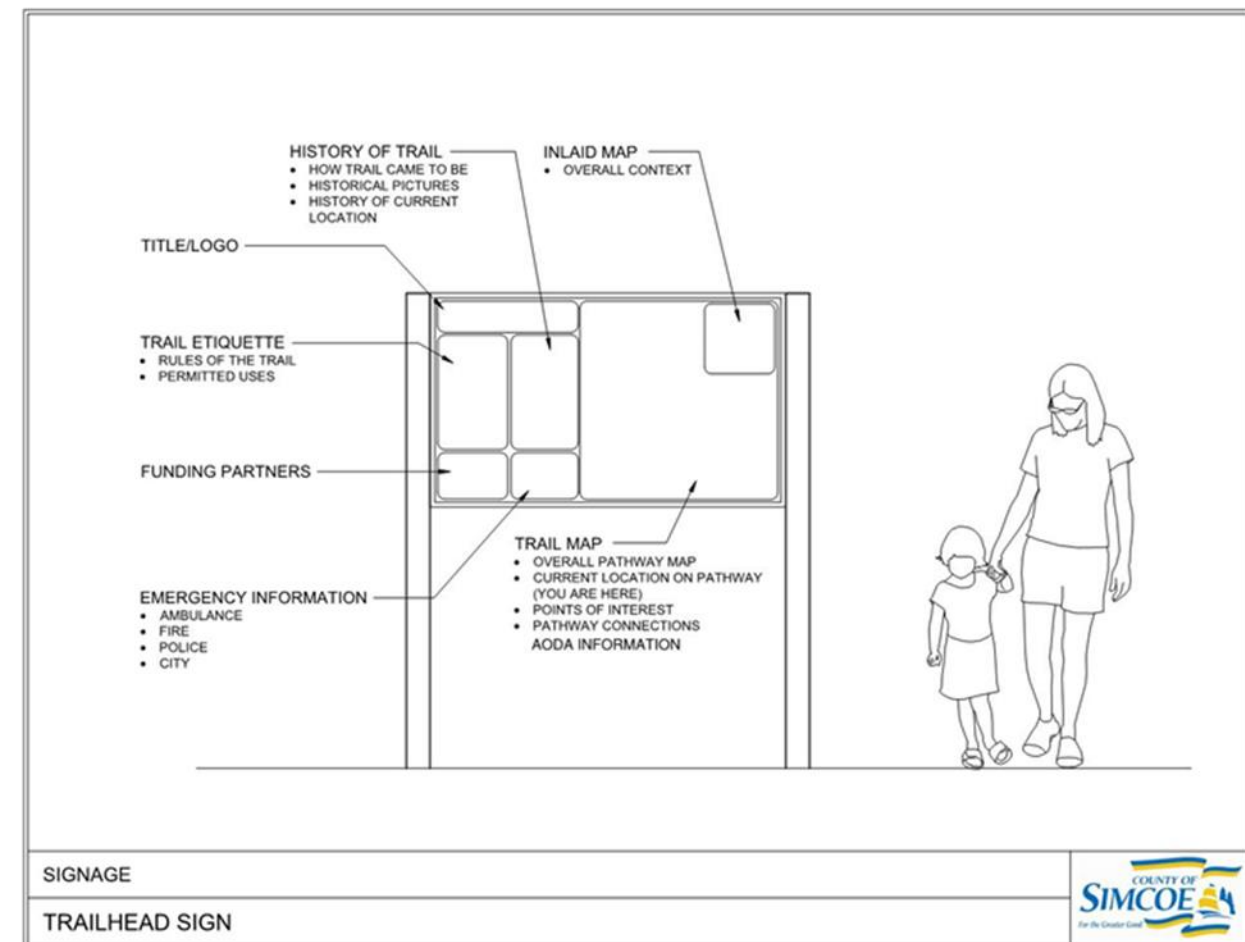


Figure 26: Trailhead sign – schematic concept



Figure 27: Trailhead sign examples – clockwise from upper left Rondeau Provincial Park, ON; Centre Wellington Township, ON; St Catharines, ON; Guelph ON (source WSP).

Directional signs (Figure 28) should be used throughout the trail at regular intervals of uninterrupted segments and at pathway intersections. Directional signs provide users with reassurance that they are following the designated trail network. Interpretive or informational signs can be used in combination with directional signs or on their own to educate users of points of interest along the trail, such as natural and cultural heritage features.



Figure 28: Trail directional sign examples – clockwise from upper left Montague, PEI; Peterborough, ON; Waterloo, ON; Sault Ste Marie, ON (source WSP).

Interpretive signs (Figure 29) provide specific educational information about points of ecological, historical and general interest, as well as current land uses along the corridor depending on the interpretive program and complexity of information to be communicated.



Figure 29: Interpretive sign examples – clockwise from upper left Collingwood, ON; Guelph, ON; Sauble Beach, ON; Tobermory, ON (source WSP).

Regulatory signs (Figure 30) are intended to restrict aspects of travel and use along the trail. Signage restricting or requiring specific behavior is not legally enforceable unless it is associated with a provincial law or municipal by-law, etc. Where applicable, it is recommended that authorities discreetly include the municipal by-law number on signs to reinforce their regulatory function.

Standard regulatory signs are aluminum plate blanks of varying dimensional size with a painted or reflective sheeting surface. Regulatory signs call attention to a traffic regulation concerning a time or place on a route and are installed in an optimal location most visible to trail users. Generally, these signs are rectangular shape except for stop and yield signs. For most trail applications the size of regulatory signs can be reduced

from the specified size for signs used along roads (i.e. 50% smaller). Typically, they are individually mounted on a metal post or custom wood post; grouped on a metal post or custom wood post; or grouped on a custom sign board, so long as the sign message is clearly visible.



Figure 30: Regulatory sign examples

6.3 Opinion of Probable Cost

6.3.1 Additional Studies and Detailed Design

As part of due diligence moving forward into detailed designs several additional background studies will need to be completed. The anticipated scope of these studies is described in Section 4.6, and the following is an estimated cost for the various studies, based on information available at the time the BCRY study was completed.

Archaeology

- Stage 1 Archaeology Assessment (AA) for the entire length of the corridor examined in this study (approximately 23km) is estimated to cost approximately \$6000

Cultural Heritage

- Cultural Heritage Resource Assessment (CHRA) for the entire length of the corridor examined in this study (approximately 23km) is estimated to cost approximately \$10,000
- Cultural Heritage Evaluation Report (CHER) for individual bridges is estimated to cost approximately \$7,000 per bridge
- Heritage Impact Assessment (HIA) is estimated to cost approximately \$4,500 and \$8,000 per property impacted / bridge

Structural Assessment

- A structural review and assessment for the 3 existing bridges is estimated to cost approximately \$12,000 to \$15,000

Natural Heritage

- A Scoped EIS for the entire length of the corridor examined in this study (approximately 23km) is estimated to cost approximately \$17,500. This estimate does not include the following as the extent of scope will be determined as the detailed design evolves:
 - Species At Risk (SAR) surveys and permitting/registration under the Endangered Species Act. It is not known if they will be required at this time, though it is anticipated that these surveys will not be required based on the Preferred Alternative (#2) which does not require grading in sensitive habitats.
 - Fisheries studies associated with any work below the high-water mark of any watercourse (i.e., culvert rehabilitation or replacement, or infilling of aquatic habitat to accommodate an expansion of the rail / trail embankment).

Hazard Tree Assessment

- For the entire length of the corridor examined in this study (approximately 23km) is estimated to cost approximately \$15,000

Detailed Design

Detailed design for the entire existing 23km corridor is estimated to be approximately \$220,000, broken out generally as follows

- \$130,000 for a boundary delineation and topographic survey (note this could be reduced to approximately \$70,000 using Remote Sensing), and this may be further reduced if
 - it is determined that the need detailed survey can be focused in key areas where the design is more complex (e.g. staging areas, road crossings, culverts and bridges), and
 - detailed survey is not required for long sections of the corridor in the rural area where details other than the trail centerline are not necessary.
- \$5,000 for additional site investigations to refine design assumptions
- \$12,000-\$15,000 for stakeholder and public consultations (i.e. 2 public open houses and 4 stakeholder meetings)
- \$4,000-5000 for Indigenous Engagement
- \$15,000 for design development (to 60% complete)
- \$35,000 for design completion, including specifications and tender documents
- \$15,000 for approvals

Note that an approximate cost for professional services during construction / contract administration was not included as this is partially dependent on phasing of construction (i.e. construction of the entire 23km length plus trailhead staging areas versus breaking the construction into several separate projects).

6.3.2 Construction

A high-level opinion of cost was developed for the implementation of the BCRY Multi-use Trail based on unit costs derived from recent design and construction projects across Ontario. The costs are presented in 2018 dollars and are based on normal / average conditions for construction but do not include:

- Cost of property acquisition or utility relocation;
- Design and engineering costs, permits or approvals;
- Annual inflation including increased cost of labour, materials, fuel, etc.;
- Applicable taxes; and

- Potential savings which could be realized through external funding opportunities and partnerships.

The estimated construction cost, including a 20% contingency is \$5.45M, broken out as follows:

- Trail \$4.74M
- Stayner Staging Area \$277,000
- New Lowell Staging Area \$202,000
- Angus Staging Area \$221,000

Figures 31 to 34 provide a detailed breakdown of the estimated construction costs.

6.3.2 Maintenance

An annual maintenance budget of \$2,500/km/year is suggested for the 23km trail for a total annual maintenance budget of \$57,500. Of this total \$45,000 would be allocated to Clearview Township and \$12,500 would be allocated to Essa Township based on the length of trail in each Township. Typical maintenance includes biweekly visual inspection during the core use season; surface grading once per year in spring to remove surface irregularities; pruning as needed to remove overhanging vegetation, maintaining sight lines at intersections and on curves, and to remove hazard trees within the fall zone of the trail; culvert cleanout / repair as needed, including when specific locations or complaints are registered by trail users; and fence repairs.



Opinion of Probable Construction Cost: Trail from Stayner to Angus					
ITEM	DESCRIPTION	UNIT	Approximate Quantity	Unit Cost	Total Cost
1.0 SITE PREPARATION					
1.1	Site mobilization and demobilization of equipment as required through the duration of the contract	lump sum	1	\$20,000.00	\$20,000.00
1.2	Supply, install and removal of silt fencing	linear metre	38,000	\$15.00	\$570,000.00
1.3	Clear and grub area through rail corridor	square metre	95,000	\$2.50	\$237,500.00
1.4	Remove and salvage existing steel rails for scrap metal (1*)	linear metre	46,000	\$5.00	\$230,000.00
1.5	Remove and dispose of existing rail tie piles along corridor (approximately 7 piles @ 15 tonnes) (2*)	tonne	105	\$300.00	\$31,500.00
1.6	Clear and remove existing trees and shrubs along edge of trail	lump sum	1	\$15,000.00	\$15,000.00
SUBTOTAL:					\$1,104,000.00
2.0 SURFACING AND DRAINAGE					
2.1	Supply and install 150mm crushed limestone screenings for pathway with 200mm granular 'A' base to bury existing rail ties	square metre	57,000	\$30.00	\$1,710,000.00
2.2	Supply and install wood deck structure for bridge crossings (3) complete with railings (3*)	square metre	270	\$500.00	\$135,000.00
2.3	Clean areas around existing culvert inlets and outlets and ensure positive drainage into and away from the existing culverts (Approx. 28 existing culverts)	each	28	\$1,000.00	\$28,000.00
2.4	Remove existing collapsed culvert and replace with new culvert	each	1	\$2,500.00	\$2,500.00
2.5	Minor improvements to the existing trail section along Warrington Road from Superior Street to Centre Line Road	linear metre	2500	\$25.00	\$62,500.00
SUBTOTAL:					\$1,938,000.00
3.0 ACCESS AND SIGNAGE					
3.1	Install trail access gates at all road crossings	each	40	\$500.00	\$20,000.00
3.2	Supply and install regulatory sign plate	each	150	\$150.00	\$22,500.00
3.3	Supply and install regulatory signage post	each	100	\$100.00	\$10,000.00
3.4	Supply and install agricultural fencing (Multiple Properties) (4*)	linear metre	10,000	\$55.00	\$550,000.00
3.5	Supply and install farm crossing double gates (3 farm crossings)	each	6	\$2,000.00	\$12,000.00
3.6	Supply and install Pedestrian Crossover County Road 90 (Mill Street, Angus)	each	1	\$50,000.00	\$50,000.00
3.7	Supply and install mid-block pedestrian at Highway 26 in Stayner	each	1	\$80,000.00	\$80,000.00
3.7	Supply and install Pedestrian Crossover at County Road 9 in New Lowell	each	1	\$50,000.00	\$50,000.00
SUBTOTAL:					\$794,500.00
4.0 PLANTING AND SEEDING					
4.1	Supply and install Broadcast Seeding (Native Seed Mix) in all disturbed areas	square metre	38000	\$2.50	\$95,000.00
SUBTOTAL:					\$95,000.00
5.0 ALLOWANCE					
5.1	Testing Allowance (i.e. Trail Subgrade, Trail Surfacing)	lump sum	1	\$20,000.00	\$20,000.00
SUBTOTAL:					\$20,000.00
SUB-TOTAL					\$3,951,500.00
CONTINGENCY (20%)					\$790,300.00
TOTAL					\$4,741,800.00
FOOTNOTES:					
1	Estimated salvage cost of the existing steel rails can vary between \$250-\$350/tonne. The total weight of the rails for this 23km stretch are approximately 3,500 tonnes.				
2	The removal of the existing rail ties is based on a disposal cost of \$200/tonne. Rail ties weigh approximately 0.076 tonnes/each.				
3	A structural investigation of all the existing rail bridges needs to be undertaken to determine if they are structurally sound for the proposed trail use.				
4	The estimated agricultural fencing length is based on active farm fields directly adjacent to the rail corridor. Fencing was not provided for areas adjacent to homes, forests and wetlands. Should fencing be required for the entire stretch of existing rail line the total would be approximately 38,000m.				
5	Does not include estimated costs for the 3 staging areas. Refer to individual tables for estimated costs of each staging area.				
6	Does not include any estimated costs for desire line connections / trail links from surrounding neighbourhoods to the BCRY Multi-use Trail.				

Figure 31 Opinion of Probable Construction Cost for the BCRY Multi-use Trail excluding staging areas

Opinion of Probable Construction Cost: Stayner Trailhead					
ITEM	DESCRIPTION	UNIT	Approximate Quantity	Unit Cost	Total Cost
1.0 SITE PREPARATION					
1.1	Site mobilization and demobilization of equipment as required through the duration of the contract	lump sum	1	\$10,000.00	\$10,000.00
1.2	Supply, install and removal of silt fencing	linear metre	200	\$15.00	\$3,000.00
1.3	Clear and grub area	square metre	2,200	\$2.50	\$5,500.00
SUBTOTAL:					\$18,500.00
2.0 SURFACING AND DRAINAGE					
2.1	Supply and install 150mm crushed limestone screenings for pathway connection to trail head	square metre	50	\$30.00	\$1,500.00
2.2	Supply and install stone paver surfacing for trail head	square metre	180	\$250.00	\$45,000.00
2.3	Supply and install granular parking lot	square metre	1300	\$60.00	\$78,000.00
2.4	Supply and install concrete curb stops for all parking stalls	each	30	\$250.00	\$7,500.00
SUBTOTAL:					\$132,000.00
3.0 FURNISHINGS					
3.1	Supply Install trail head sign	each	1	\$7,500.00	\$7,500.00
3.2	Supply and install bench	each	4	\$2,500.00	\$10,000.00
3.3	Supply and install waste receptacle	each	2	\$1,000.00	\$2,000.00
3.4	Supply and install shade structure	each	1	\$25,000.00	\$25,000.00
3.5	Supply and install portable washroom	each	1	\$5,000.00	\$5,000.00
3.6	Supply and install post and rail fencing	linear metres	50	\$250.00	\$12,500.00
SUBTOTAL:					\$49,500.00
4.0 PLANTING AND SEEDING					
4.1	Supply and install Deciduous Tree	each	6	\$400.00	\$2,400.00
4.2	Supply and install Shrubs	each	200	\$35.00	\$7,000.00
4.3	Supply and install Broadcast Seeding (Native Seed Mix) in all disturbed areas	square metre	500	\$2.50	\$1,250.00
SUBTOTAL:					\$10,650.00
5.0 ALLOWANCE					
5.1	Testing Allowance (i.e. Parking Lot Subgrade, Parking Lot Surfacing)	lump sum	1	\$20,000.00	\$20,000.00
SUBTOTAL:					\$20,000.00
SUB-TOTAL					\$230,650.00
CONTINGENCY (20%)					\$46,130.00
TOTAL					\$276,780.00

Figure 32: Opinion of Probable Construction Cost for the BCRY Stayner Trailhead Staging Area

Opinion of Probable Construction Cost: New Lowell Trailhead					
ITEM	DESCRIPTION	UNIT	Approximate Quantity	Unit Cost	Total Cost
1.0 SITE PREPARATION					
1.1	Site mobilization and demobilization of equipment as required through the duration of the contract	lump sum	1	\$10,000.00	\$10,000.00
1.2	Supply, install and removal of silt fencing	linear metre	200	\$15.00	\$3,000.00
1.3	Clear and grub area	square metre	1,300	\$2.50	\$3,250.00
SUBTOTAL:					\$16,250.00
2.0 SURFACING AND DRAINAGE					
2.1	Supply and install 150mm crushed limestone screenings for pathway connection to trail head	square metre	50	\$30.00	\$1,500.00
2.2	Supply and install stone paver surfacing for trail head	square metre	160	\$250.00	\$40,000.00
2.3	Supply and install granular parking lot	square metre	550	\$60.00	\$33,000.00
2.4	Supply and install concrete curb stops for all parking stalls	each	14	\$250.00	\$3,500.00
SUBTOTAL:					\$78,000.00
3.0 FURNISHINGS					
3.1	Supply install trail head sign	each	1	\$7,500.00	\$7,500.00
3.2	Supply and install bench	each	4	\$2,500.00	\$10,000.00
3.3	Supply and install waste receptacle	each	2	\$1,000.00	\$2,000.00
3.4	Supply and install shade structure	each	1	\$25,000.00	\$25,000.00
3.5	Supply and install portable washroom	each	1	\$5,000.00	\$5,000.00
3.6	Supply and install post and rail fencing	linear metres	50	\$250.00	\$12,500.00
SUBTOTAL:					\$49,500.00
4.0 PLANTING AND SEEDING					
4.1	Supply and install Deciduous Tree	each	3	\$400.00	\$1,200.00
4.2	Supply and install Shrubs	each	50	\$35.00	\$1,750.00
4.3	Supply and install Broadcast Seeding (Native Seed Mix) in all disturbed areas	square metre	500	\$2.50	\$1,250.00
SUBTOTAL:					\$4,200.00
5.0 ALLOWANCE					
5.1	Testing Allowance (i.e. Parking Lot Subgrade, Parking Lot Surfacing)	lump sum	1	\$20,000.00	\$20,000.00
SUBTOTAL:					\$20,000.00
SUB-TOTAL					\$167,950.00
CONTINGENCY (20%)					\$33,590.00
TOTAL					\$201,540.00

Figure 33: Opinion of Probable Construction Cost for the BCRY New Lowell Trailhead Staging Area

Opinion of Probable Construction Cost: Angus Trailhead					
ITEM	DESCRIPTION	UNIT	Approximate Quantity	Unit Cost	Total Cost
1.0 SITE PREPARATION					
1.1	Site mobilization and demobilization of equipment as required through the duration of the contract	lump sum	1	\$10,000.00	\$10,000.00
1.2	Supply, install and removal of silt fencing	linear metre	200	\$15.00	\$3,000.00
1.3	Clear and grub area	square metre	2,000	\$2.50	\$5,000.00
SUBTOTAL:					\$18,000.00
2.0 SURFACING AND DRAINAGE					
2.1	Supply and install 150mm crushed limestone screenings for pathway connection to trail head	square metre	50	\$30.00	\$1,500.00
2.2	Supply and install stone paver surfacing for trail head	square metre	170	\$250.00	\$42,500.00
2.3	Supply and install granular parking lot	square metre	650	\$60.00	\$39,000.00
2.4	Supply and install concrete curb stops for all parking stalls	each	18	\$250.00	\$4,500.00
SUBTOTAL:					\$87,500.00
3.0 FURNISHINGS					
3.1	Supply Install trail head sign	each	1	\$7,500.00	\$7,500.00
3.2	Supply and install bench	each	4	\$2,500.00	\$10,000.00
3.3	Supply and install waste receptacle	each	2	\$1,000.00	\$2,000.00
3.4	Supply and install shade structure	each	1	\$25,000.00	\$25,000.00
3.5	Supply and install portable washroom	each	1	\$5,000.00	\$5,000.00
3.6	Supply and install post and rail fencing	linear metres	100	\$250.00	\$25,000.00
SUBTOTAL:					\$49,500.00
4.0 PLANTING AND SEEDING					
4.1	Supply and install Deciduous Tree	each	10	\$400.00	\$4,000.00
4.2	Supply and install Shrubs	each	100	\$35.00	\$3,500.00
4.3	Supply and install Broadcast Seeding (Native Seed Mix) in all disturbed areas	square metre	500	\$2.50	\$1,250.00
SUBTOTAL:					\$8,750.00
5.0 ALLOWANCE					
5.1	Testing Allowance (i.e. Parking Lot Subgrade, Parking Lot Surfacing)	lump sum	1	\$20,000.00	\$20,000.00
SUBTOTAL:					\$20,000.00
SUB-TOTAL					\$183,750.00
CONTINGENCY (20%)					\$36,750.00
TOTAL					\$220,500.00

Figure 34: Opinion of Probable Construction Cost for the BCRY Angus Trailhead Staging Area



7.0 Recommended Next Steps

Following the completion of the Preliminary Design study, the proposed undertaking will proceed to detailed design. The following future works and associated commitments are recommended during detailed design.

1. Develop the Terms of Reference for the next phase of work (i.e. EA or detailed design) and retain the services of a qualified firm.
2. Complete the topographic and boundary survey for the corridor.
3. Complete the additional studies described in Section 4.6:
 - a. Stage 1 Archaeological Assessment
 - b. Cultural Heritage Resource Assessment (CHRA)
 - c. Cultural Heritage Evaluation Report (CHER) for individual railway bridges
 - d. Heritage Impact Assessment (HIA)
 - e. Environmental Impact Study (EIS)
 - f. Bridge Structural Assessment
 - g. Hazard Tree Assessment
4. Confirm existing utilities and consult with utility owners regarding utilities that may require removal/relocation or permissions for construction (i.e. hydro, gas, etc.).
5. Ensure all existing culverts along the rail corridor are cleaned out as part of the construction process and any collapsed culverts are replaced.
6. Complete further assessments on all major road crossings to determine appropriate measures to be put in place.
7. Speak with adjacent land owners, stakeholders, and community members through a public engagement process.
8. Investigate the potential of incorporating existing desire lines through private and public properties as permanent trail connections.
9. Prepare detailed design, specifications and contract documents.
10. Secure any necessary approvals and secure funding for construction.

