

9 CYCLING AND PEDESTRIAN MASTER PLAN

9.1 Network Development Process and the Recommended Network

The following section describes the recommended active transportation (AT) network and the key steps in the development process. The approach used was an iterative process for identifying proposed facility types; it was guided by the overall vision for active transportation and the route selection principles identified in **Section 6.2**. Key steps included:

1. Collection and Assembly of Background Information

Existing or previously proposed active transportation facilities in the City of Greater Sudbury were consolidated into a digital map which included connections to surrounding municipalities. Base information was provided by the Sustainable Mobility Advisory Panel (SMAP), Bicycle Advisory Panel (BAP) and Sudbury Cyclist Union (SCU). This included a list of capital projects for 2011, 2012 and beyond, an updated sidewalk inventory and preliminary input from staff and stakeholders.

2. Review of Consolidated Base Mapping with Sustainable Mobility Advisory Panel Committee

Base mapping was reviewed by the study team in conjunction with the Sustainable Mobility Advisory Panel at a number of key stages throughout the study and refined as additional information became available.

3. Development of Route Selection Principles

A set of qualitative principles was developed to guide the selection of Candidate Routes, as described in **Section 6.2**. These principles were discussed with attendees at the first stakeholder workshop and the first Public Information Centre.

4. Preparation of Candidate Routes Mapping

Candidate routes were mapped and refined based on the outcomes of the first three stages. This desktop analysis was undertaken using the City's high resolution aerial imagery and street view images (where available) from Google Earth.

5. Public Input To The Candidate Network and Route Selection Principles

The City held a second Public Information Centre (PIC) in June 2013 to provide the opportunity for residents to review the proposed candidate network and existing conditions as well as the route selection principles. The proposed network was further refined in response to public feedback from this session and the associated online questionnaire.

6. Field Review and Assessment of Candidate Routes and Preparation of Draft Route Network

Candidate Routes identified for the AT network were reviewed in the field by the study team in Fall 2011. Data was collected on site characteristics and was used to inform the decision to accept or reject each candidate route. The network for consideration was then refined using the



route selection principles, information collected in the field and stakeholder input. The draft route network was subsequently prepared for review by the Sustainable Mobility Advisory Panel.

7. Identification of Appropriate Facility Types

Potential facility types for each route in the network were narrowed down based on consideration of a number of characteristics including:

- Facility types recommended in other City plans or studies;
- Current traffic characteristics;
- Motor vehicle operating speeds;
- Number of travel lanes;
- Existing lane widths;
- Available right-of-way, public land or potential for access agreements on other linear corridors;
- Adjacent land uses;
- Types of destinations along the route;
- Anticipated user groups;
- Capital improvement plans; and
- Distance to the nearest existing or proposed route.

Observations made by the study team were then balanced by comments received from the City, the Sustainable Mobility Advisory Panel, and the public, and local stakeholders.

8. Review of Input on the Draft Route Network and Recommendation of the Final Route Network

Feedback on the draft route network, facility types and implementation priorities was gathered through discussions with the Sustainable Mobility Advisory Panel, stakeholders and the public. A second stakeholder workshop and round of Public Information Centres was held in June 2013. Some routes were rejected and previously-considered routes were incorporated as part of the refinement and finalization of the recommended route network.

9. Preparation of Implementation Plan

A detailed implementation and phasing plan was developed to guide the short, medium and long-term development of the AT network throughout the City. Policies and general recommendations were developed to guide the future development and implementation of the proposed active transportation facilities.



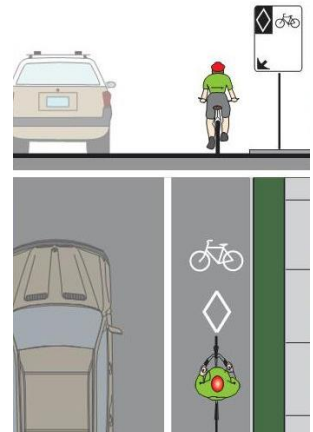
9.2 Cycling and Pedestrian Network Facility Types (Overview)

The following sections provide a brief summary of the facility types envisioned for the Cycling and Pedestrian network in the City of Greater Sudbury.

9.2.1 On-Road Cycling Facilities – Dedicated Space

CONVENTIONAL BICYCLE LANE

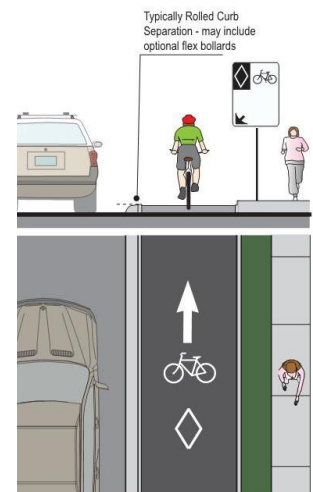
This is a portion of a roadway which has been designated by pavement markings and signage for the preferential or exclusive use of cyclists. A bicycle lane is typically located on urban arterial or collector roadways that have higher traffic volumes, operating speeds and proportion of commercial vehicles compared to local urban roadways. Bicycle lanes should typically be provided on both sides of two-way streets. On one-way streets, conventional bike lanes operate in the direction of travel, although contraflow lanes are also permitted. Bike lanes are typically implemented on urban arterial and major collector roads where traffic volumes and speeds are higher.



9.2.2 On-Road Cycling Facilities – Separated Space

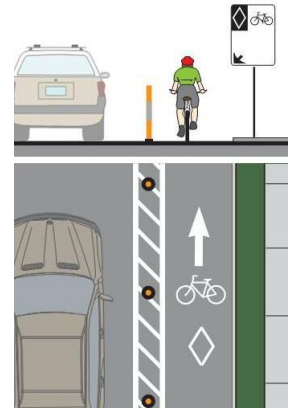
RAISED CYCLE TRACK

This is a bicycle facility adjacent to but vertically separated from motor vehicle travel lanes. A raised cycle track is designated for exclusive use by cyclists, and is distinct from the sidewalk. A raised cycle track is typically implemented on high volume urban arterial or collector roadways with high bicycle traffic volumes. Raised cycle tracks are typically raised and curb separated to the level of the adjacent sidewalk or an intermediate level between that and the roadway. The raised cycle track may be designed for one-way or two-way travel and are typically used by both experienced and casual cyclists for utilitarian purposes.



SEPARATED BICYCLE LANE

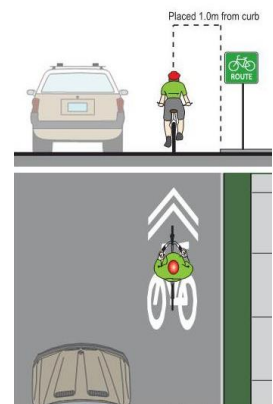
This is a portion of a roadway which has been designated for the exclusive use of cyclists by signage along with a physical or marked buffer. This facility type provides additional spatial or physical separation between motorists and cyclists. A separated bicycle lane, also sometimes referred to as a ‘segregated bicycle lane’ may be separated by a buffer with hatched pavement markings or by a physical barrier such as a line of bollards, a median or parked vehicles. Physical separation restricts the encroachment of motor vehicle traffic into the separated bicycle lane, and is perceived to create a more secure and comfortable environment for cyclists. It may, however, restrict a cyclist’s ability to manoeuvre into or out of the lane midblock. Where a roadway allows on-street parking, the separated bicycle lane may be positioned between the parking lane and the curb. A separated bicycle lane is typically used for utilitarian purposes.



9.2.3 On-Road Cycling Facilities – Shared Space

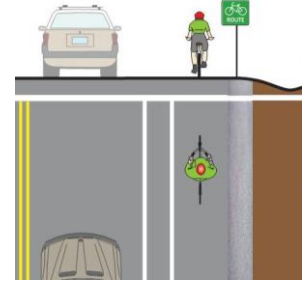
SIGNED BIKE ROUTE

Signed Routes are typically installed on quiet, residential and local or collector streets where motor vehicle traffic volumes and speeds are low. In addition to ‘bicycle route’ marker signs, shared use lane markings (sharrows) may be applied to guide both motorists and cyclists on relative positioning. Where shared lanes are sufficiently wide for cyclists to ride alongside motorists, sharrows are applied near the curb, otherwise they are placed in the centre of the lane. ‘Share the Road’ or ‘Shared Use Lane Single File’ signage may also be installed.



**SIGNED BIKE ROUTE
WITH PAVED
SHOULDER
(RURAL)**

This is a road with a rural cross section which is signed as a bike route that also includes a paved shoulder. A paved shoulder is a portion of a roadway which is contiguous with the travelled way, and is used to accommodate stopped vehicles, emergency use, pedestrians and cyclists as well as for lateral support of the pavement structure. A paved shoulder on a designated bike route may include a buffer zone to provide greater separation between motorists and cyclists travelling in the same direction.



**EDGE LINE /
URBAN PAVED
SHOULDER**

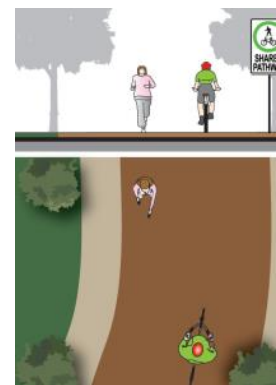
Signed-only Bike Routes in urban areas may be supplemented with edge lines to create urban paved shoulders. These provide cyclists with operating space outside the motor vehicle travelled portion of the roadway without restricting on-street parking. The perceived reduction in width available to the motorist may also have a traffic calming effect. It should be noted that urban paved shoulders are not an alternative to bicycle lanes but may be used on roadways where there is a strong, site specific justification for not implementing conventional bicycle lanes.



9.2.4 Off-Road Cycling Facilities – Separated Space

**OFF-ROAD
MULTI-USE TRAILS**

Off-Road Multi-Use Trails are shared facilities located outside the road right-of-way for use by cyclists and pedestrians. If permitted, multi-use trails may also be used by recreational motorized vehicles. They are typically located in parklands, valley lands, utility corridors, and along the alignment of former rail lines.



9.3 The Recommended Cycling and Pedestrian Network

One of the primary objectives of the City of Greater Sudbury Active Transportation Master Plan is to develop a continuous and integrated cycling and pedestrian network of safe recreational and utilitarian routes. It builds upon, connects and supports existing and planned local regional routes and facilities such as the Rainbow Routes and Trans Canada Trail.

The recommended cycling and pedestrian network, as well as the proposed facility types for the City of Greater Sudbury, are illustrated in **Figure 67** and key areas are shown enlarged in:

- **Figure 68:** Cycling and Pedestrian Network Downtown Enlargement;
- **Figure 69:** Cycling and Pedestrian Network New Sudbury Enlargement;
- **Figure 70:** Cycling and Pedestrian Network South End Enlargement;
- **Figure 71:** Cycling and Pedestrian Network Enlargement Areas, including Valley East, Capreol, Azilda, Chelmsford, Garson, Lively, Onaping and Levack.

A summary of the cycling and pedestrian network facility types is provided in **Table 45**.

Table 45: Facility Type by Distance

Facility Type	Existing (KM)	Proposed (KM)	Total (KM)
Bike Lane	8.6	14.0	22.6
Cycle Track	0.0	19.9	19.9
Signed Bike Route	0.6	89.5	90.1
Signed Bike Route with Paved Shoulder (Rural)	26.4	78.4	104.8
Edge line (Urban Paved Shoulder)	0.0	11.3	11.3
Multi-Use Trail	102.9	55.4	158.3
TOTAL (KM)	138.6	268.5	407.1

9.4 Recommended Phasing / Implementation Strategy

The proposed infrastructure improvements and additions are part of a long-term strategy to improve active transportation infrastructure and develop a cohesive, comprehensive and sustainable network.

The implementation strategy is designed to be fiscally responsible, coordinated with other long-term capital investments as they are scheduled and respectful of the fact that a significant investment is proposed and could take the City many years to complete. It is important to note that the actual phasing of the proposed cycling and pedestrian network will ultimately be determined by the future availability of resources and decisions yet to be taken by the councillors and staff of the City of Greater Sudbury.

The recommended implementation strategy is divided into three phases:

- Short Term (generally 0 – 5 years);
- Medium Term (generally 6 – 10 years); and
- Long Term (generally 11 – 15 years and beyond).

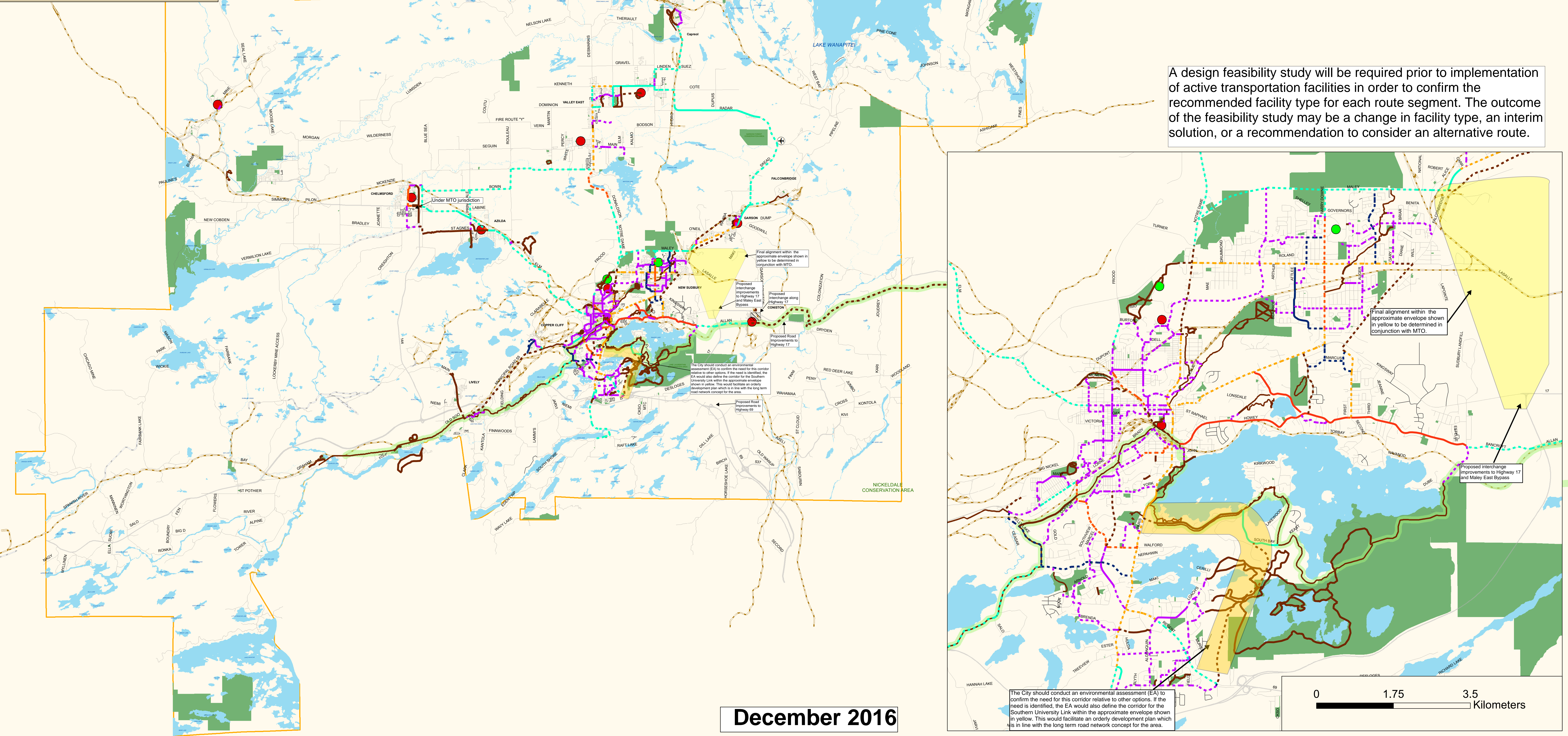
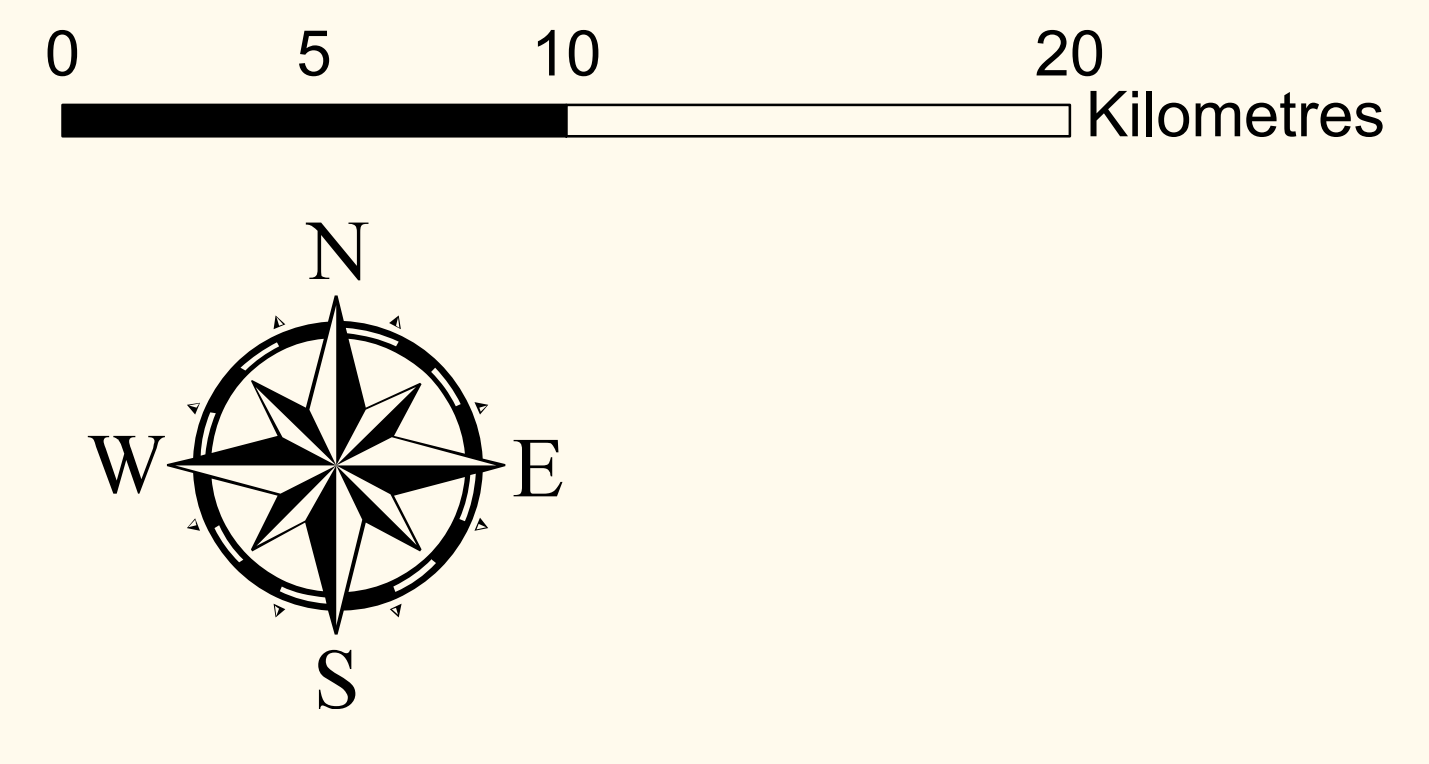
Figure 72 through **Figure 76** illustrate the recommended cycling and pedestrian network by implementation phase.



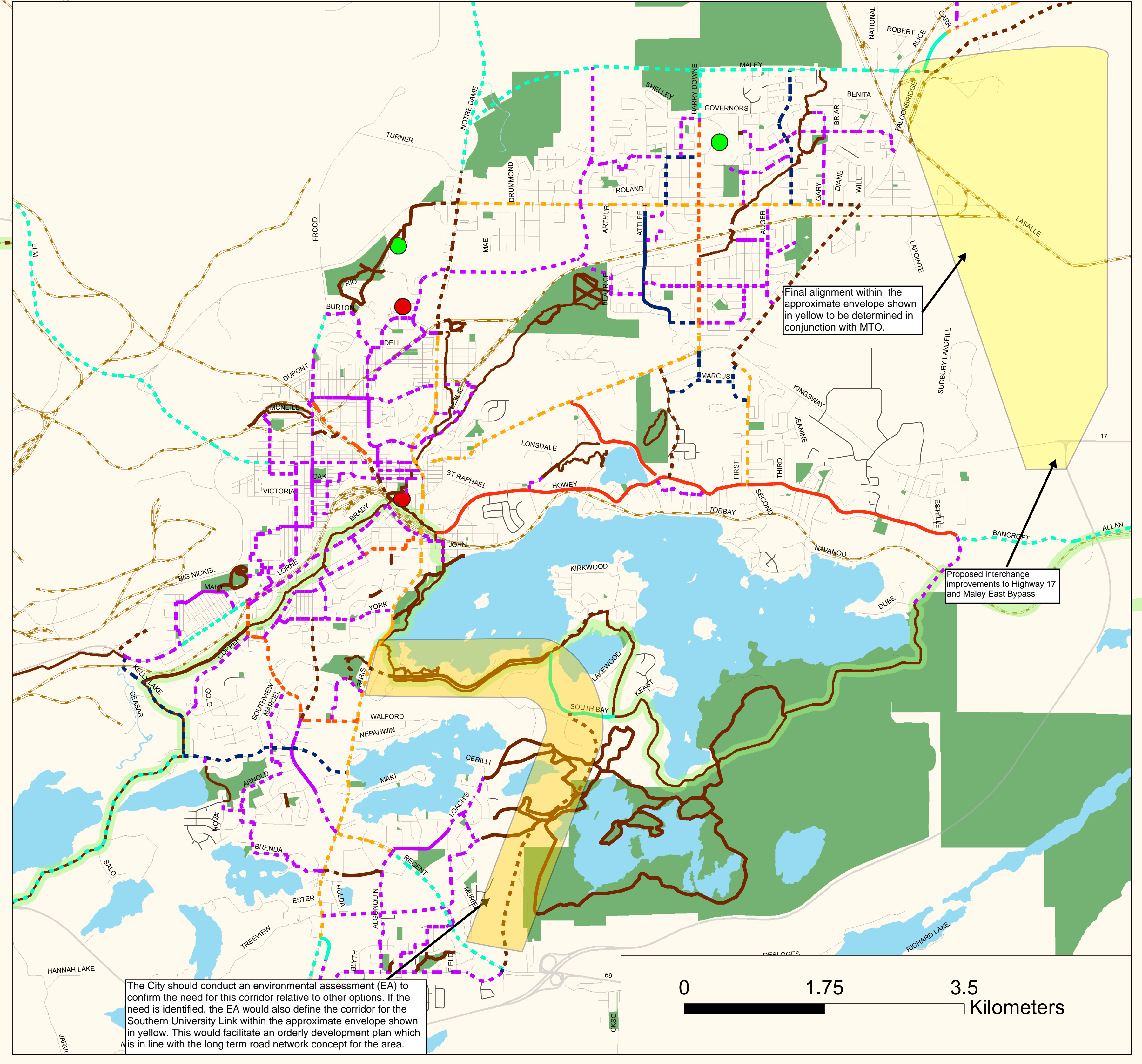


Figure 67
Greater Sudbury Transportation Study
Recommended 2031
Cycling and Pedestrian Network

- Legend**
- On-Road Facilities**
 - Existing Bike Lane
 - Proposed Bike Lane
 - Existing Signed Bike Route with Paved Shoulder
 - Proposed Signed Bike Route with Paved Shoulder
 - Existing Signed Bike Route
 - Proposed Signed Bike Route
 - Existing Edgeline
 - Proposed Edgeline
 - Separated Facilities**
 - Existing Cycle Track
 - Proposed Cycle Track
 - Off-Road Facilities**
 - Existing Multi-Use Trail
 - Proposed Multi-Use Trail
 - Regional Trails and Routes**
 - Trans Canada Trail
 - Destinations**
 - Airport
 - Arena / Community Centre
 - College / University
 - Other**
 - Lakes and Rivers
 - Parks and Conservation Areas
 - Provincial Road / Highway
 - Local Road
 - Active Railway
 - Abandoned Railway

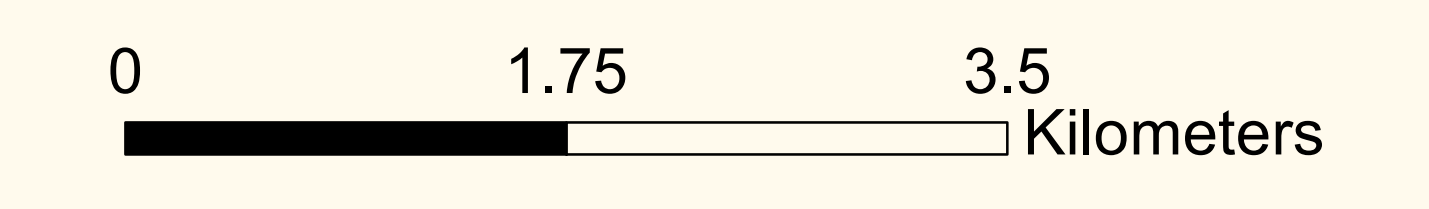


A design feasibility study will be required prior to implementation of active transportation facilities in order to confirm the recommended facility type for each route segment. The outcome of the feasibility study may be a change in facility type, an interim solution, or a recommendation to consider an alternative route.



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The City should conduct an environmental assessment (EA) to confirm the need for this corridor relative to other options. If the need is identified, the EA would also define the corridor for the Southern University Link within the approximate envelope shown in yellow. This would facilitate an orderly development plan which is in line with the long term road network concept for the area.



**Figure 68
Cycling and Pedestrian Network
Downtown Enlargement**



Legend

On-Road Facilities

- Existing Bike Lane
- Proposed Bike Lane
- Existing Signed Bike Route with Paved Shoulder
- Proposed Signed Bike Route with Paved Shoulder
- Existing Signed Bike Route
- Proposed Signed Bike Route
- Existing Edgeline
- Proposed Edgeline

Separated Facilities

- Existing Cycle Track
- Proposed Cycle Track

Off-Road Facilities

- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Regional Trails and Routes

- Trans Canada Trail

Destinations

- Airport
- Arena / Community Centre
- College/University

Other

- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road / Highway
- Local Road
- Active Railway
- Abandoned Railway

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Bell Park Path - Cycling Path
RAMSEY LAKE

Jim Gordon Boardwalk - Hiking / Walking Path

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0 250 500 1,000 Metres

Figure 69
Cycling and Pedestrian Network
New Sudbury Enlargement

Legend

On-Road Facilities

- Existing Bike Lane
- Proposed Bike Lane
- Existing Signed Bike Route with Paved Shoulder
- Proposed Signed Bike Route with Paved Shoulder
- Existing Signed Bike Route
- Proposed Signed Bike Route
- Existing Edgeline
- Proposed Edgeline

Separated Facilities

- Existing Cycle Track
- Proposed Cycle Track

Off-Road Facilities

- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Regional Trails and Routes

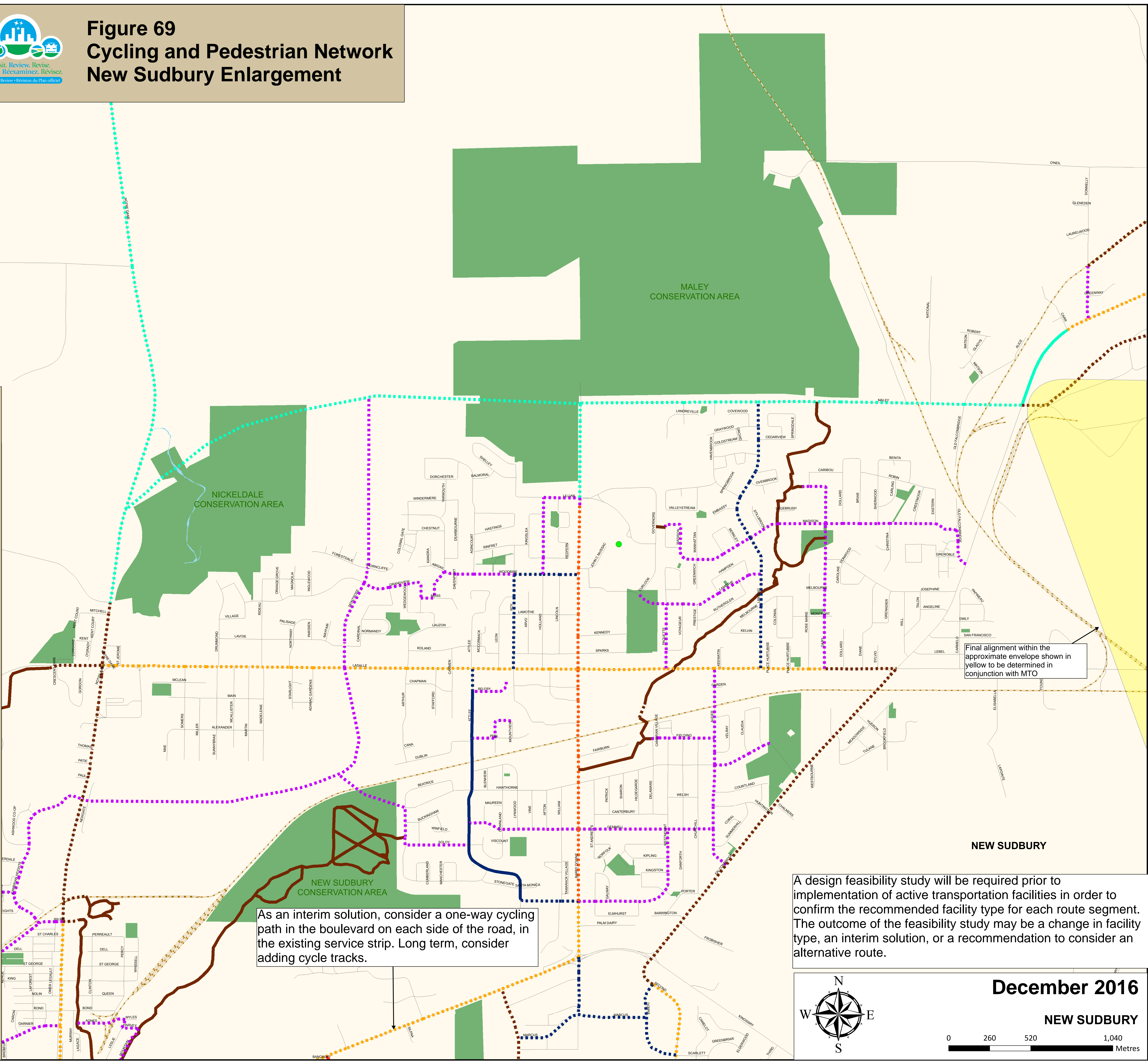
- Trans Canada Trail

Destinations

- Airport
- Arena / Community Centre
- College/University

Other

- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road / Highway
- Local Road
- Active Railway
- Abandoned Railway



As an interim solution, consider a one-way cycling path in the boulevard on each side of the road, in the existing service strip. Long term, consider adding cycle tracks.

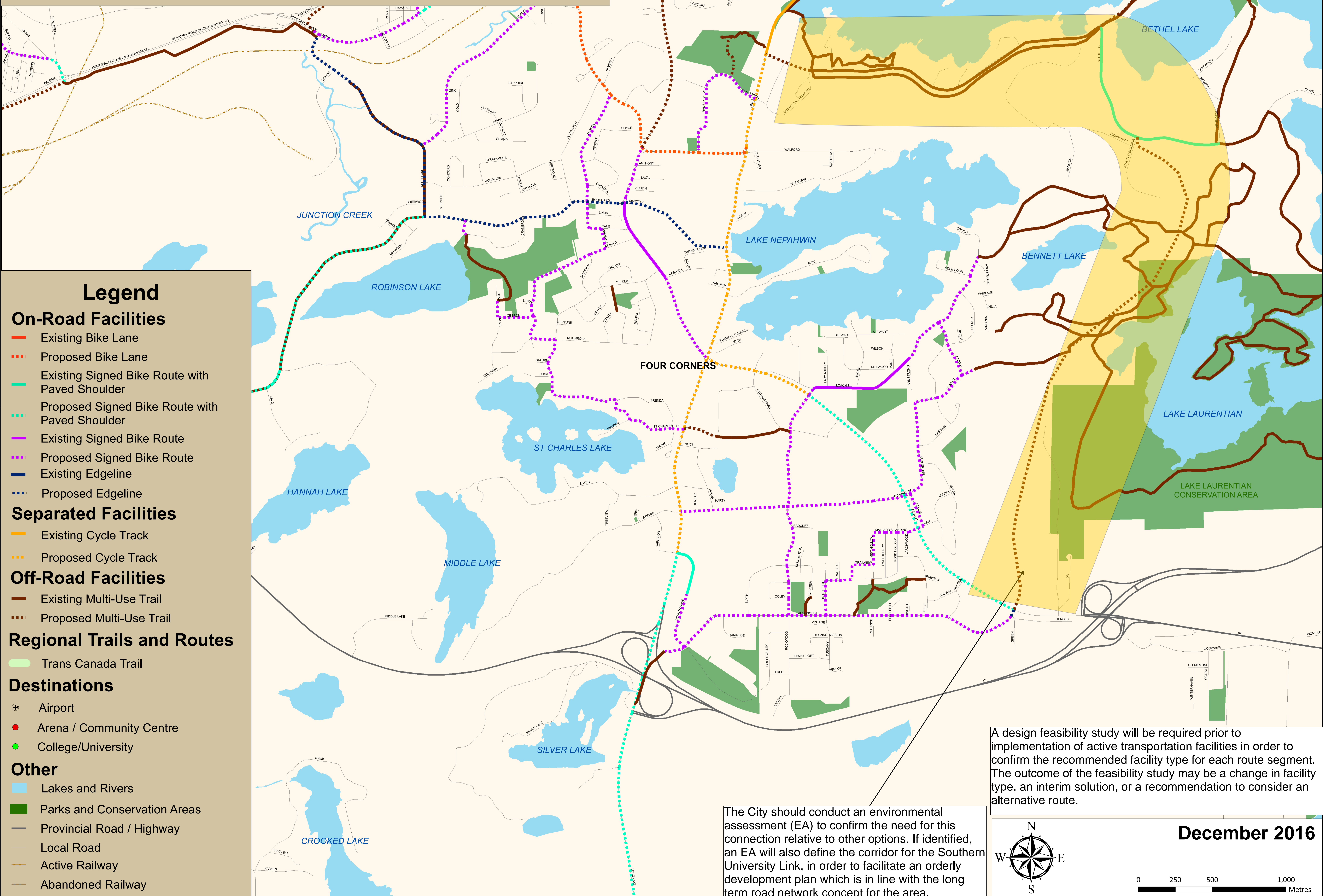
Final alignment within the approximate envelope shown in yellow to be determined in conjunction with MTO

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NEW SUDBURY

0 260 520 1,040 Metres



Legend

On-Road Facilities

- Existing Bike Lane
- Proposed Bike Lane
- Existing Signed Bike Route with Paved Shoulder
- Proposed Signed Bike Route with Paved Shoulder
- Existing Signed Bike Route
- Proposed Signed Bike Route
- Existing Edgeline
- Proposed Edgeline

Separated Facilities

- Existing Cycle Track
- Proposed Cycle Track

Off-Road Facilities

- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Regional Trails and Routes

- Trans Canada Trail

Destinations

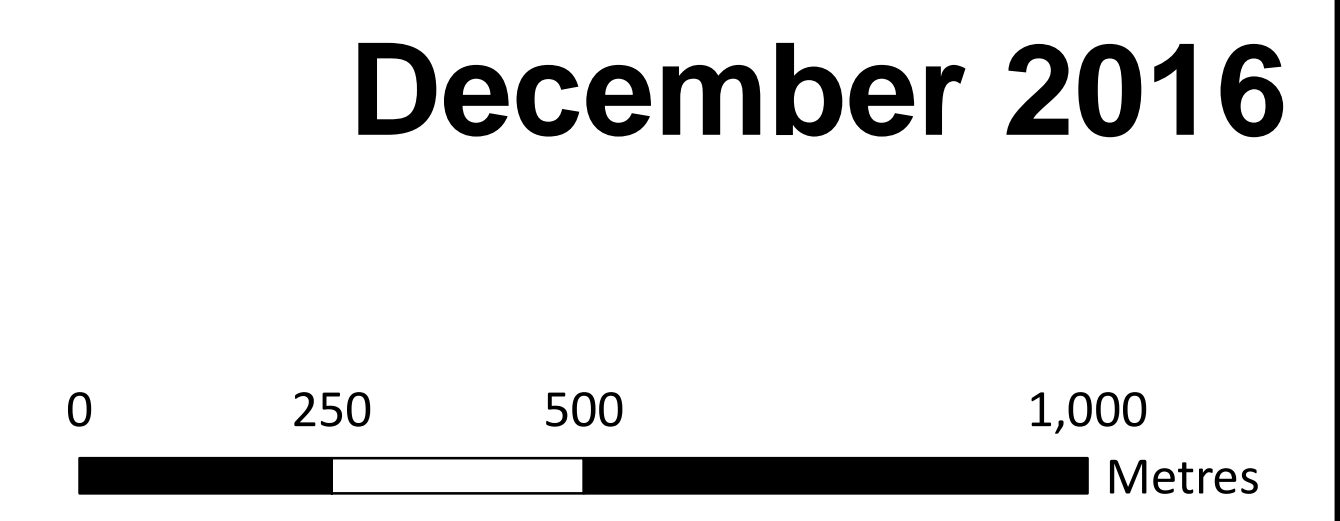
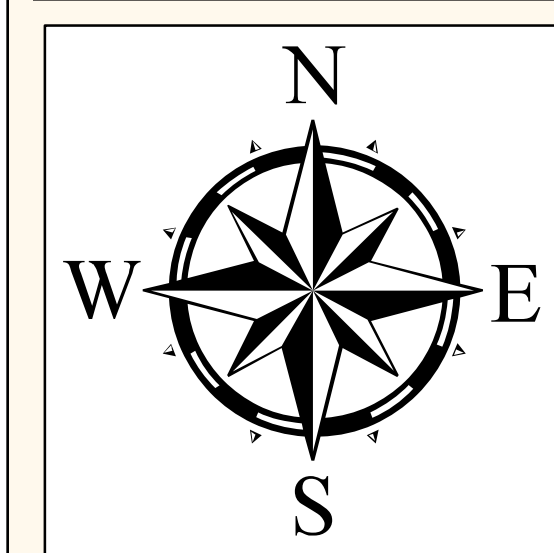
- Airport
- Arena / Community Centre
- College/University

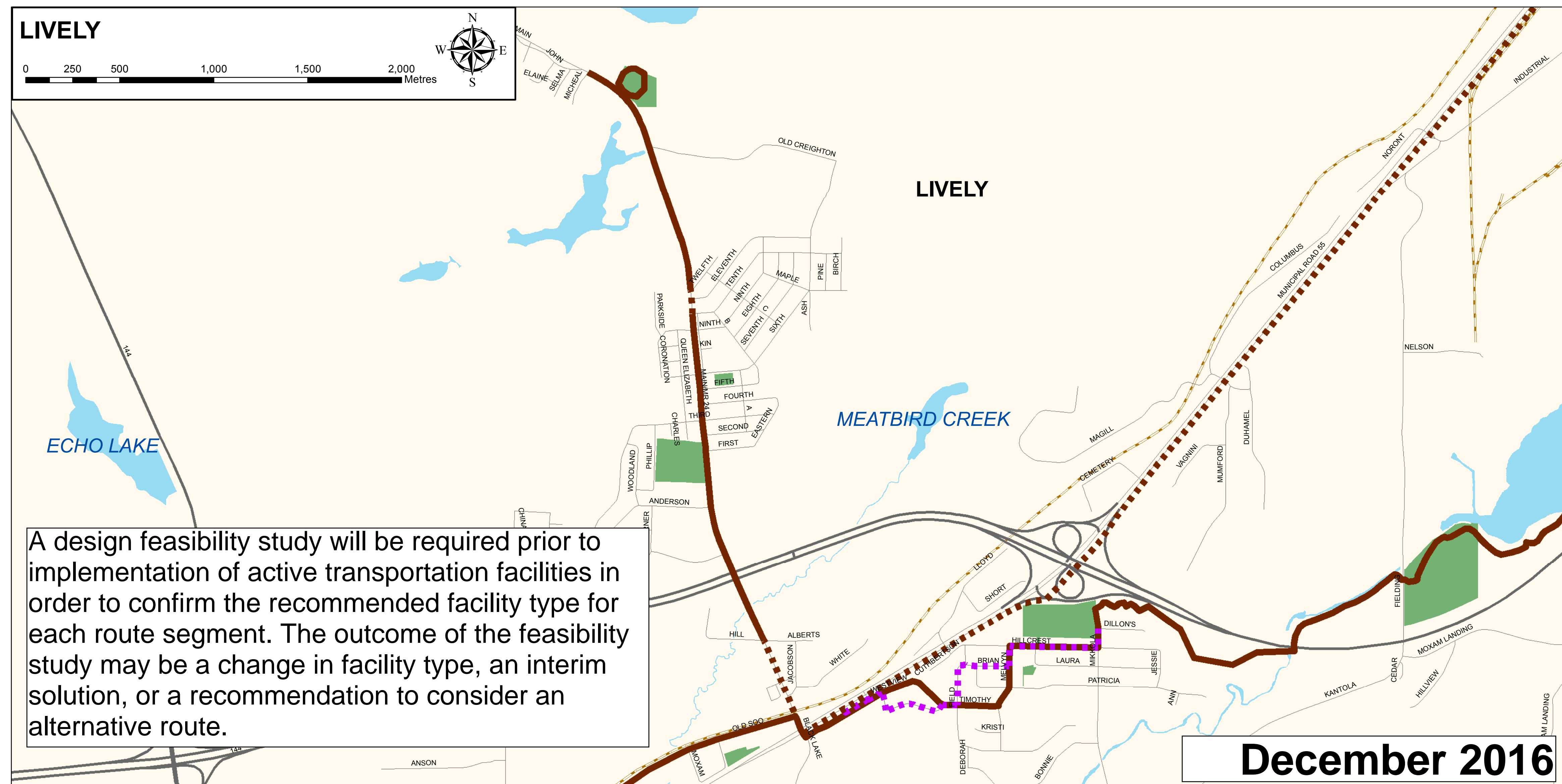
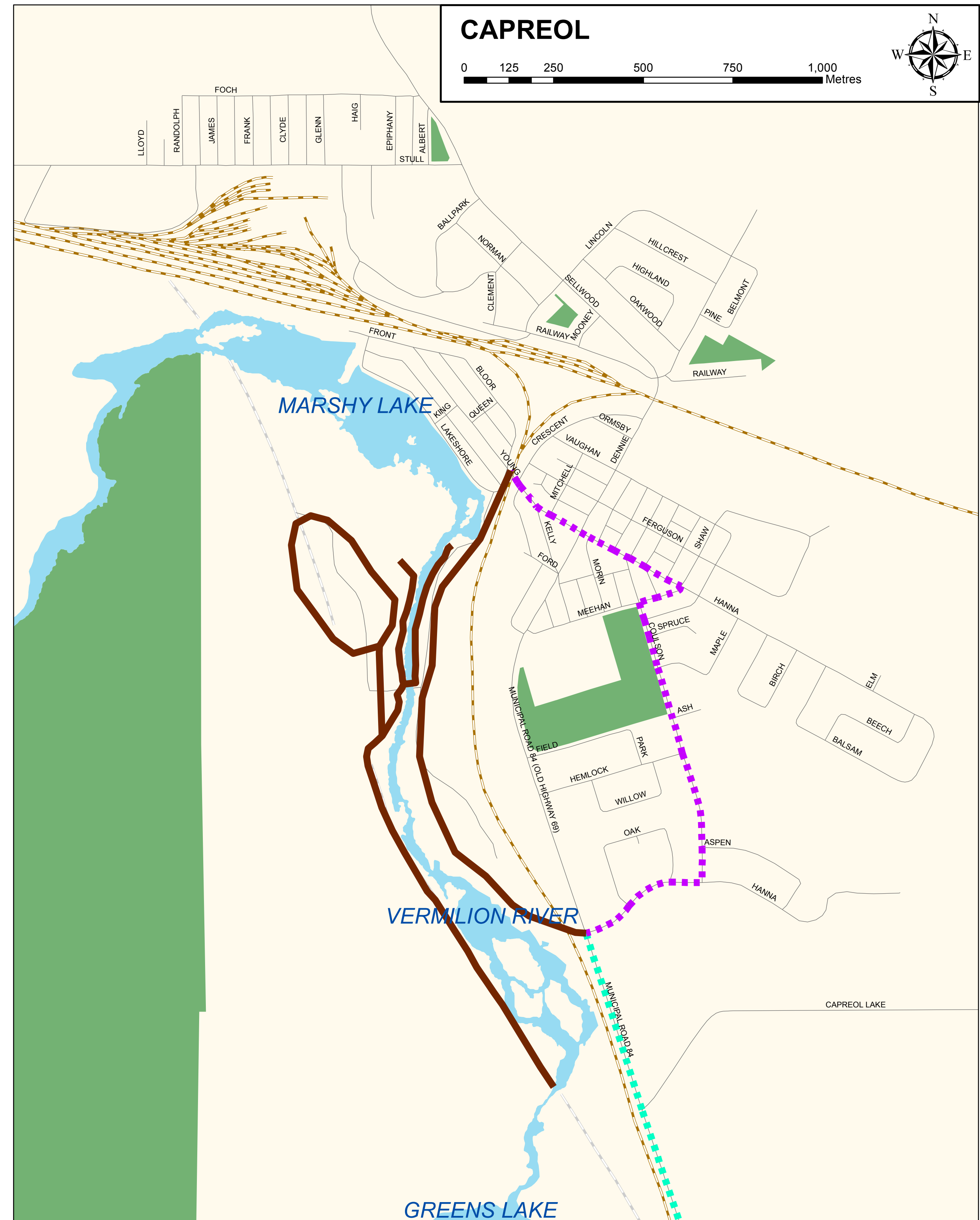
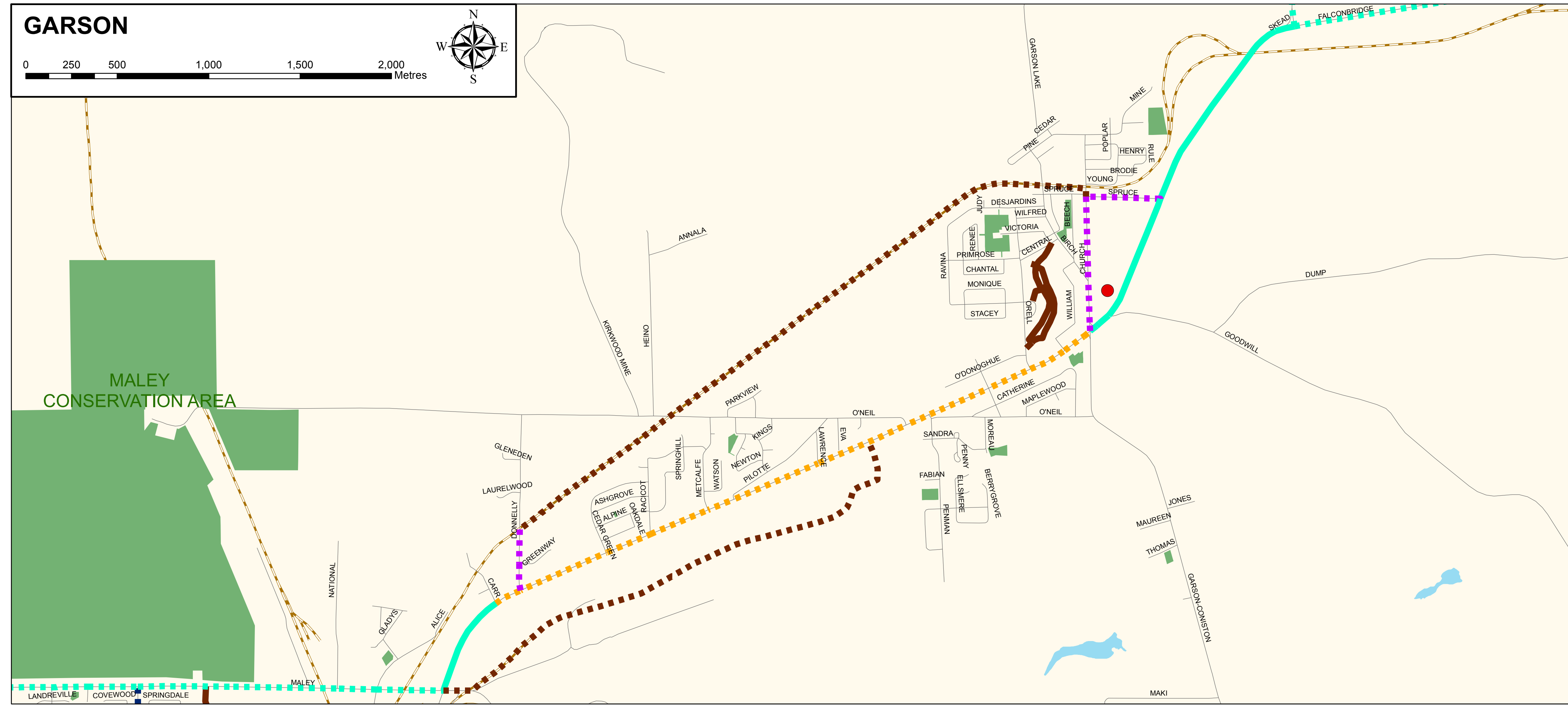
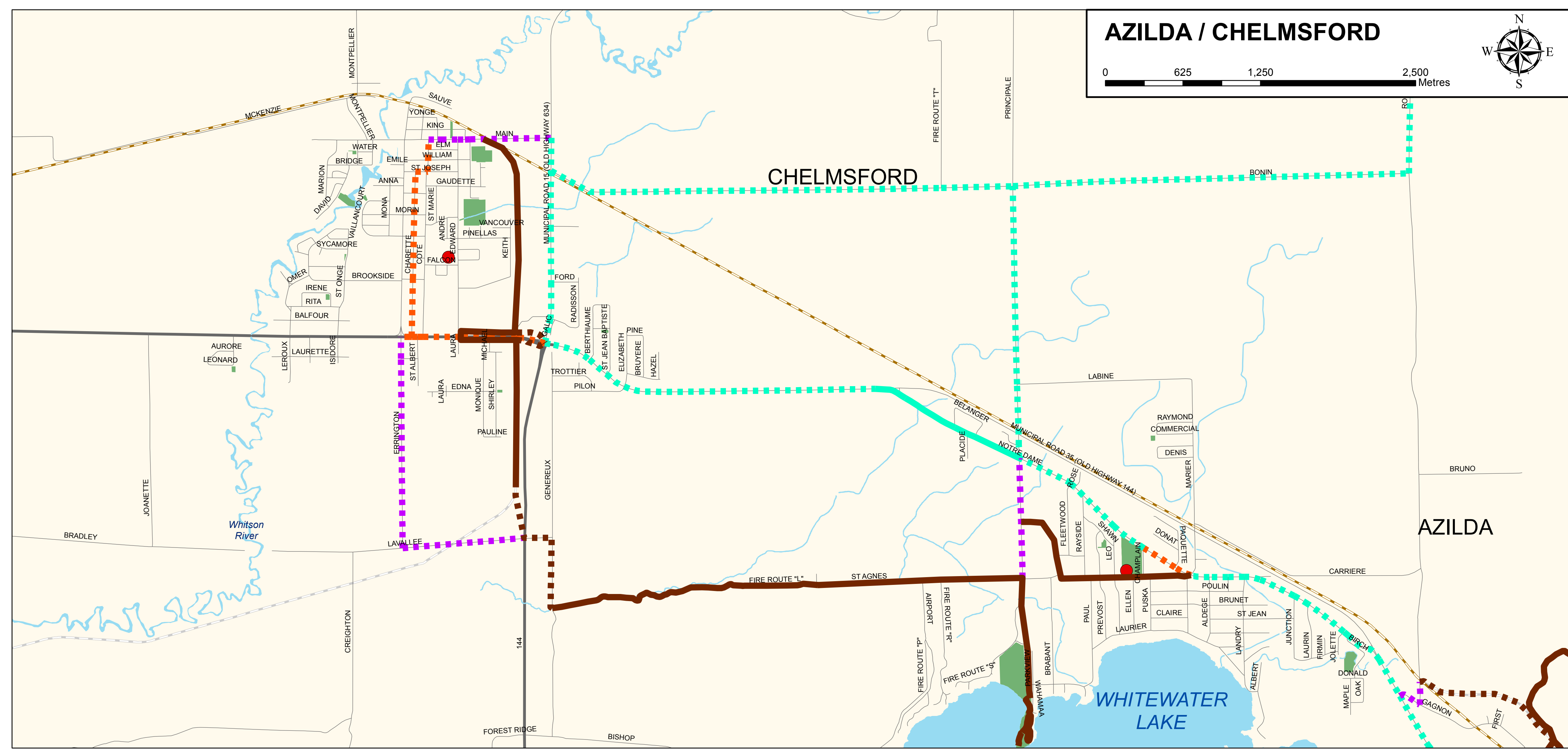
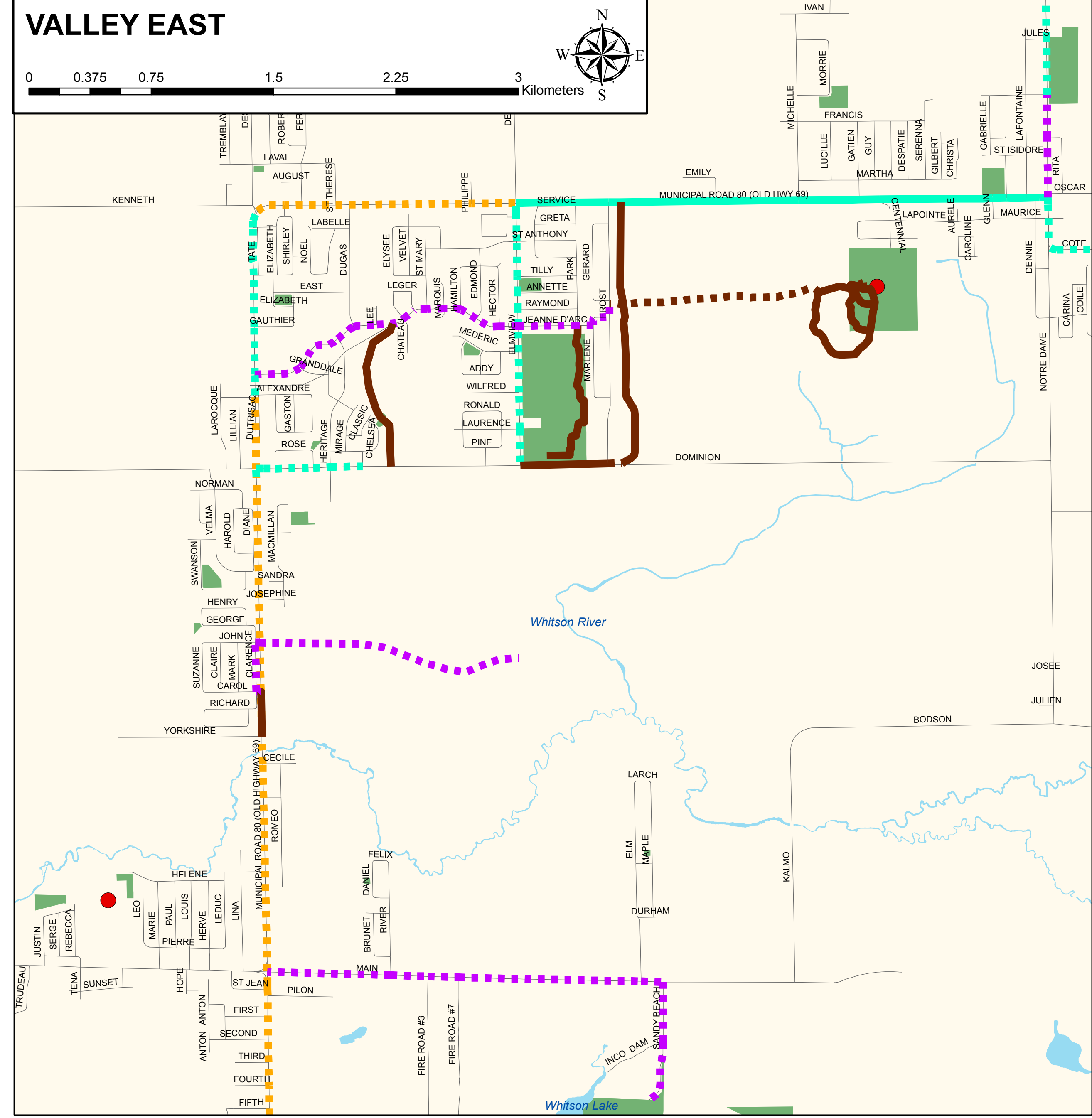
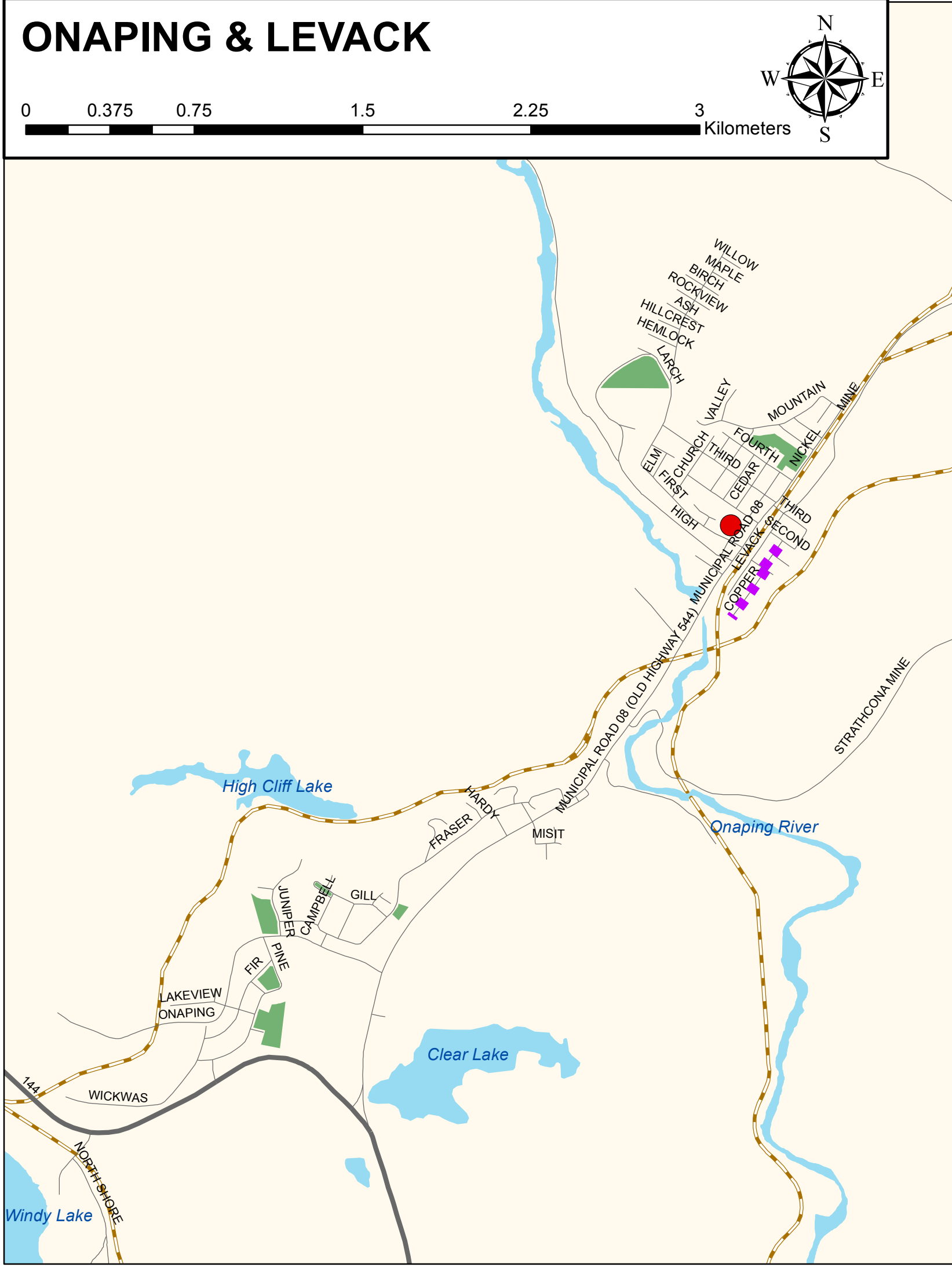
Other

- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road / Highway
- Local Road
- Active Railway
- Abandoned Railway

A design feasibility study will be required prior to implementation of active transportation facilities in order to confirm the recommended facility type for each route segment. The outcome of the feasibility study may be a change in facility type, an interim solution, or a recommendation to consider an alternative route.

The City should conduct an environmental assessment (EA) to confirm the need for this connection relative to other options. If identified, an EA will also define the corridor for the Southern University Link, in order to facilitate an orderly development plan which is in line with the long term road network concept for the area.





Legend

On-Road Facilities

- Existing Bike Lane
- Proposed Bike Lane
- Existing Signed Bike Route with Paved Shoulder
- Proposed Signed Bike Route with Paved Shoulder
- Existing Signed Bike Route
- Proposed Signed Bike Route
- Existing Edgeline
- Proposed Edgeline

Separated Facilities

- Existing Cycle Track
- Proposed Cycle Track

Off-Road Facilities

- Existing Multi-Use Trail
- Proposed Multi-Use Trail

Regional Trails and Routes

- Trans Canada Trail

Destinations

- Airport
- Arena / Community Centre
- College/University

Other

- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road / Highway
- Local Road
- Active Railway
- Abandoned Railway

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Legend

Network Phasing

- Existing
- Phase 1 (0 - 5 Years)
- Phase 2 (6 - 10 Years)
- Phase 3 (11 - 15+ Years)

Destinations

- ⊕ Airport
- Arena / Community Centre
- College / University

Other

- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road/ Highway
- Local Road
- Active Railway
- Abandoned Railway

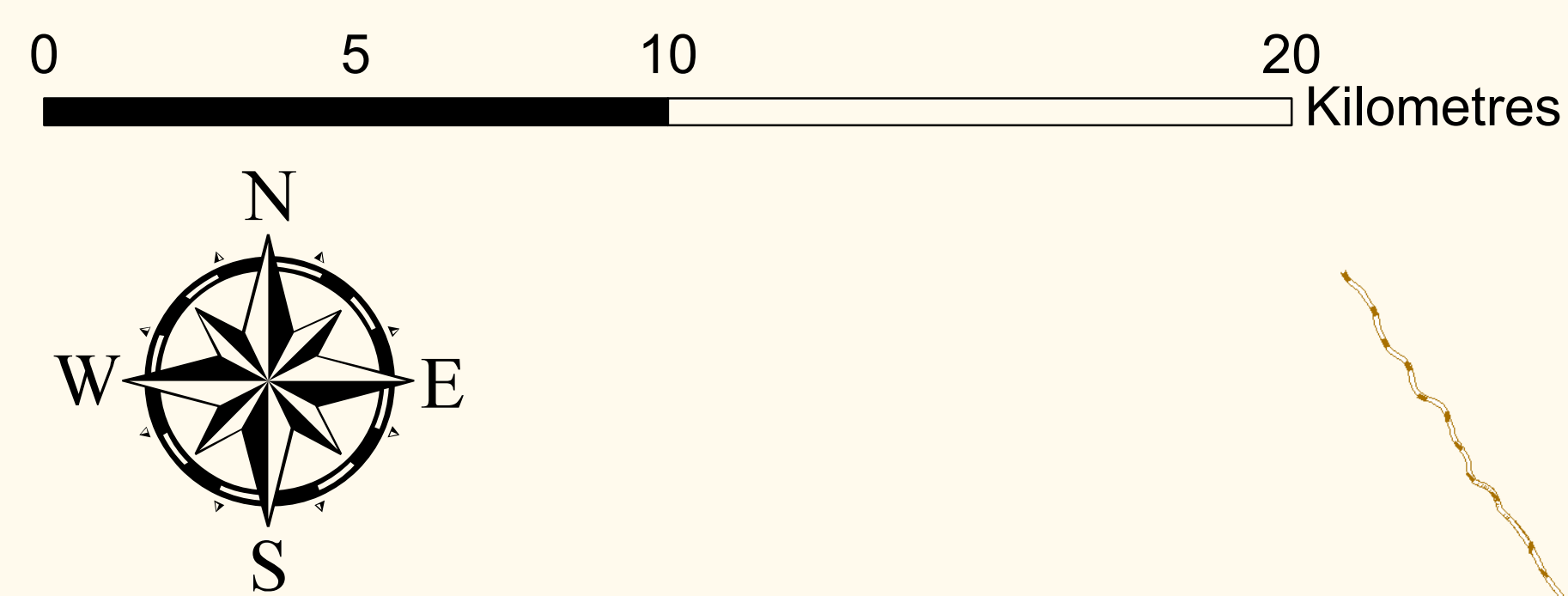
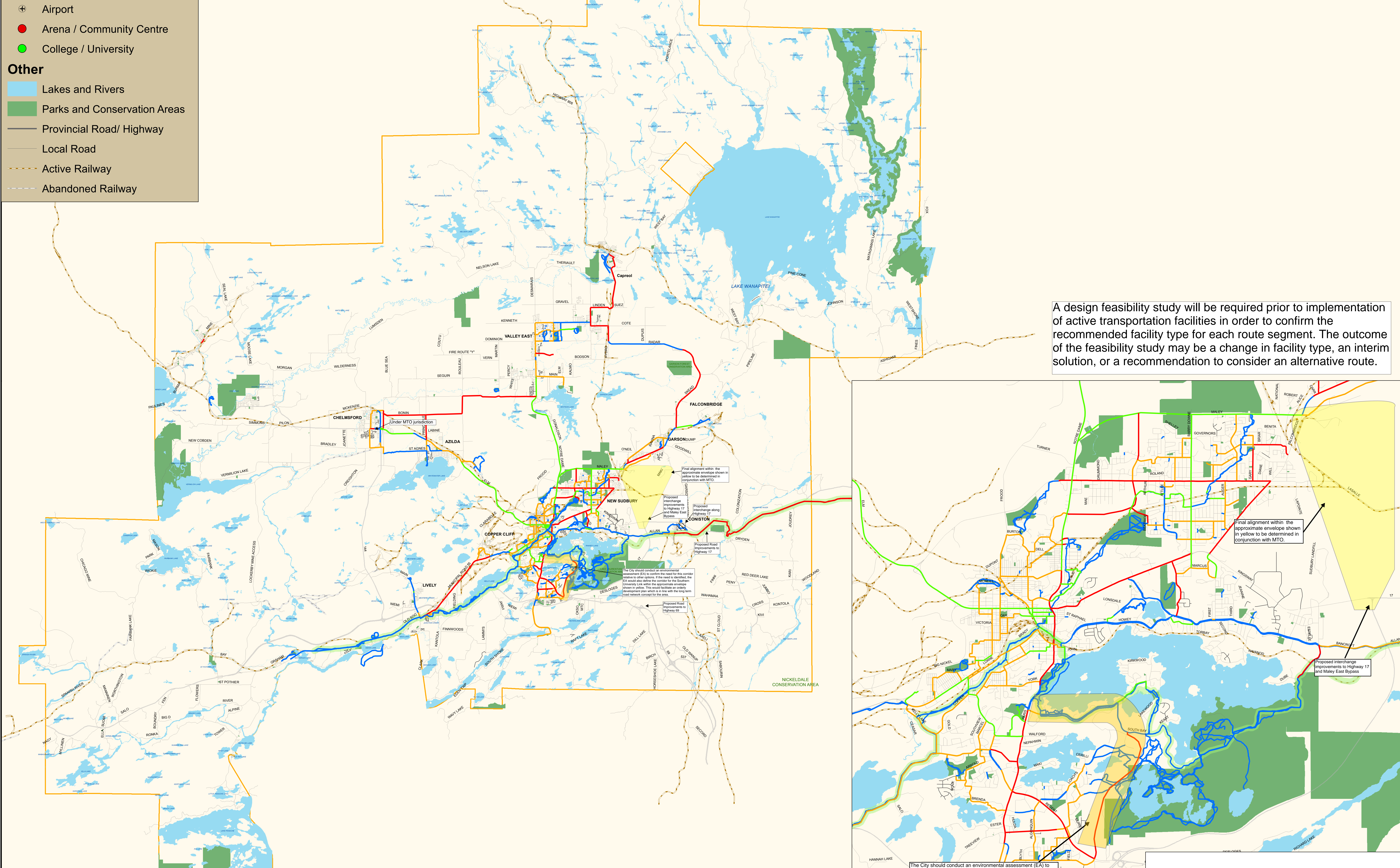
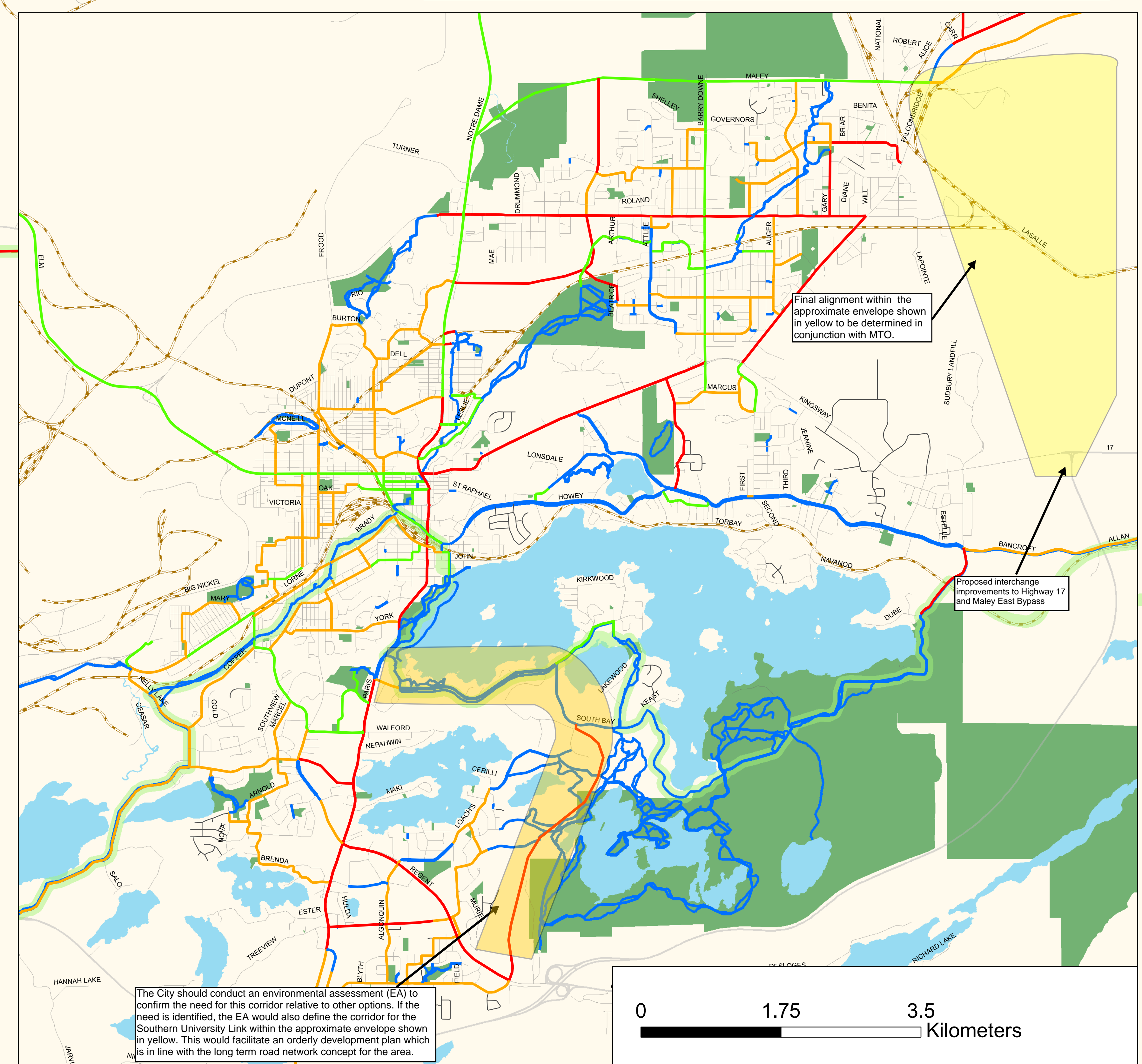


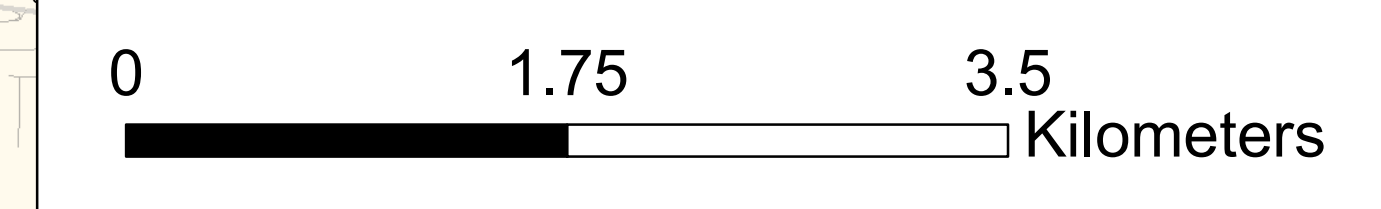
Figure 72
Greater Sudbury Transportation Study
Cycling and Pedestrian - Phasing



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Figure 73
Cycling and Pedestrian Network
Downtown Enlargement - Phasing



NEW SUDBURY CONSERVATION AREA

DOWNTOWN

RAMSEY LAKE

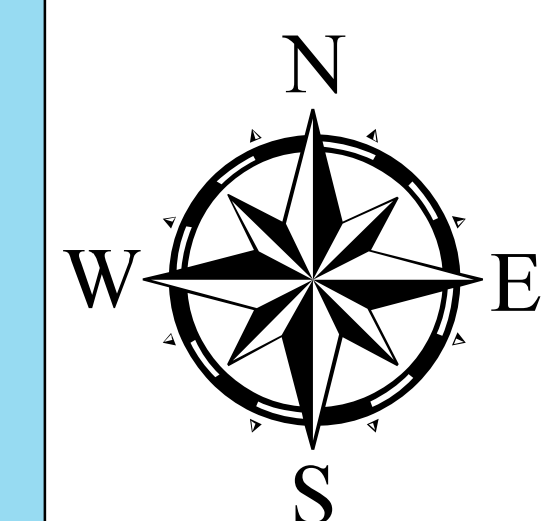
JUNCTION CREEK

Bell Park Path - Cycling Path

Jim Gordon Boardwalk - Hiking / Walking Path

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Greater Grand Sudbury



Figure 74 Cycling and Pedestrian Network New Sudbury Enlargement - Phasing

Legend

Network Phasing

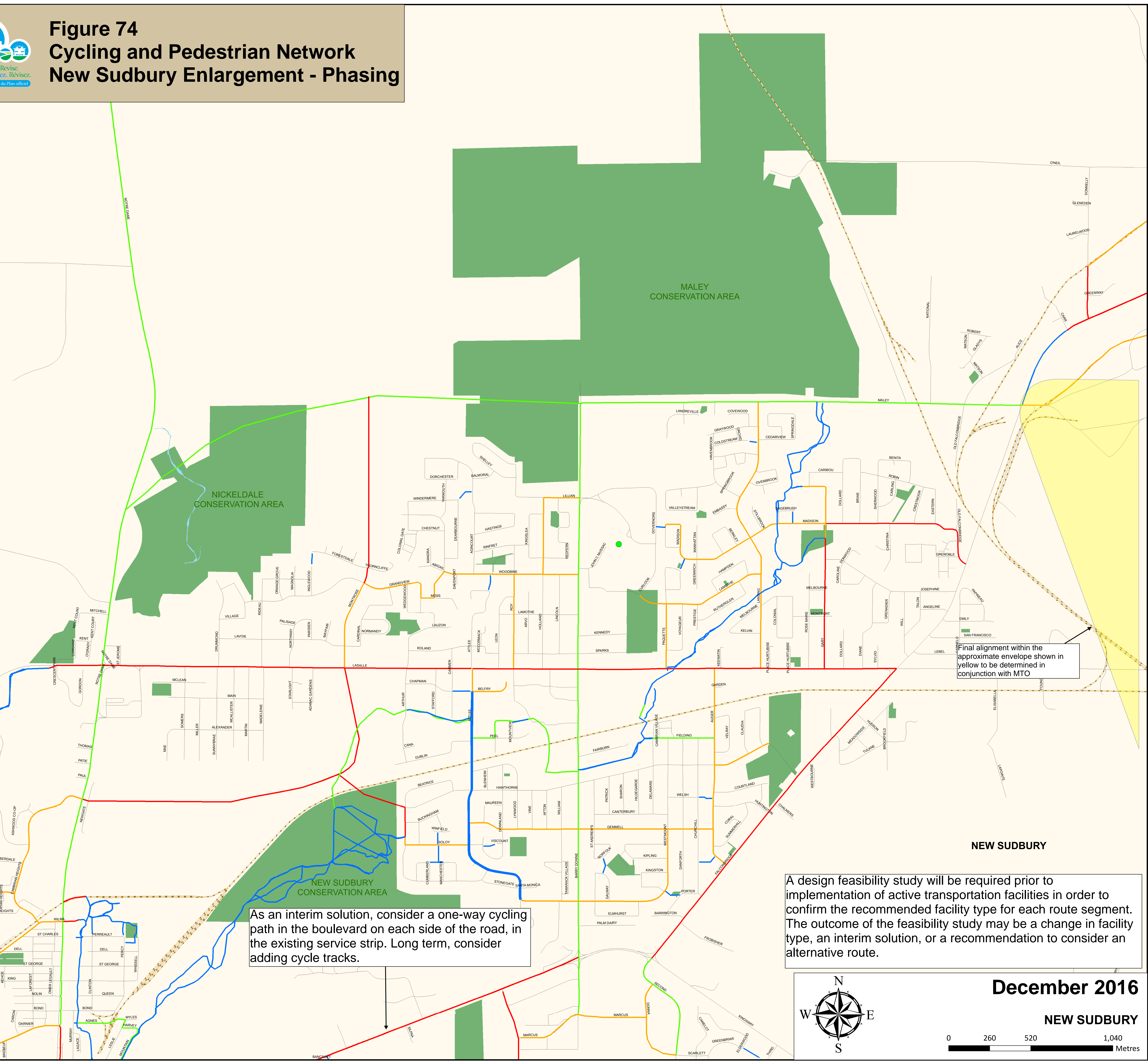
- Existing
- Phase 1 (0 - 5 Years)
- Phase 2 (6 - 10 Years)
- Phase 3 (11 - 15+ Years)

Destinations

- Airport
- Arena / Community Centre
- College / University

Other

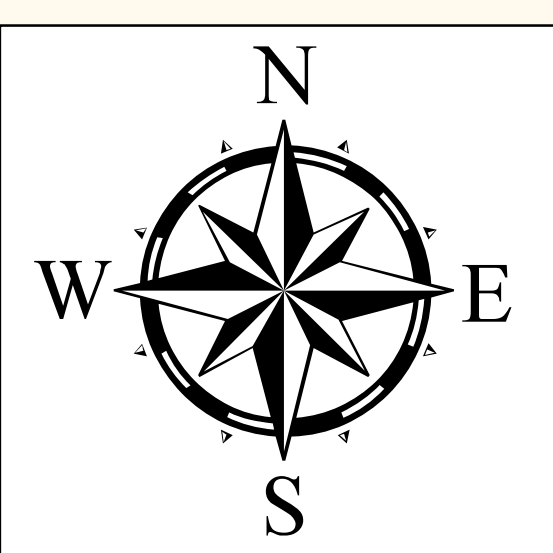
- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road / Highway
- Local Road
- Active Railway
- Abandoned Railway



Final alignment within the approximate envelope shown in yellow to be determined in conjunction with MTO

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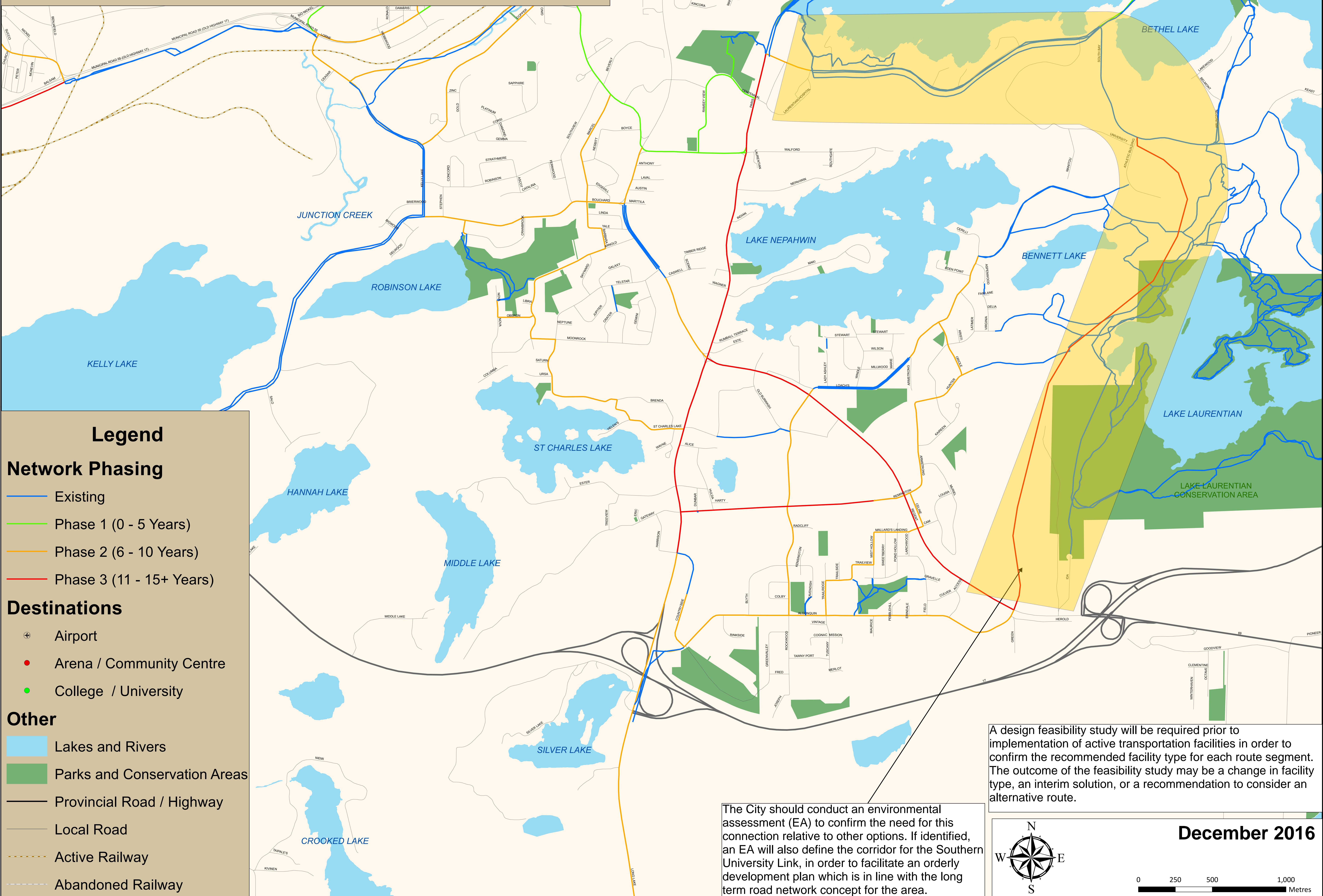
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NEW SUDBURY





Legend

Network Phasing

- Existing
- Phase 1 (0 - 5 Years)
- Phase 2 (6 - 10 Years)
- Phase 3 (11 - 15+ Years)

Destinations

- Airport
- Arena / Community Centre
- College / University

Other

- Lakes and Rivers
- Parks and Conservation Areas
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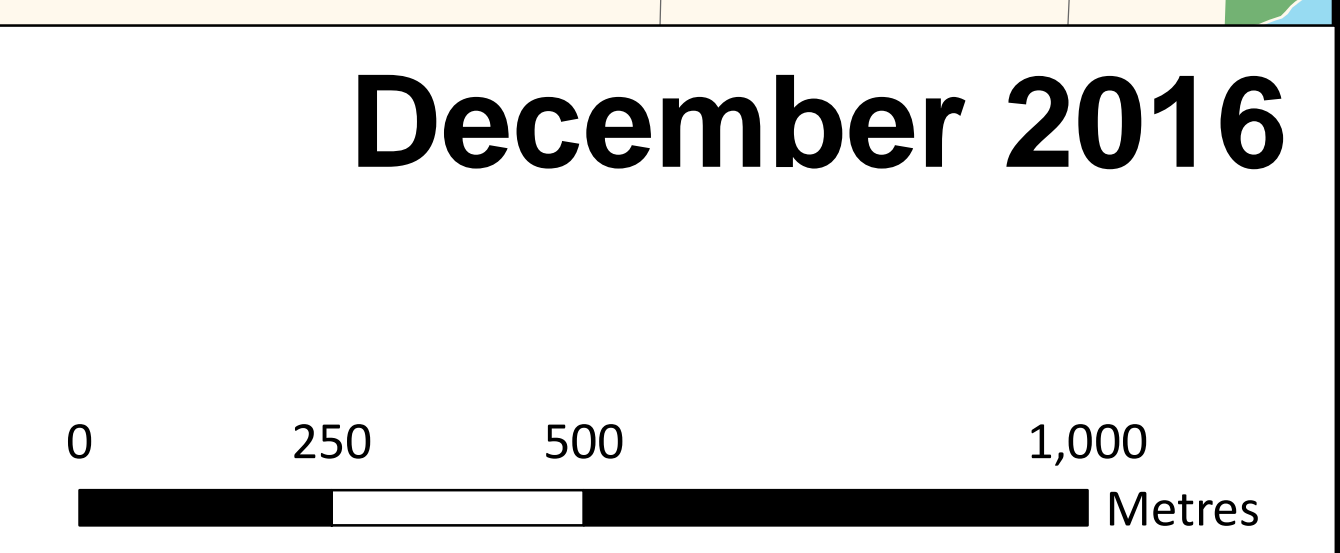
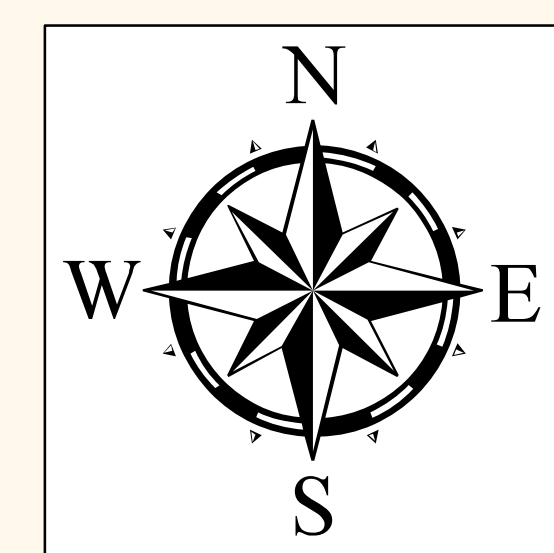
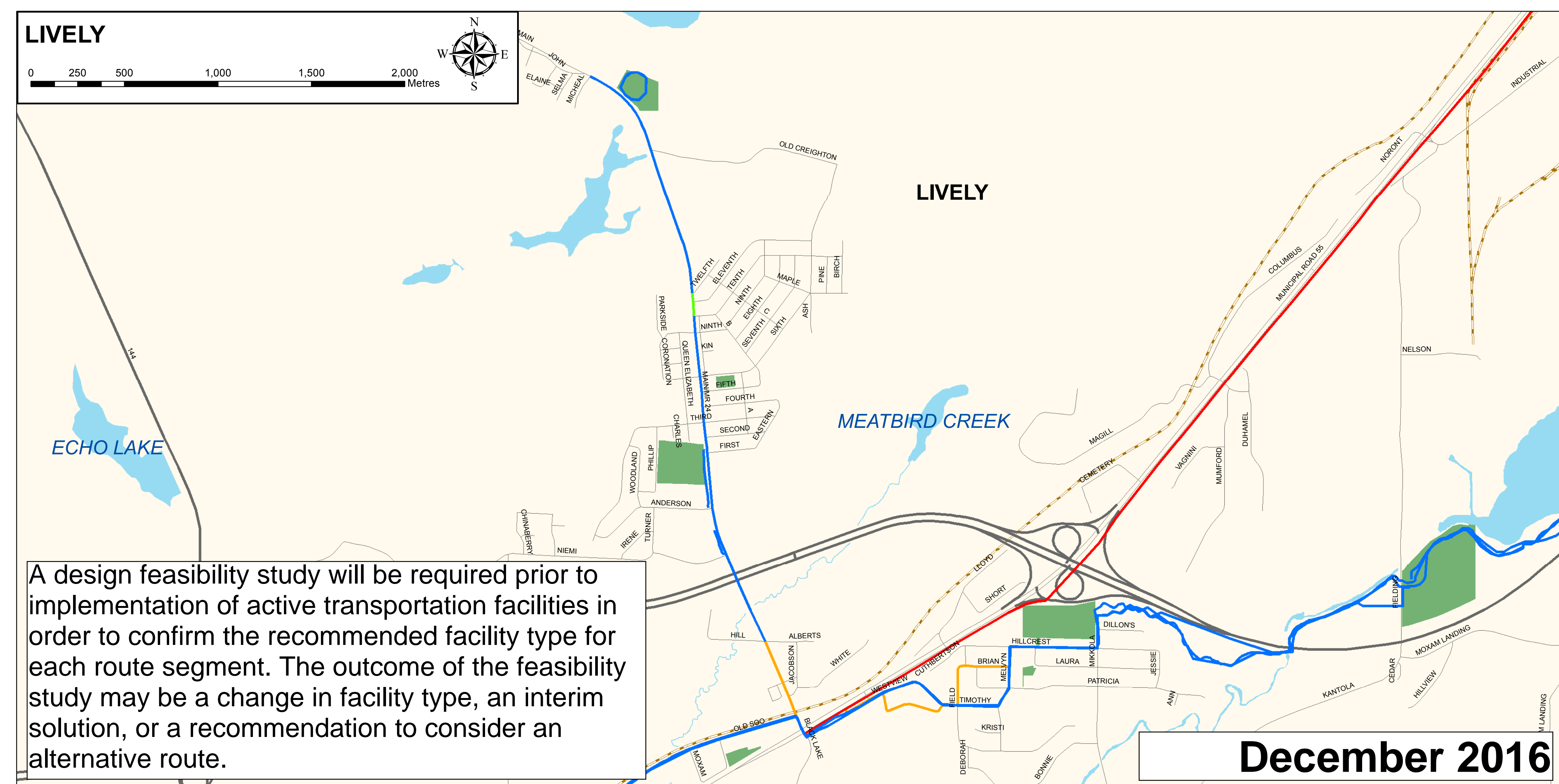
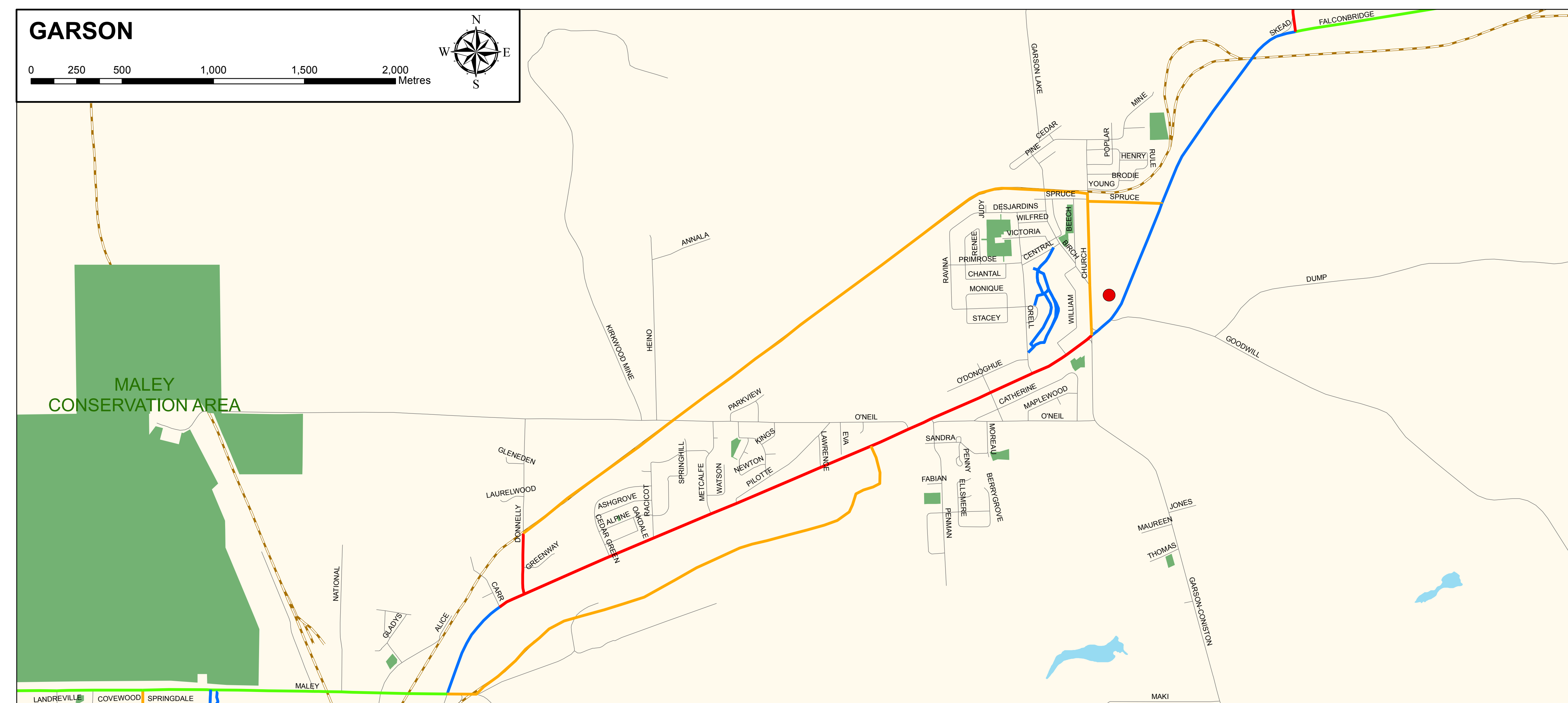
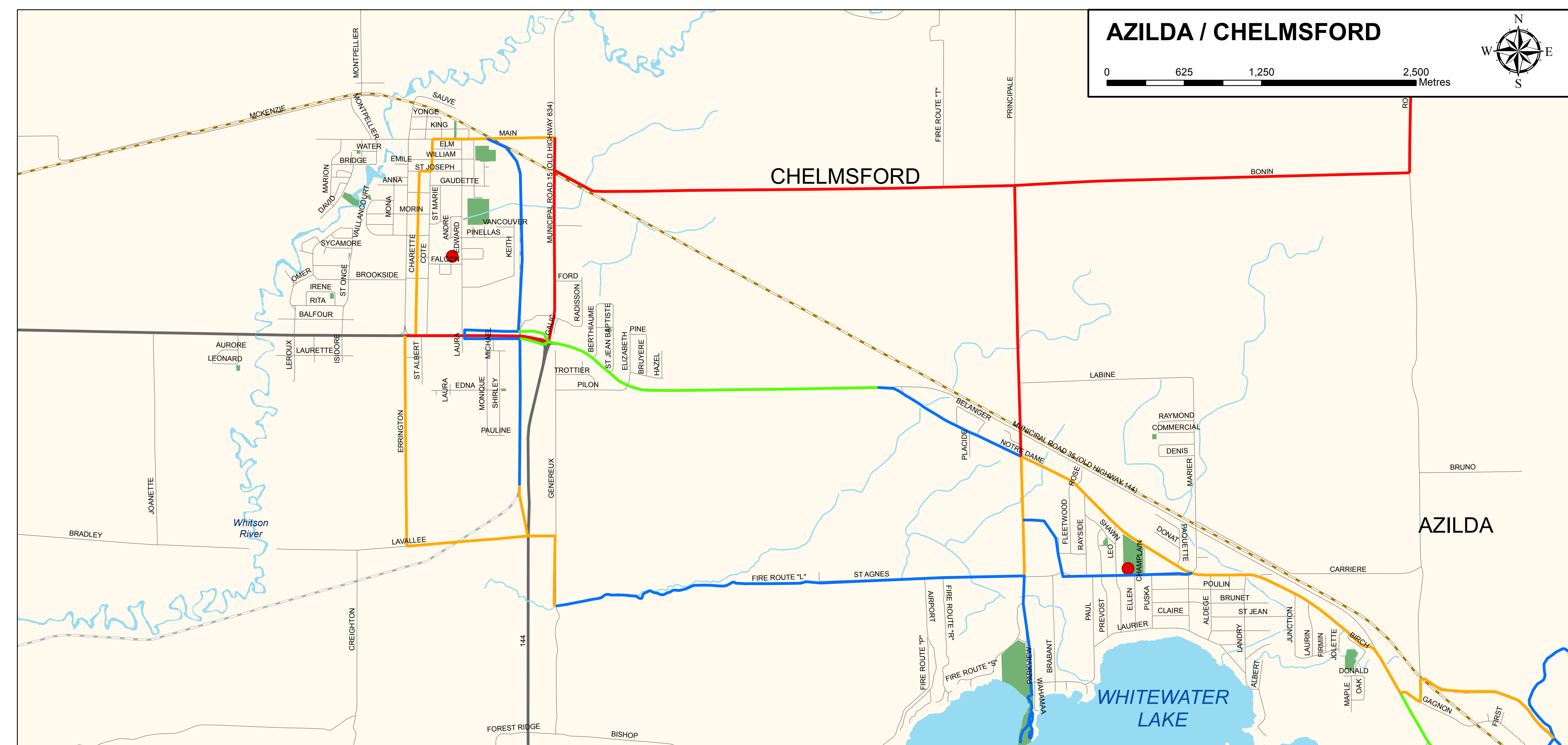
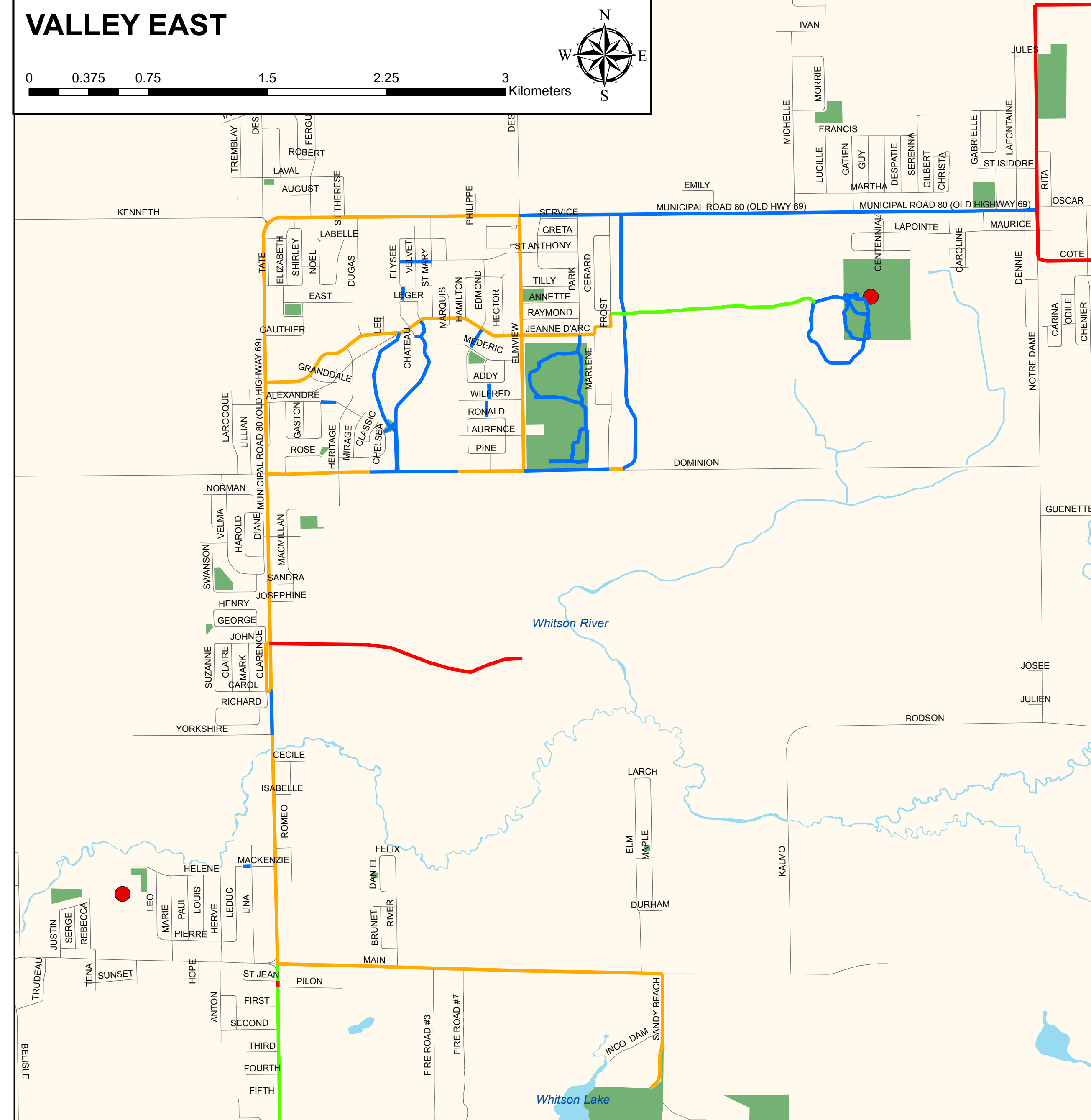
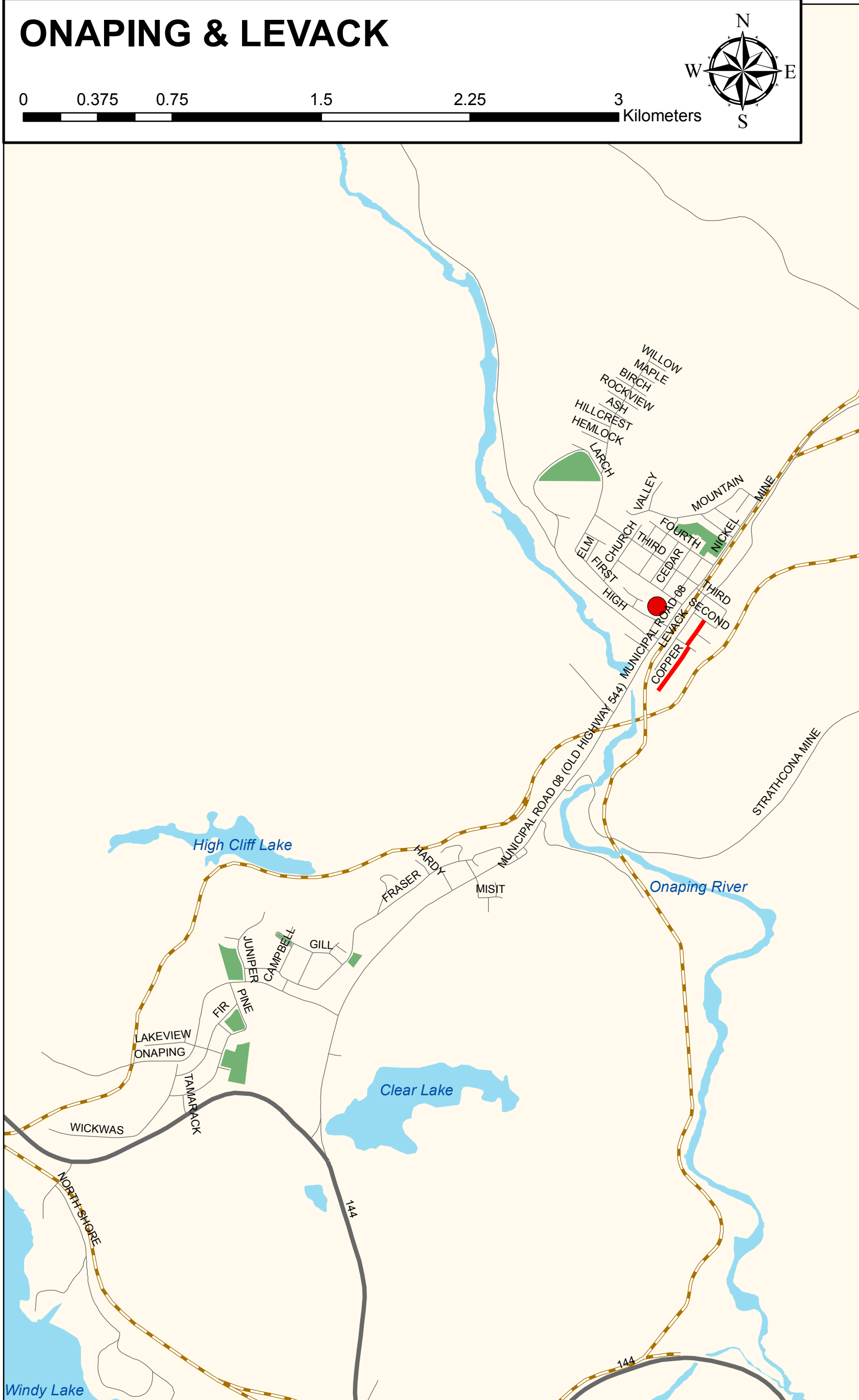


Figure 76 Cycling and Pedestrian Network Phasing - Enlargement Areas



Legend

Network Phasing

- Existing
- Phase 1 (0 - 5 Years)
- Phase 2 (6 - 10 Years)
- Phase 3 (11 - 20+ Years)

Destinations

- Airport
- Arena / Community Centre
- College/University

Other

- Lakes and Rivers
- Parks and Conservation Areas
- Provincial Road / Highway
- Local Road
- Active Railway
- Abandoned Railway

A design feasibility study will be required prior to implementation of active transportation facilities in order to confirm the recommended facility type for each route segment. The outcome of the feasibility study may be a change in facility type, an interim solution, or a recommendation to consider an alternative route.

9.4.1 *Establishing Priorities*

An efficient reporting and implementation structure is vital to ensure that the decision-making process associated with the cycling and pedestrian network is managed effectively and all relevant City and local departments are appropriately engaged. The suggested structure for managing and implementing the cycling and pedestrian network would see interaction between the Roads and Transportation Services Department and Community and Strategic Planning Department as well as interaction with groups outside of the City departments, such as the Sustainable Mobility Advisory Panel, the Rainbow Routes Association, the Trans Canada Trail Organization, Sudbury and District Public Health Unit and the Greater Sudbury Police.

Roles & Responsibilities:

- A core team will be formed by the City's Community and Strategic Planning Services as well as the Roads and Transportation Services. This team would be responsible for overseeing recommendations made regarding funding and priorities as well as other active transportation-related initiatives; and
- A group of additional committee members including local agencies and organizations have been identified who will be responsible for presenting the trail and active transportation related ideas from the community.



9.4.2 Implementation Recommendations

Implementation recommendations are provided in **Table 46**.

Table 46: Recommendations and Timelines for Implementation of the AT Network

	Recommendation	Timeline
1	The City of Greater Sudbury should adopt the AT network implementation plan and use it to guide the implementation of the network over time.	Short term / ongoing
2	The City of Greater Sudbury should take the lead in establishing an Inter-Municipal Active Transportation Working Group including but not limited to staff representatives from the City, Sudbury District Public Health Unit and other key agencies as determined.	Short term
3	The City of Greater Sudbury should continue to work with representatives from local advocacy groups, citizens-at-large, local businesses and other key groups as determined to further active transportation goals and objectives.	Short term
4	The City of Greater Sudbury should coordinate the AT network implementation with the City's Roads and Transportation Services Department as well as the Community and Strategic Planning Department and other Departments.	Short term / ongoing
5	The City of Greater Sudbury should explore the development of the role of an Active Transportation coordinator who would be responsible for the "championing" of AT related issues, initiatives and programming throughout the City. This role could be a new full-time position at the City.	Short term
6	The Active Transportation Coordinator would be responsible for the implementation of the AT network and would provide updates on the progress of the study when necessary to stakeholders and interest groups.	Short term / ongoing
7	The AT Plan should be reviewed and given consideration when road improvements and other capital infrastructure projects are programmed.	Short term
8	As an interim solution in advance of future road improvements to install cycle tracks, the City of Greater Sudbury should modify current by-laws to continue to restrict cycling on sidewalks for adults but not prohibiting cycling on paved portions of boulevards where it is safe to do so.	Long term
9	As part of demonstrating leadership, the City should provide bicycle parking facilities at public buildings under their ownership.	Short term
10	The City, in partnership with local partners should investigate the potential to develop a bicycle parking program whereby bicycle racks would be installed in locations where there is a demonstrated need for bicycle parking facilities.	Short term
11	The City should adopt the proposed network phasing strategy as the guide for implementing the AT network.	Short term
12	In addition to capital funding, the City of Greater Sudbury should explore other outside partnerships, cost-sharing and funding opportunities for the implementation of the AT Network.	Short term
13	The City of Greater Sudbury should recognize that future refinement of the proposed AT network will be required. This is consistent with a goal of ensuring that the plan is flexible and can respond to changes and new opportunities.	Short to medium term

