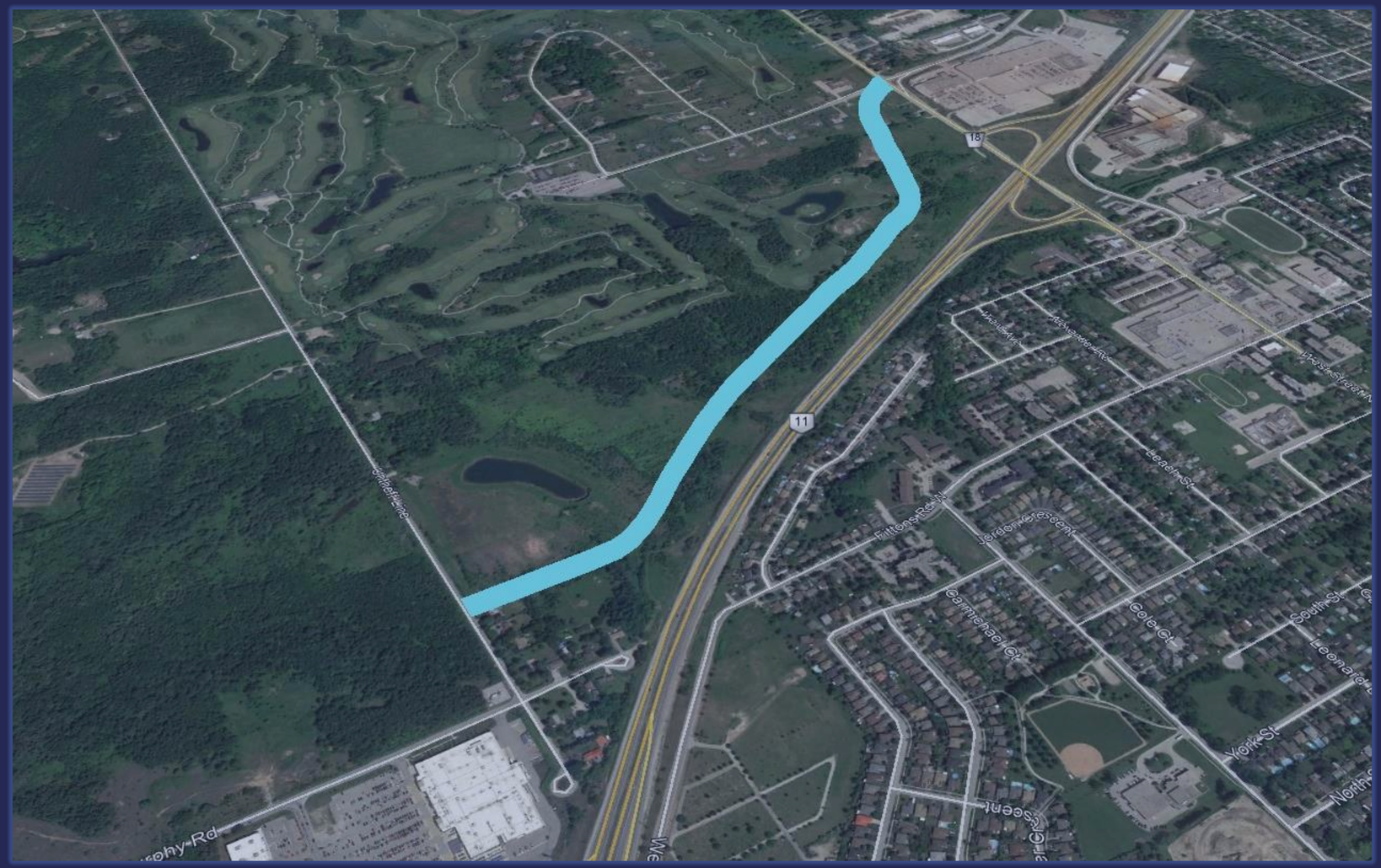
Public Information Centre



ORILLIA

INCH FARM ARTERIAL ROAD AND INDUSTRIAL EMPLOYMENT LAND Class Environmental Assessment

TATHAM ENGINEERING

October 29, 2020

Welcome

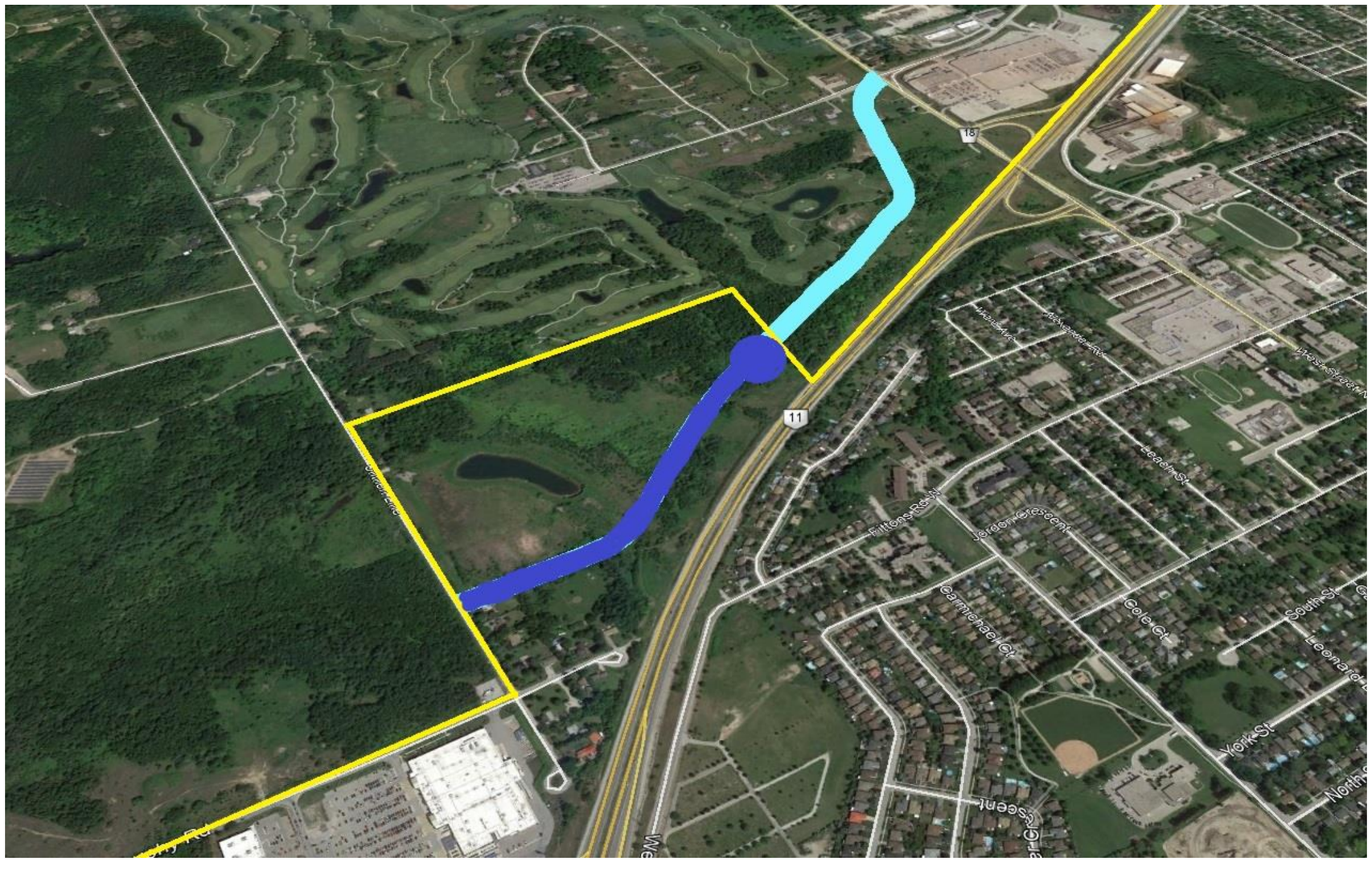
- This Public Information Centre will:
  - establish channels of communication with public & stakeholders
  - detail the study area, study objectives & purpose
  - present the need & justification for the study and issues to be resolved
  - identify potential environmental impacts & mitigation techniques
  - Identify alternative solutions
  - identify a recommended solution for public review
  - seek input & comments for consideration in the selection of the final preferred solution

- Public & Stakeholders should:
  - review the presentation material and background information
  - ask questions of the City and/or Consultant through submission of a comment sheet
  - confirm whether or not you want to be kept informed of the study process
  - City of Orillia Project Website

(https://www.orillia.ca/en/city-hall/inchfarm-arterial-road.aspx)

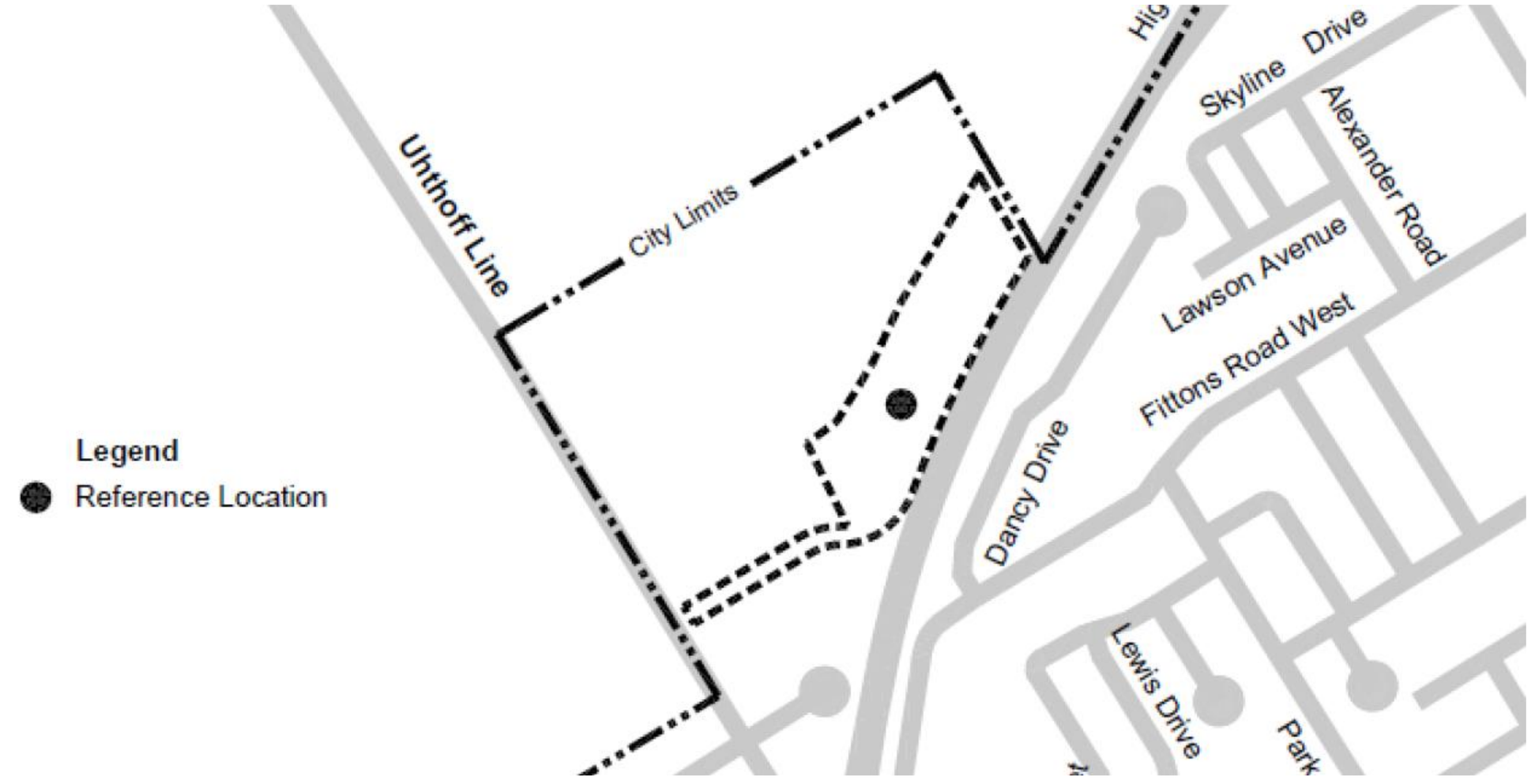
Background

- *City of Orillia 2019 Multi-modal Transportation Master Plan Update (MMTMP)*
  - Project 19: Extension of Murphy Road parallel to Highway 11 to connect with existing Brodie Drive, providing a connection between Highway 12 and Burnside Line/West Street.
  - Note this study only includes the section of the road extension within the City limits;



Background

- In June 2020, the City retained Tatham Engineering to complete the Municipal Class Environmental Assessment and Detailed Design for the Inch Farm Arterial Road and Industrial Park.



Municipal Class EA Process

- The *Multi-modal Transportation Master Plan, 2019* was completed in accordance with the Class EA process.
  - Phases 1 and 2 completed. Completion of the MMTMP EA identified the need for this project.
- Inch Arterial Road and Inch Industrial Park Servicing is being undertaken as a Schedule C process.
  - Phases 3 to 5 will be completed by April 2021.

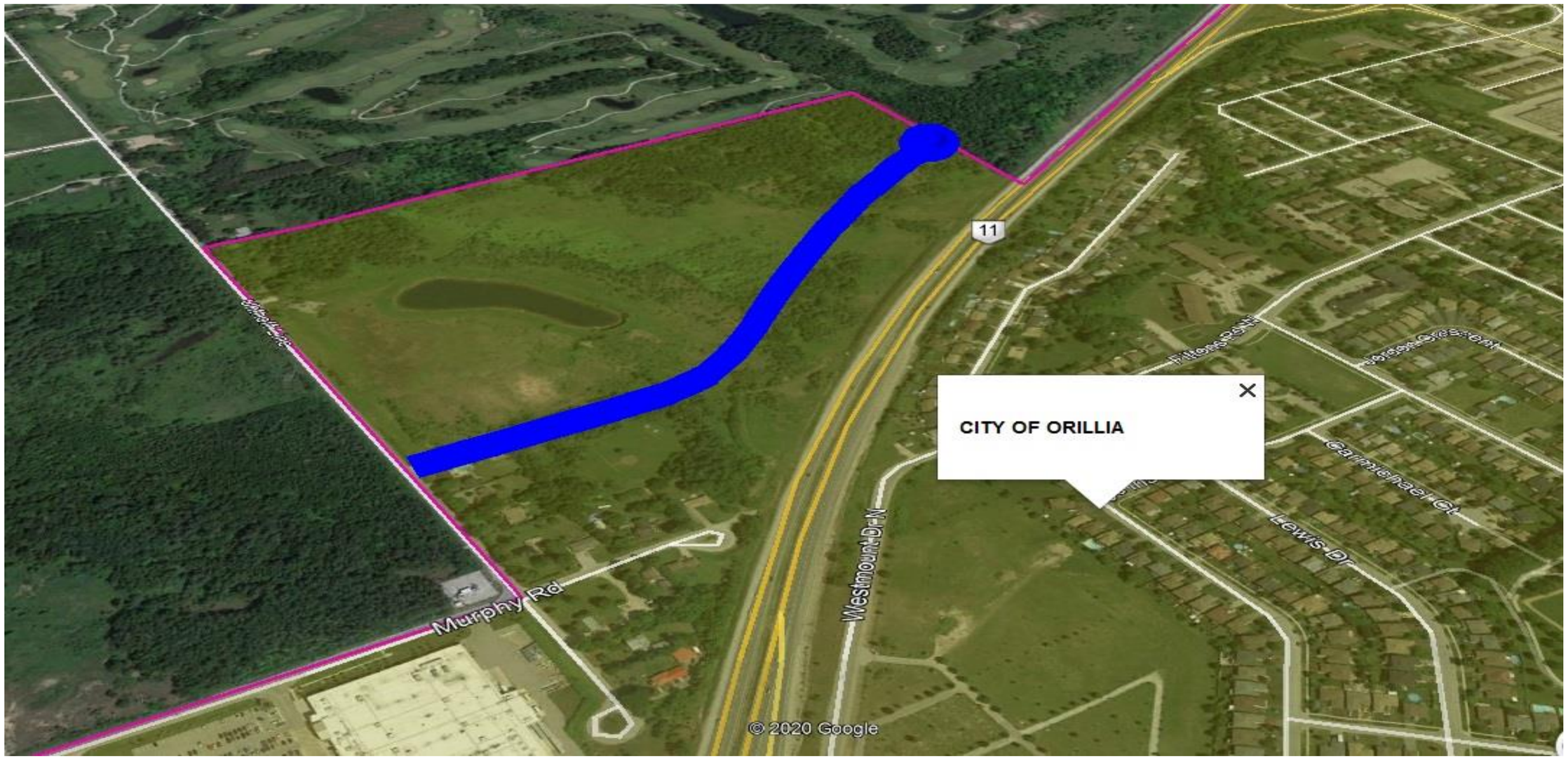
Study Objective & Purpose

- The **OBJECTIVE** of the study is to facilitate the implementation of the project considering:
  1. The goals identified in the Multi-modal Transportation Master Plan Update, 2019 and supporting studies;
  2. The impacts to adjacent property owners through evaluation of physical, natural, social, cultural & heritage, and economic environments;
  3. The needs of motorists, pedestrians, and cyclists;
  4. The needs of transit operations;
  5. The impacts to climate change;

- The **PURPOSE** of the study is to:
  1. identify the location, extent and sensitivity of affected environments;
  2. develop cost effective alternative solutions to transportation operations, servicing, and infrastructure implementation;
  3. assess the alternatives given potential environmental impacts;
  4. identify the preferred solution;
  5. establish measures to mitigate impacts;
  6. satisfy the Class EA requirements;

Study Area

- The project limits are from Uhthoff Line easterly to the boundary between the City of Orillia and the Township of Severn.
  - Includes provision for water and sanitary sewer servicing from Murphy Road, northerly along Uhthoff Line to the intersection with the proposed Arterial Road



Design Components

- The study evaluates several components which together will provide a framework for the detail design stage of the project. The design components are generally summarized as follows:

1. *TRANSPORTATION*
2. *DRAINAGE*
3. *SERVICING*

Evaluation Criteria

- The study will consider implementation of the project components while addressing the following evaluation criteria:

1. **PHYSICAL ENVIRONMENT**
    1. Traffic operations;
    2. Cycling operations;
    3. Pedestrian operations;
    4. Transit operations;
    5. Driveway operations;
    6. Stormwater management;
    7. Utilities;

2. **NATURAL ENVIRONMENT**
    1. Fisheries & Aquatic Impacts;
    2. Wildlife & Terrestrial Impacts;
    3. Vegetation Impacts;

3. **SOCIAL ENVIRONMENT**
    1. Land Use;
    2. Property/Development Impacts;
    3. Aesthetics;
    4. Noise Impacts;
    5. Construction Impacts;

4. **CULTURAL/HERITAGE ENVIRONMENT**
    1. Archaeological & Heritage Impacts;

5. **ECONOMIC ENVIRONMENT**
    1. Construction Costs;
    2. Maintenance Costs;
    3. Land Acquisition Costs;

6. **CLIMATE CHANGE**

Natural Environment

- Field investigation completed by Michalski Nielsen Associates in summer/fall 2020
- Existing conditions
  - study area is vegetated with a mix of common plant species, widespread and secure in Ontario;
  - Potential presence of bat habitat;
  - No endangered or threatened species were observed;
  - Tributary creeks are both intermittent and non-fish bearing;
  - North tributary creek has valley, open-space feature bearing some wildlife habitat;

- Mitigation
  - Adhere to timing window for cutting and removing trees (October 15 – April 15);
  - Implement Environmentally Protected (EP) area along limits of North Tributary Creek;
  - Span entirety of north tributary valley area with an open bottom structure;

Cultural/Heritage Environment

- Existing conditions
  - assessment based on Stage 1 Archaeological/Heritage assessment
    1. Desktop exercise by Archaeologist to determine if there is potential for archaeological sites on the property;
    2. Site visits to inspect the current condition of the property;
    3. Contact the Ministry of Heritage, Sport, Tourism, and Culture Industries to confirm if there are any known archaeological sites near the property;
    4. Determine if a Stage 2 assessment is required;

- no archaeological potential found
  - No further assessment required

- Potential impacts to Cultural/Heritage Environment
  - no known impacts

Social Environments

- Existing conditions
  - Vacant, zoned M3 Business Park Industrial
  - Adjacent land uses include:
    - R2, Residential;
    - Highway 11;
    - OS-1, Open Space;
  - all residences front adjacent streets (Murphy Road and Uhthoff Line)
  - Highway 11 is primary noise source
- Proposed conditions
  - Arterial Road;
  - M3, Business Park Industrial;

Note: Noise impact studies will be completed on a site specific basis as the business park lots are developed

- Potential impacts to Social Environment
  - potential property impacts
  - potential noise impacts

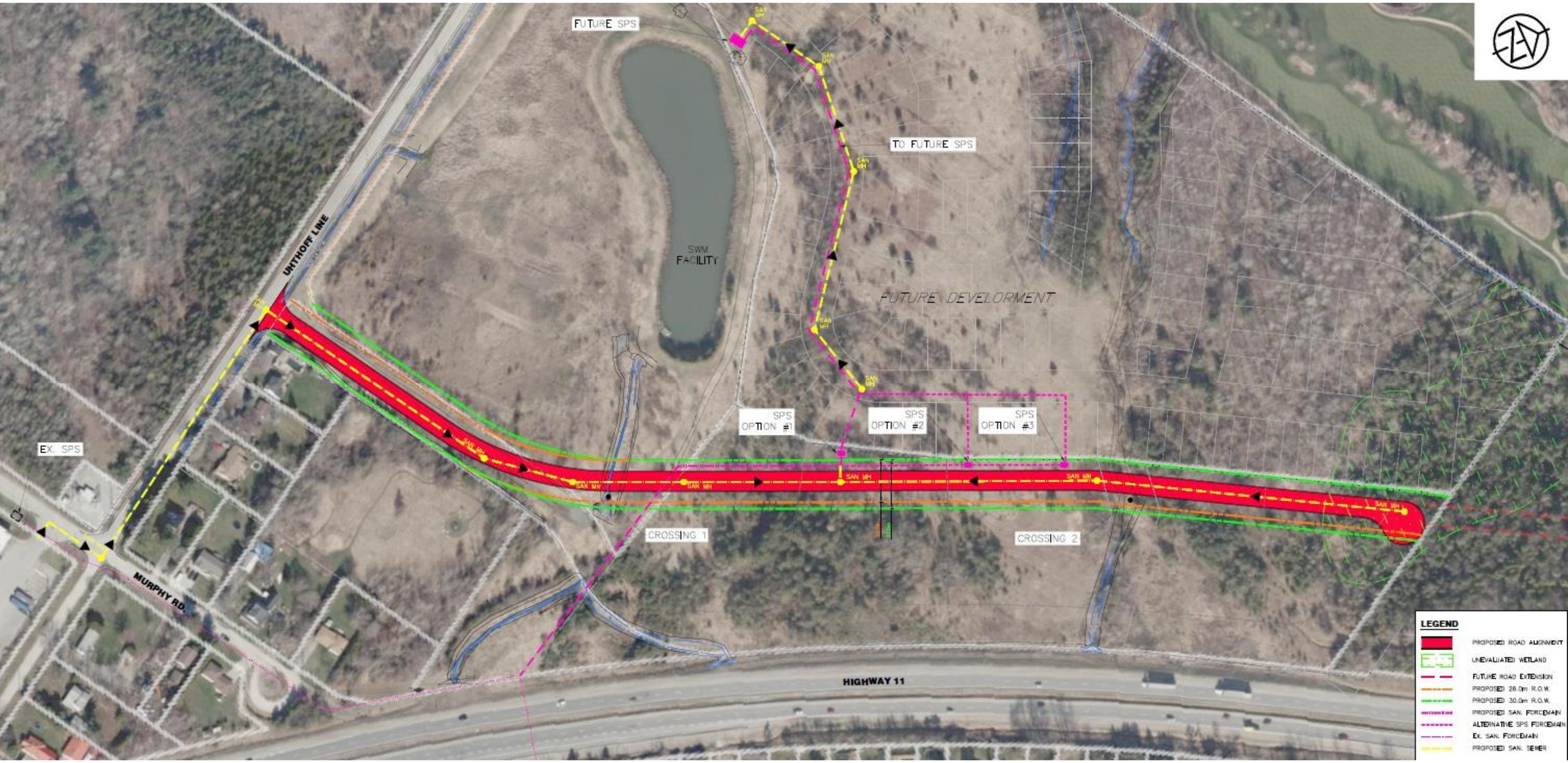
Design Component: Transportation

- **TRANSPORTATION** aspects of the study consider:
  1. Road alignment;
     1. East alignment along Highway 11;
     2. West alignment along west property limit;
     3. Middle alignment;
  2. Road cross-section;
     1. 3-Lane;
     2. 4-Lane;
     3. 5-Lane;
  3. Pedestrian/Cycling
     1. Sidewalk(s);
     2. Bicycle Lane(s);
     3. Multi-Use Trail(s);

- 2020 Forecast Traffic Volumes: 400 vehicles per hour (AM Peak Hour)
  625 vehicles per hour (PM Peak Hour)
- 2040 Forecast Traffic Volumes: 550 vehicles per hour (AM Peak Hour)
  775 vehicles per hour (PM Peak Hour)

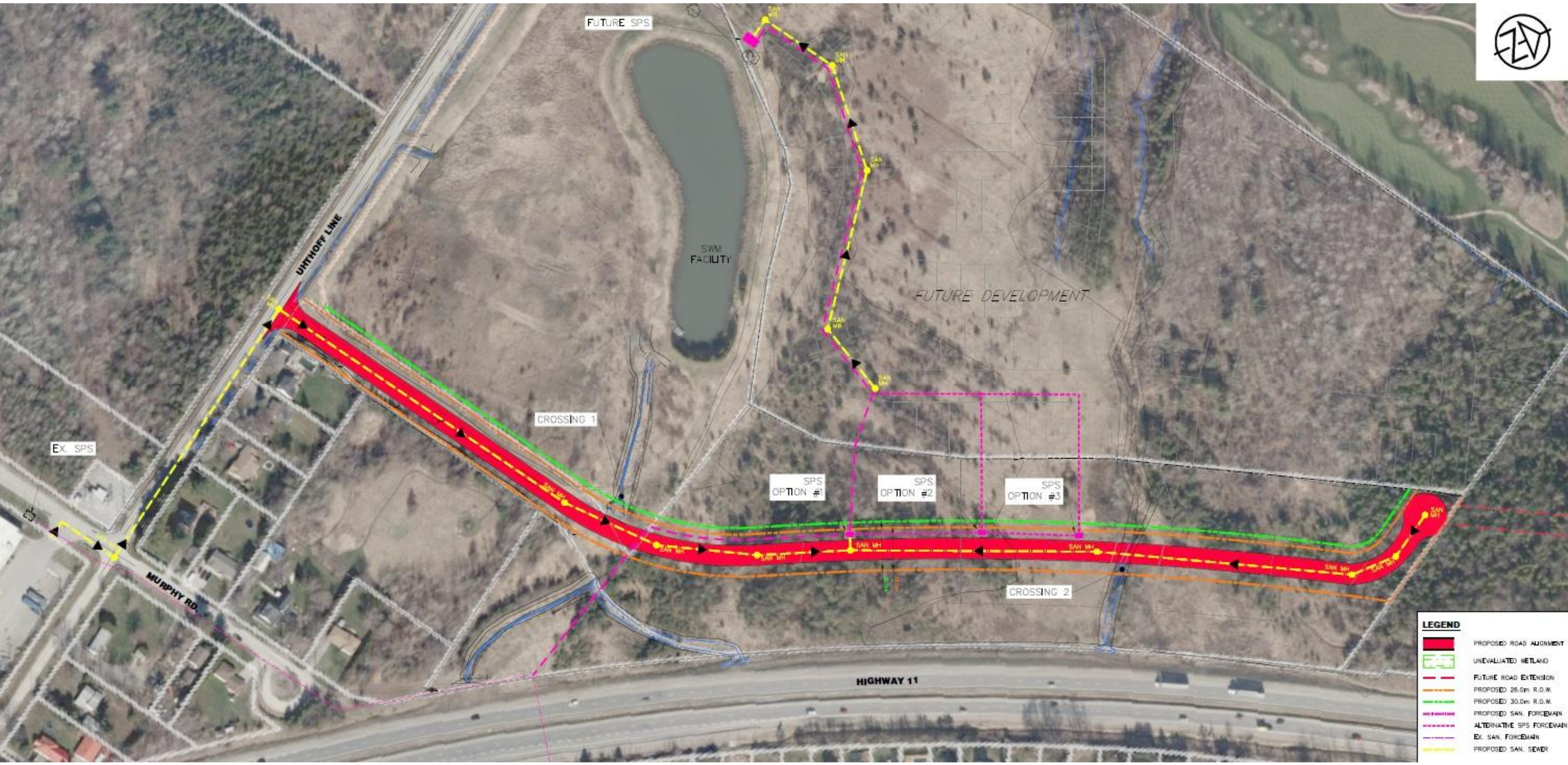
Alternative Solutions: Road Alignment

Option 1: West Alignment



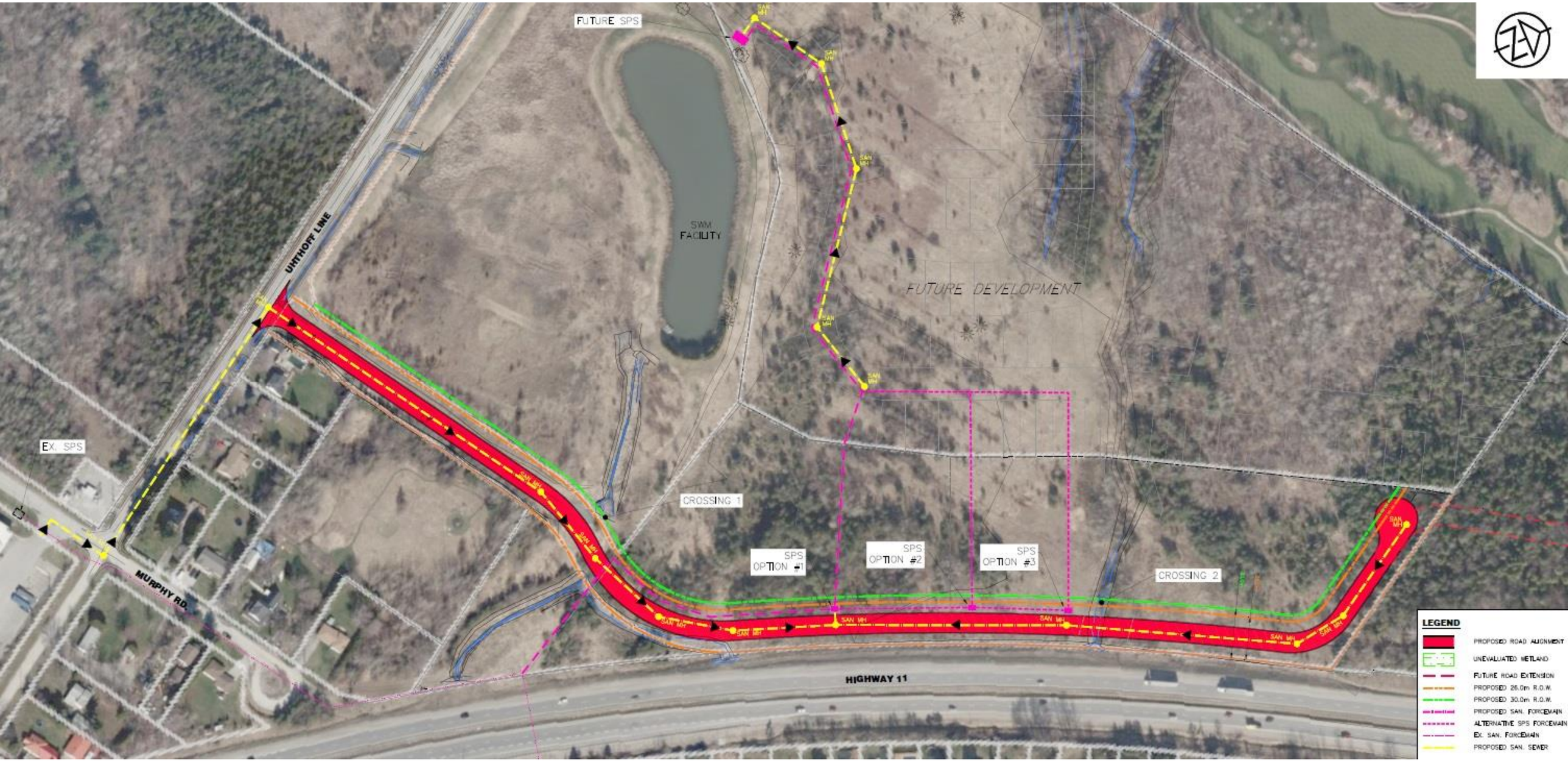
Alternative Solutions: Road Alignment

Option 2: Middle Alignment



Alternative Solutions: Road Alignment

Option 3: East Alignment



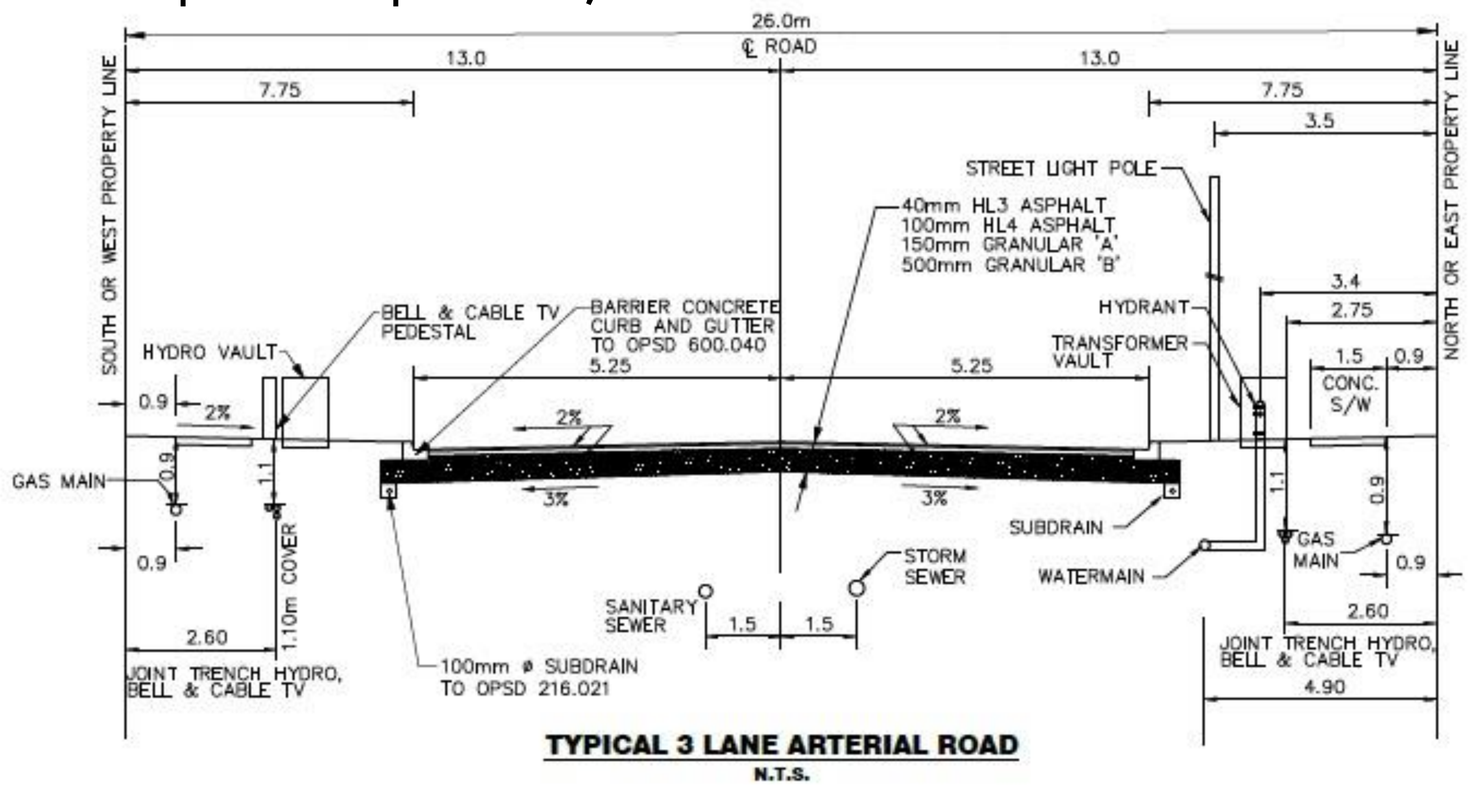
Assessment of Alternatives: Road Alignment

Evaluation Criteria	Option 1 - West	Option 2 - Middle	Option 3 - East
Physical Environment	✓Driveways will all be on one side of the corridor; ✓Provides most direct alignment for utilities (overhead and underground)	× Requires S-bend; × Driveways will all be on both sides of the corridor; × Provides less direct alignment for utilities (overhead and underground)	× Requires S-bend; ✓Driveways will all be on one side of the corridor; × Provides less direct alignment for utilities (overhead and underground)
Natural Environment	✓Impacts will generally be the same for each alternative;	✓Impacts will generally be the same for each alternative;	✓Impacts will generally be the same for each alternative ✓Existing crossing of south tributary may be salvaged;
Social Environment	✓This option will result in an arterial road abutting future residential property along the west boundary rather than industrial use abutting future residential property; ✓Alignment provides maximum lot depth for future industrial development; ✓This alignment provides the shortest length of road, least construction impact;	✓This option will result in industrial use abutting future residential property along the west boundary; × This alternative leaves insufficiently sized lots for industrial development	×This alignment requires the longest length of road, most construction impact; ×Alignment provides slightly less lot depth for future industrial development due to the setback from Highway 11 (in alternative 1 the Highway 11 setback would overlap with the rear yard setback of the development lots)
Cultural/Heritage Environment	✓No archaeological potential identified;	✓No archaeological potential identified;	✓No archaeological potential identified;
Economic Environment	✓least construction and maintenance costs compared with other alternatives;	✓moderate construction and maintenance costs compared with other alternatives;	× the greatest construction and maintenance costs compared with other alternatives. ✓ Note this alternative does not require relocation of the south tributary water crossing;
Climate Change	✓least construction impact, least construction materials, least runoff, least maintenance compared with other alternatives;	✓moderate construction impact, moderate construction materials, moderate runoff, moderate maintenance compared with other alternatives;	×longest length of road, most construction impact, most construction materials, most runoff, most maintenance;

NOTE: A copy of the comprehensive evaluation matrix is available for review on the project website.

Alternative Solutions: Road Cross Section

- **3-LANE ARTERIAL:**
  1. 26.0m right-of-way width (SEE NOTE);
  2. 3.3m travel lanes (each direction);
  3. 3.3m two-way centre left turn lane, left turns across 1 one lane of traffic, and eliminates left turns from queueing the traffic flow;
  4. Traffic volume capacity: 900 vehicles per lane per hour;
  5. 1.5m sidewalk each side;
  6. 7.75m wide boulevards;
  7. Lowest construction cost;
  8. Lowest environmental impact;
     1. Less asphalt;
     2. Less runoff;
     3. Less maintenance;
     4. Less winter sand;

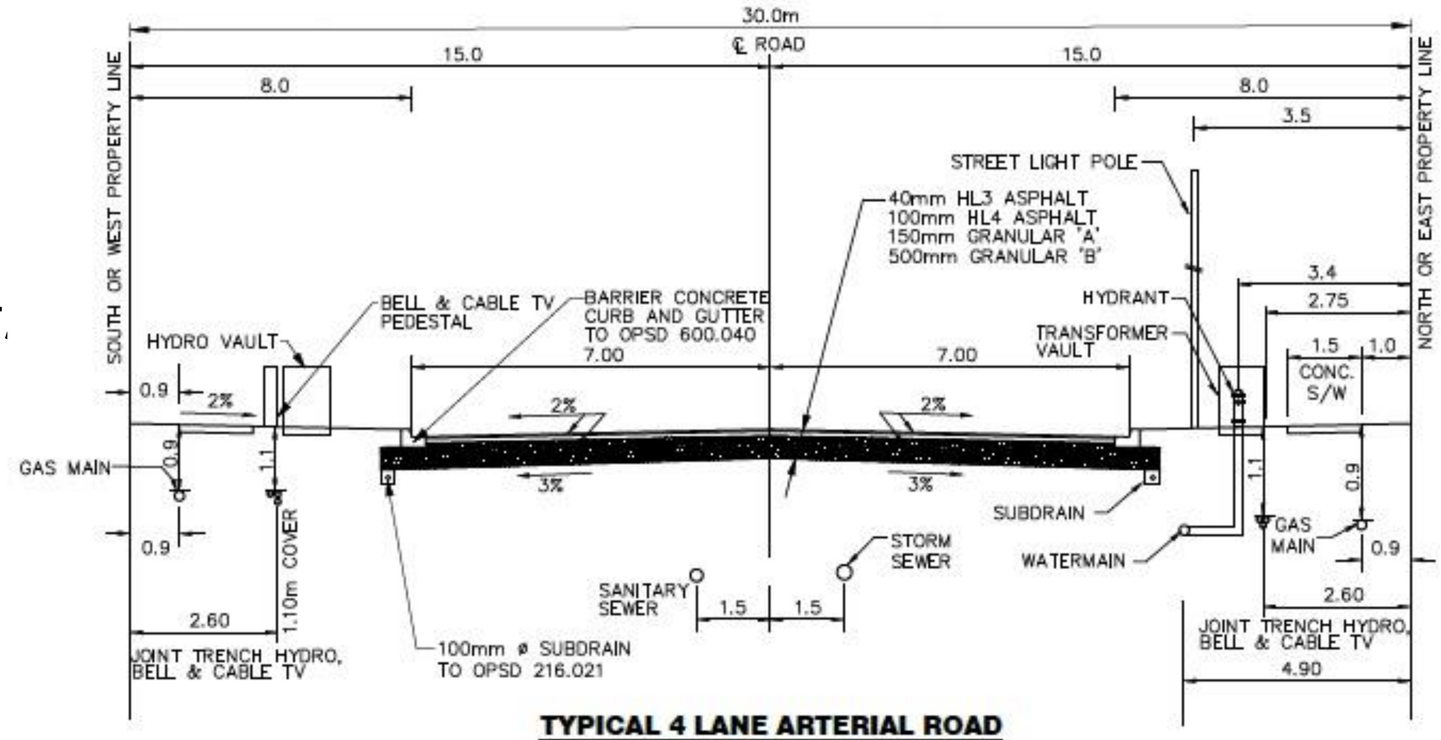


TYPICAL 3 LANE ARTERIAL ROAD
N.T.S.

NOTE: There is adequate space to widen the R-O-W to 30m, providing additional width for utilities and SWM features;

Alternative Solutions: Road Cross Section

- **4-LANE ARTERIAL:**
  1. 30.0m right-of-way width;
  2. Two 3.3m travel lanes (each direction);
  3. No two-way centre left turn lane, left turns across two lanes of traffic;
  4. Traffic volume capacity: 800 vehicles per lane per hour; 1600 vehicle per hour directional;
  5. 1.5m sidewalk each side;
  6. 8.0m wide boulevards;
  7. Moderate construction cost;
  8. Moderate environmental impact
     1. increased asphalt area;
     2. Increased runoff;
     3. increased maintenance;
     4. increased winter sand;

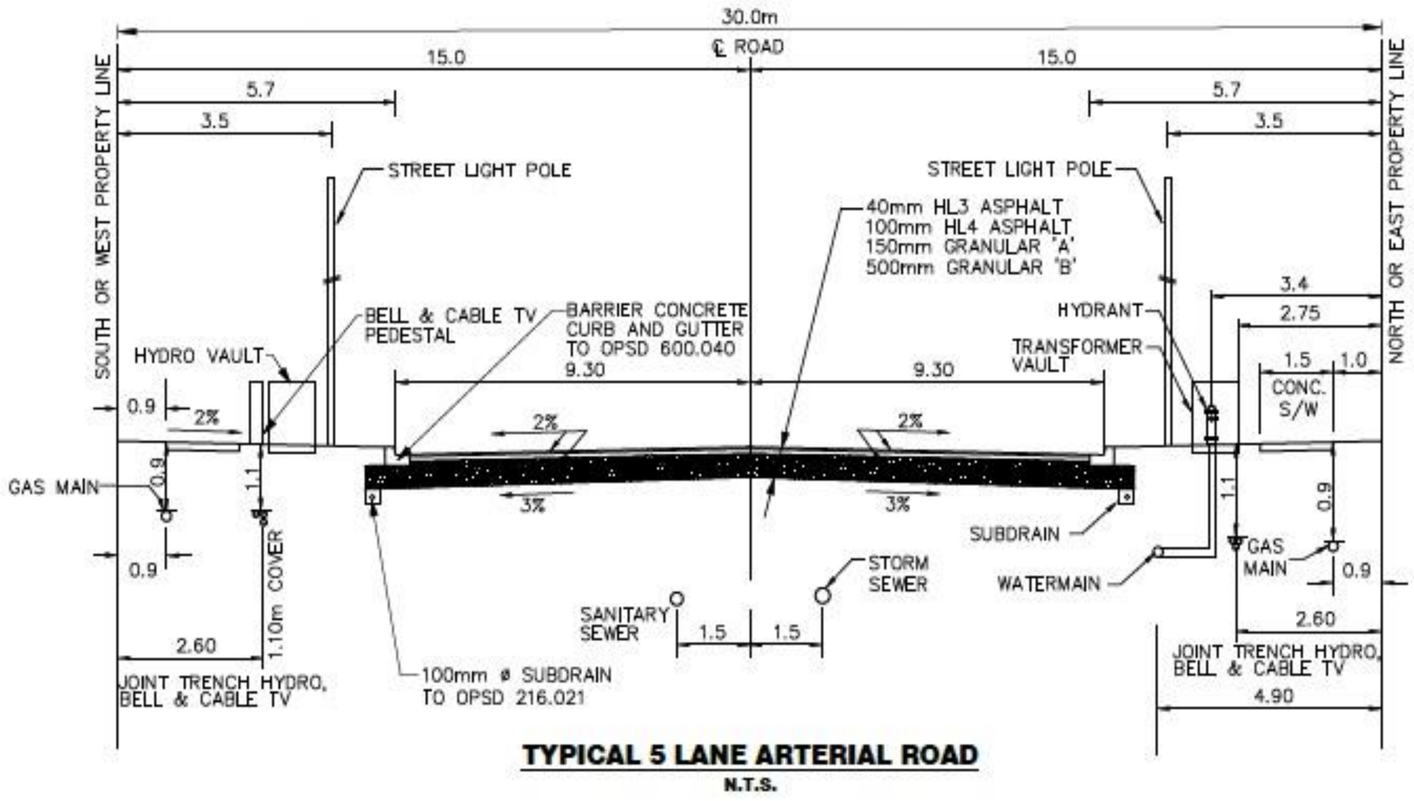


TYPICAL 4 LANE ARTERIAL ROAD
N.T.S.

NOTE: Lack of left turn lane results in queueing of traffic flow.

Alternative Solutions: Road Cross Section

- **5-LANE ARTERIAL:**
  1. 30.0m right-of-way width;
  2. Two 3.3m travel lanes (each direction);
  3. 3.3m two-way centre left turn lane, left turns across two lanes of traffic, and eliminates left turns from queueing the traffic flow;
  4. Traffic volume capacity: 900 vehicles per lane per hour; 1800 vehicle per hour directional
  5. 1.5m sidewalk each side;
  6. 5.7m wide boulevards
  7. Highest construction cost;
  8. Greatest environmental impact;
     1. Most asphalt;
     2. Most runoff;
     3. Most maintenance;
     4. Most winter sand;



TYPICAL 5 LANE ARTERIAL ROAD

N.T.S.

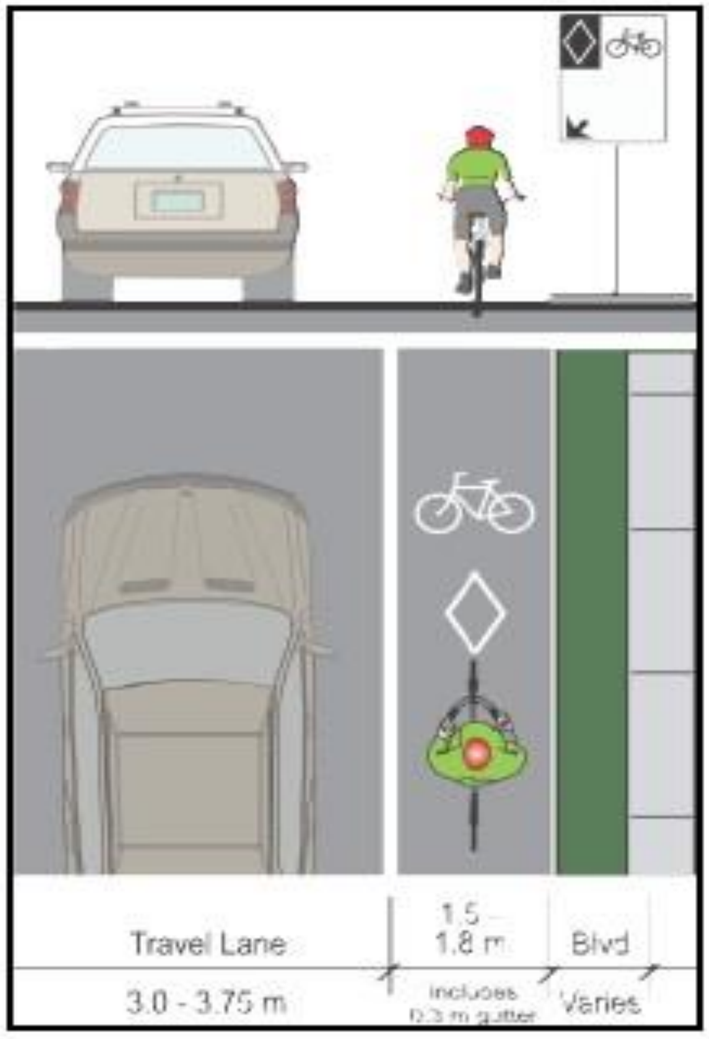
Assessment of Alternatives: Road Cross Section

Evaluation Criteria	Option 1 – 3-Lane (26m ROW)	Option 2 - 4-Lane (30m ROW)	Option 3 - 5-Lane (30m ROW)
Physical Environment	✓Cross section capacity meets the forecasted traffic volumes to 2040; ✓Centre turn lane improves left turn operations; ✓Two-way left turn lane will assist with access to/from driveways; ✓Least SWM requirements; ✓Provides 7.75m wide boulevard for utilities;	✓Cross section exceeds the forecasted traffic volumes to 2040; × lack of two-way left turn lane is inefficient and could result in turn movements interfering with traffic and transit operations; × Left turns to/from driveways across two lanes of traffic; × Moderate SWM requirements; ✓ Provides 8.0m wide boulevard for utilities;	✓Cross section exceeds the forecasted traffic volumes to 2040 ✓Centre turn lane improves left turn operations; ✓Two-way left turn lane will assist with access to/from driveways × Greatest SWM requirements × Provides 5.7m wide boulevard for utilities
Natural Environment	✓Least impact due to narrowest road platform;	✓Moderate impact due to road platform;	×Greatest impact, widest cross section
Social Environment	✓Less construction impact, shorter construction period	✓Moderate construction impact, slightly longer construction period	×Greatest construction impact, slightly longer construction period
Cultural/Heritage Environment	✓No archaeological potential identified;	✓No archaeological potential identified;	✓No archaeological potential identified;
Economic Environment	✓Lowest construction and maintenance cost, narrowest cross section ✓May require some land acquisition requirements, adjacent land is owned by City so no net cost impact	✓Moderate construction and maintenance cost, wider cross section × Requires some land acquisition requirements, adjacent land is owned by City so no net cost impact	× Greatest construction and maintenance cost, widest cross section × Requires some land acquisition requirements, adjacent land is owned by City so no net cost impact
Climate Change	✓least construction impact, least construction materials, least runoff, least maintenance compared with other alternatives;	✓moderate construction impact, moderate construction materials, moderate runoff, moderate maintenance compared with other alternatives;	×longest length of road, most construction impact, most construction materials, most runoff, most maintenance;

NOTE: A copy of the comprehensive evaluation matrix is available for review on the project website.

Alternative Solutions: Pedestrian/Cycling

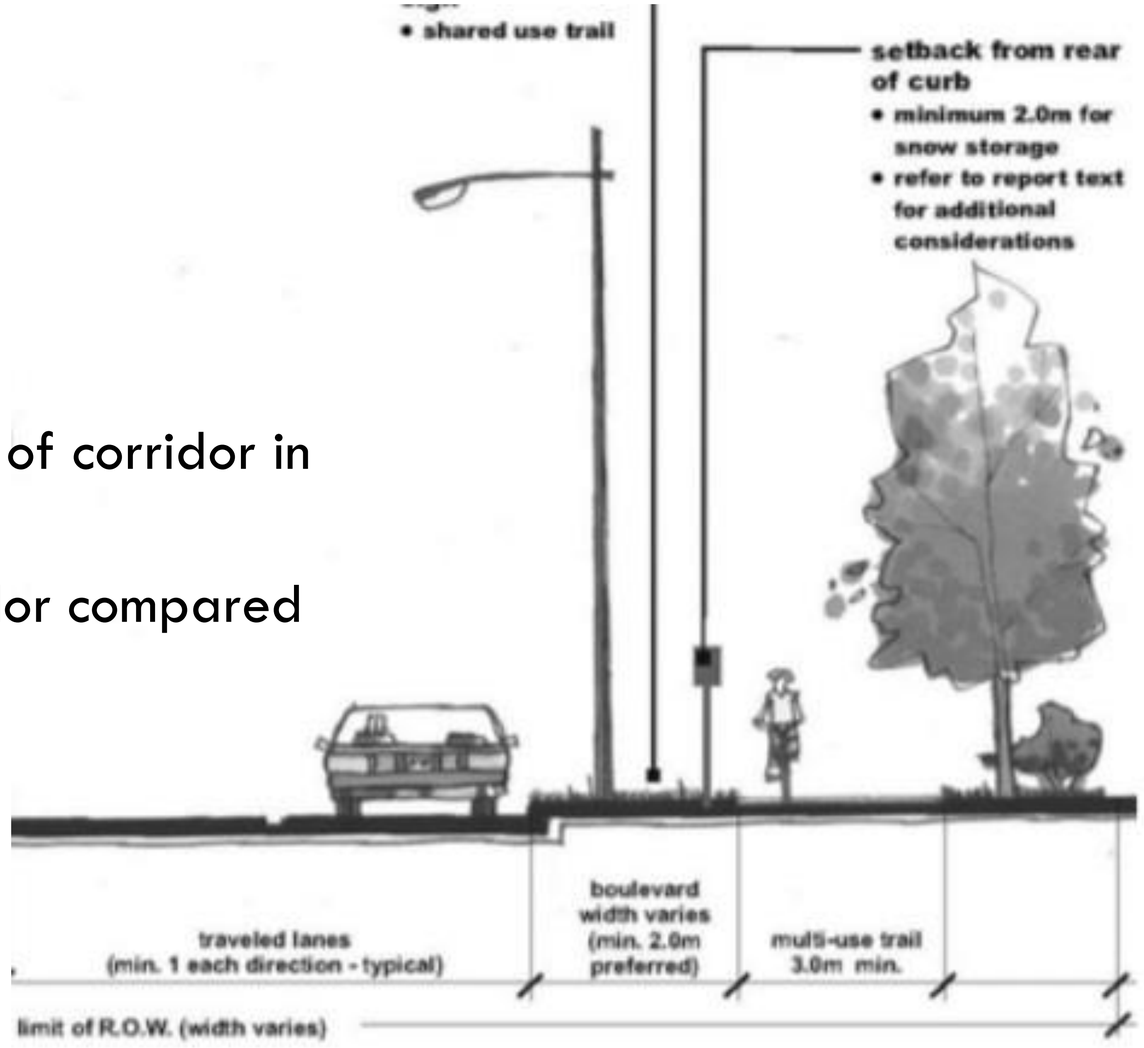
- **BICYCLE LANE(S):**
  1. 1.5m dedicated bicycle lanes (each direction);
  2. Provides 1-way traffic;
  3. Reduced user safety (on-road);
     1. Buffer zone can be provided to mitigate (requires more space);
  4. Sidewalks still required for pedestrian traffic;
  5. Occupies more overall space in the corridor compared to multi-use trail option;



For the purpose of this study, pedestrian and cycling infrastructure is being considered in context of the City's standard arterial road corridor which includes 1.5m sidewalks on both sides of the road.

Alternative Solutions: Pedestrian/Cycling

- **MULTI USE TRAIL(S):**
  1. 3.0m off road multi-use trail;
  2. Provides two-way traffic;
  3. Improved user safety (off-road);
  4. Consider placement of trail on one side of corridor in lieu of sidewalk;
  5. Occupies less overall space in the corridor compared to bicycle lanes option;



For the purpose of this study, pedestrian and cycling infrastructure is being considered in context of the City's standard arterial road corridor which includes 1.5m sidewalks on both sides of the road.

Assessment of Alternatives: Pedestrian/Cycling

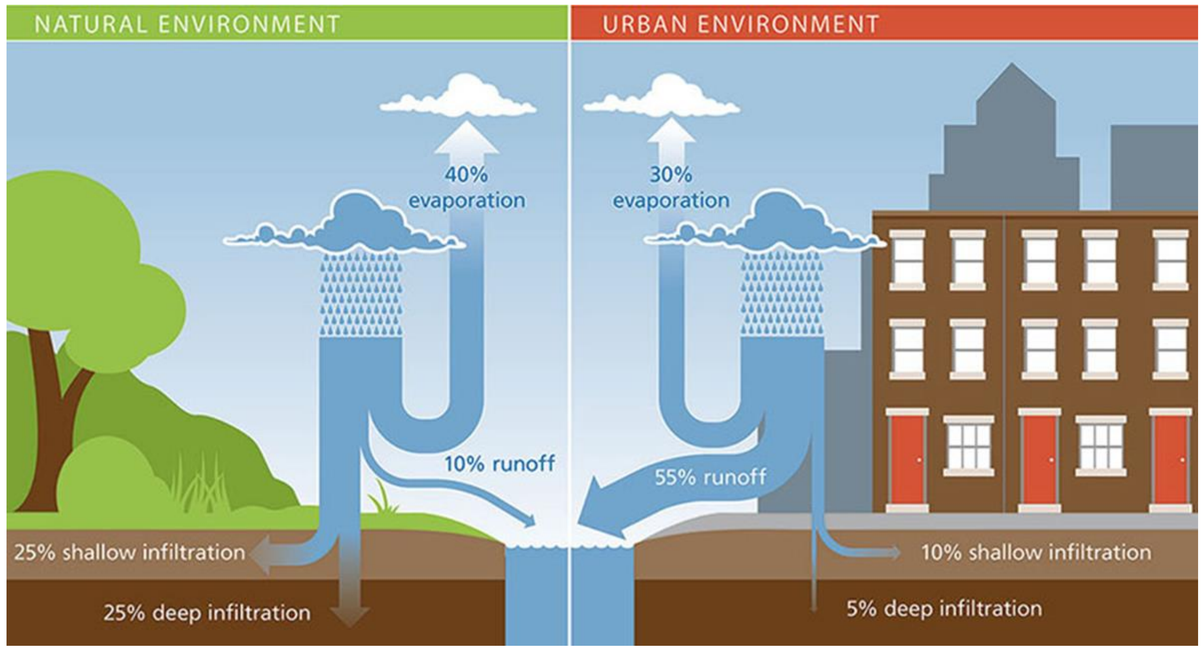
Evaluation Criteria	Option 1 – 1.8m Wide Bicycle Lane(s)	Option 2 – 3.0m Wide Multi-Use Trail(s)
Physical Environment	× Provides shared vehicular / cycling facility, may increase interference with traffic operations × Provides dedicated cycling route, not recommended on arterial roadway per MMTP × Creates conflict with transit operations	✓Provides separate vehicular / cycling/pedestrian facility, limited interference with traffic operations ✓Consistent with recommendations of 2012 ATP and 2019 MMTMP ✓Consistent with other City of Orillia Arterial road corridors (University Avenue, West Ridge Boulevard, Memorial Drive);
Natural Environment	✓Impacts are the same for each alternative	✓Impacts are the same for each alternative
Social Environment	✓Impacts are the same for each alternative × Increased risks during winter use	✓Impacts are the same for each alternative ✓Less risks during winter use;
Cultural/Heritage Environment	✓No archaeological potential identified;	✓No archaeological potential identified;
Economic Environment	✓Less construction cost ✓Least on-going maintenance cost as feature is part of roadway ✓Winter maintenance costs are dependent on whether the feature is maintained for cycling in the winter (ie. May result in more frequent snowbank removal)	× Greater construction cost ✓ Moderate on-going maintenance costs (asphalt patching, crack repair, etc..) ✓ Winter maintenance costs are dependent on whether the feature is maintained for cycling in the winter (ie. Does the full trail width get maintained)
Climate Change	✓No net impact on climate change compared to other options, all options promote active transportation	✓No net impact on climate change compared to other options, all options promote active transportation

NOTE: A copy of the comprehensive evaluation matrix is available for review on the project website.

NOTE: The location and alignment of the multi-use trail will be determined through the detail design process.

Design Component: Drainage

- **DRAINAGE** aspects of the study consider:
  1. Creek Crossings;
     1. North Silver Creek Tributary;
     2. South Silver Creek Tributary;
  2. Stormwater Management;



Key Considerations: Water Crossings

- **SOUTH SILVER CREEK TRIBUTARY:**
  1. Intermittent flow;
  2. Non-fish bearing;
  3. Conventional culvert crossing is acceptable;
  4. Existing structures are in place on original access road;
     1. Note the existing crossing will need to be extended or relocated depending on the selected road alignment;

- **NORTH SILVER CREEK TRIBUTARY:**
  1. Intermittent flow;
  2. Non-fish bearing;
  3. Valley, open-space feature bearing some wildlife habitat;
  4. Open bottom structure or bridge crossing is required to span the channel;

Alternative Solutions: Water Crossings

- **OPEN BOTTOM CULVERT:**
  1. Maintains natural creek for flow conveyance ;
  2. Maintains valley bottom for wildlife passage;
  3. Various materials and spans available;
  4. Higher costs compared to conventional culverts;
  5. Low maintenance costs;

- **CONVENTIONAL CULVERT:**
  1. Piped flow conveyance;
  2. Limited ability to accommodate wildlife passage;
  3. Various materials and spans available;
  4. Lower costs compared to conventional culverts;
  5. Low maintenance costs;

Alternative Solutions: Water Crossings

- **BRIDGE:**

1. Maintains natural creek for flow conveyance;
2. Maintains valley bottom for wildlife passage;
3. Various materials and spans available;
4. Significant foundation requirements;
5. Significant construction impacts;
6. Highest costs compared to other options;
7. Highest maintenance costs compared to other options;

Assessment of Alternatives: Water Crossings

Evaluation Criteria	Option 1 – Open Bottom Structure	Option 2 – Conventional Culvert	Option 3 - Bridge
Physical Environment	✓Driveway setbacks from crossing locations will be the same for open bottom and culvert; ✓Crossing design can accommodate utilities;	✓Driveway setbacks from crossing locations will be the same for open bottom and culvert. ✓Crossing design can accommodate utilities;	× Bridge approaches may restrict driveway locations (due to guiderail); × Utilities would need to be attached to bridge superstructure, span the crossing, or directional drill under crossing resulting in increased costs;
Natural Environment	✓South Crossing (Intermittent flow, non fish bearing): conveyance only, higher costs, no other net benefit compared to other alternatives; ✓North Crossing (Intermittent flow, non fish bearing, EP): Provides opportunity to accommodate valley/tributary open space feature with footings outside the sensitive area; × Provides minor barrier for some wildlife movement;	✓South Crossing (Intermittent flow, non fish bearing): conveyance only, meets requirements; × North Crossing (Intermittent flow, non fish bearing, EP): Provides opportunity to accommodate valley/tributary open space feature with footings outside the sensitive area, does not meet requirements; × Provides minor barrier for some wildlife movement;	✓ South Crossing (Intermittent flow, non fish bearing): conveyance only, higher costs, no other net benefit compared to other alternatives; ✓ North Crossing (Intermittent flow, non fish bearing, EP): Provides opportunity to accommodate valley/tributary open space feature with footings outside the sensitive area; ✓ Provides connection for wildlife under roadway;
Social Environment	✓Impacts are generally the same for each alternative ✓Discrete appearance ✓Moderate construction impacts;	✓Impacts are generally the same for each alternative ✓Discrete appearance ✓Moderate construction impacts;	✓Impacts are generally the same for each alternative × Noticeable appearance × Significant construction impacts;
Cultural/Heritage Environment	✓No archaeological potential identified;	✓No archaeological potential identified;	✓No archaeological potential identified;
Economic Environment	× Moderate construction and maintenance costs; × Possible on-going inspection costs (OSIM);	✓ Lowest construction and maintenance costs;	× Significant construction costs × Highest maintenance and on-going inspection costs (OSIM);
Climate Change	✓Less impact	✓Least impact	×Greatest impact

NOTE: Option 2 – Closed Bottom Culvert ranked highest but is not suitable for the North crossing;

NOTE: A copy of the comprehensive evaluation matrix is available for review on the project website.

Alternative Solutions: Stormwater Management

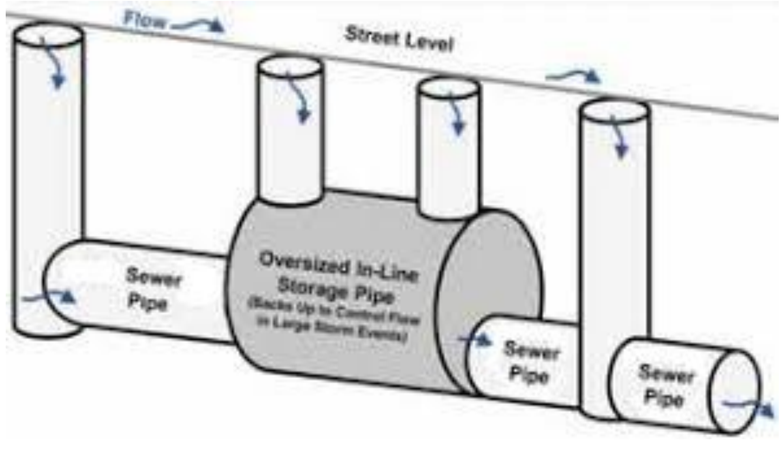
- **END OF PIPE FACILITY(IES):**
  1. Provides quantity and quality control for storm runoff;
  2. Provides 80% total suspended solids removal rate;
  3. Provides 63% total phosphorus removal rate;
  4. Provides sediment & erosion control for downstream receivers;
  5. Requires large area footprint outside of the right-of-way;
  6. Two facilities would be required to service this area due to topographic constraints;
  7. Lowest construction costs;
  8. Lowest maintenance costs;

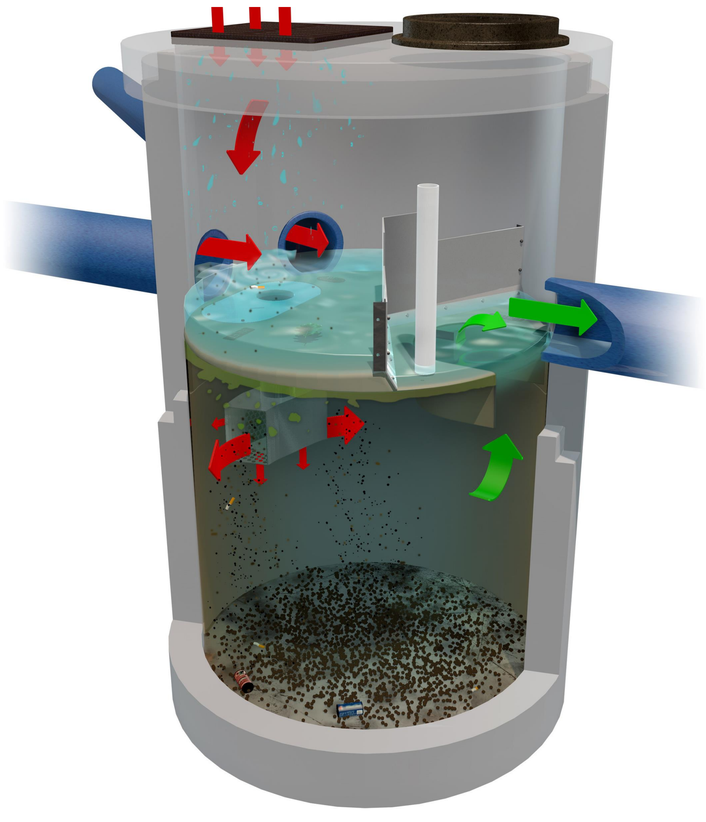
NOTE: Use of existing regional SWM facility is not feasible due to topographic constraints.

Alternative Solutions: Stormwater Management

- **LINEAR FACILITY – Oversize Storm Sewer & Oil Grit Separators:**

1. Provides quantity (oversize pipe) and quality control (oil-grit separator) for storm runoff;
2. Provides 70% total suspended solids removal rate;
3. Provides 60% total phosphorus removal rate;
4. Provides sediment & erosion control for downstream receivers;
5. Requires small footprint within the road right-of-way;
6. Four OGS units would be required to service this area due to topographic constraints;
7. Moderate construction costs;
8. Highest maintenance costs;

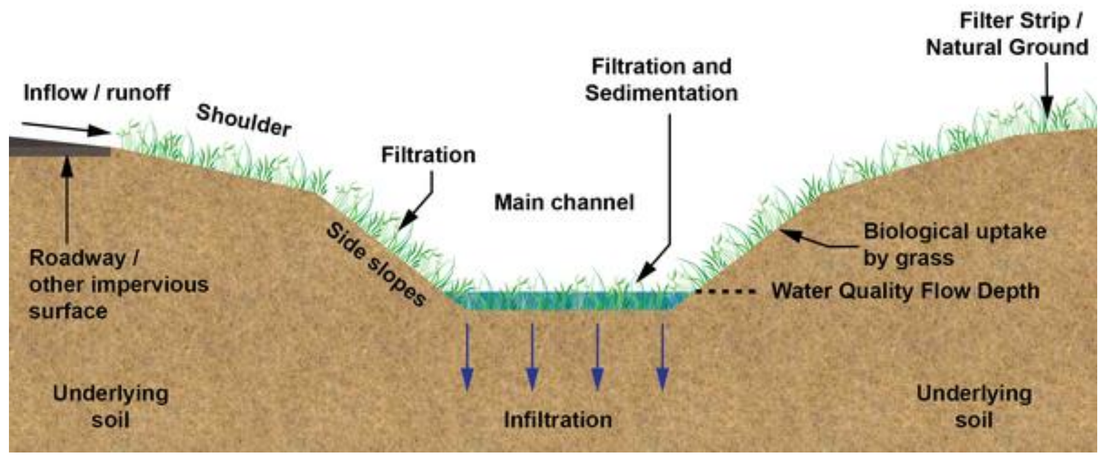




Alternative Solutions: Stormwater Management

- **LINEAR – Bioswale & Storm Sewer:**

1. Provides quantity and quality control for storm runoff;
2. Provides 80% total suspended solids removal rate;
3. Provides 63% total phosphorus removal rate;
4. Provides sediment & erosion control for downstream receivers;
5. Provides a ‘treatment train’ approach to stormwater management in accordance with latest best practice design;
6. Provides opportunity for infiltration and water balance targets;
7. Requires moderate footprint within the road right-of-way;
8. Moderate construction costs;
9. Moderate maintenance costs;



Assessment of Alternatives: Stormwater Management

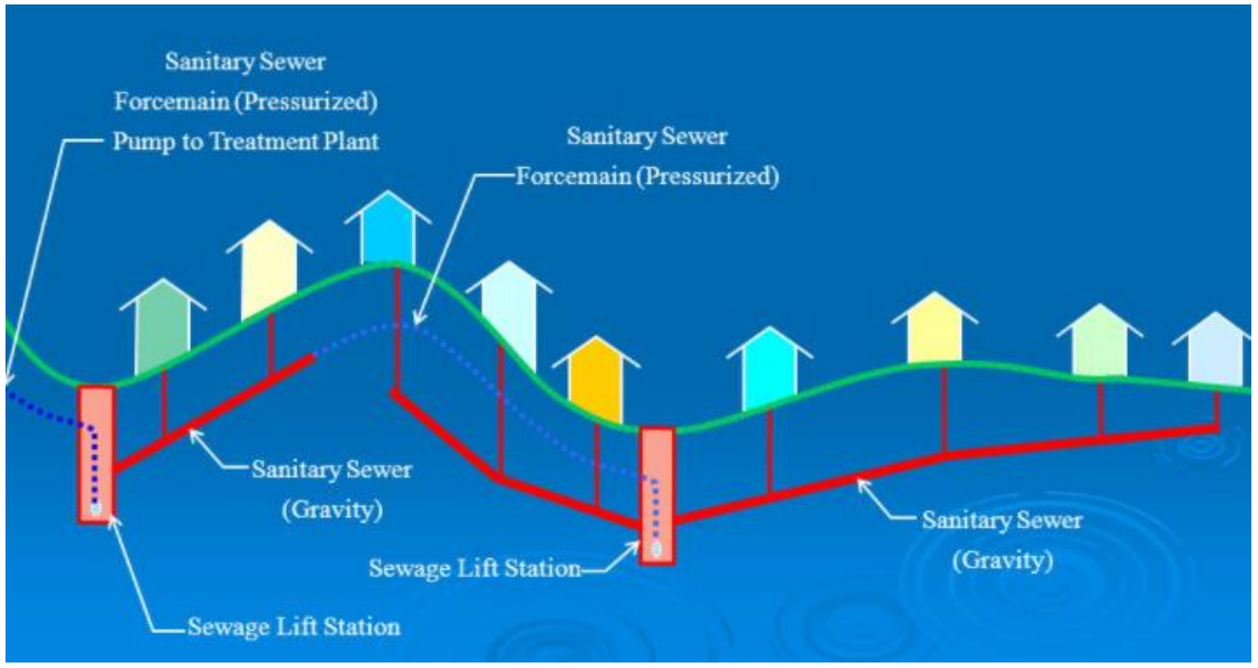
Evaluation Criteria	Option 1 – End of Pipe Facility	Option 2 – Oversized Pipe & Oil-Grit Separator	Option 3 – Bioswale & Storm Sewer
Physical Environment	× End-of-pipe SWMFs have potential to increase discharging temperatures. Roadway must be graded such that overland flow is directed to the SWM Facilities. Roadway to convey runoff during major storm events. × No impact to utilities anticipated.	✓Underground pipe system provides no benefit to discharging temperatures. × Roadway must be graded such that runoff ponds at catch basin locations to allow for 100-year capture by inlets. There will be ponding on roadway to max. 0.30 m × Provides less space for utilities in the right-of-way.	✓Underground filtration system has potential to decrease discharging temperatures. ✓Curb cuts required to convey runoff from roadway to bioswales for all storm events, less ponding water on roadway, less flow over roadway. Wider right-of-way required, no impact to utilities anticipated.
Natural Environment	✓80% TSS removal rate, 63% TP removal rate, erosion and sediment control provided by SWMF. Potential to increase discharge temperatures; × some impacts to aquatic species can be anticipated without further mitigation. The tributary is not fish-bearing, no impacts to fish species are anticipated; ✓Mitigate loss of habitat by strategic planting and landscaping plan for SWMF;	× 70% TSS removal rate, 60% TP removal rate, erosion and sediment control provided by Oversized pipes & OGS. Underground pipe system has potential to decrease discharge temperatures ; × Some impacts to aquatic species can be anticipated without further mitigation. The tributary is not fish-bearing, no impacts to fish species are anticipated; × No opportunity to offset loss of habitat;	✓ 80% TSS removal rate, 63% TP removal rate, erosion and sediment control provided by bioswale. Underground filtration system has potential to decrease discharge temperatures; ✓ No impacts to aquatic species anticipated. The tributary is not fish-bearing, no impacts to fish species are anticipated; ✓ Mitigate loss of habitat by strategic planting and landscaping plan for SWMF;
Social Environment	✓Requires larger parcel of land that could otherwise be used for development;	✓All infrastructure underground, no visual impact on future properties. No opportunity for aesthetic improvements;	✓ Bioswales located on both sides of roadway within right-of-way, minor local visual impact on future properties. Can mitigate negative visual impact with strategic plantings and landscaping bioswale blocks;
Cultural/Heritage Environment	✓No archaeological potential identified;	✓No archaeological potential identified;	✓No archaeological potential identified;
Economic Environment	✓Lowest construction, maintenance and life cycle costs;	× Highest construction, maintenance, and life cycle costs;	× Moderate construction, maintenance, and life cycle costs;
Climate Change	✓Provides improved treatment levels for downstream receiver;	× Provides limited treatment levels for downstream receiver;	✓Provides improved treatment levels for downstream receiver;

NOTE: A copy of the comprehensive evaluation matrix is available for review on the project website.

Design Component: Servicing

SERVICING

1. Gravity sanitary sewer;
2. Sewage pump station;
3. Sanitary force main;
4. Water distribution (see note);



For the purposes of the EA, alternatives for the water system layout were not considered as the water system layout will be in accordance with City of Orillia standards. Accordingly different layouts and alignments have no bearing on the outcome of the study. Final layout will be determined through completion of detailed design.

Key Considerations: Servicing

- **SERVICING** aspects of the study consider:
  1. Interim servicing conditions;
     1. Provide water, sanitary, and storm servicing to City of Orillia industrial lands;
        1. An Interim sewage pump station is required within City project limits to pump flows up to the existing infrastructure on east side of Highway 11; (SEE NOTE 1);
     2. Accommodate contributing upstream sanitary sewage flows from Smart Centres;
     3. Accommodate contributing upstream sanitary sewage flows from existing residential development on Murphy Road and Uhthoff Line;
     4. Consider impacts to future development (SEE NOTE 2);
        1. Limit installation of any redundant infrastructure for future condition;

Note 1: the driving factor of the servicing layout is the location of the interim sanitary sewage pump station. Accordingly, the servicing aspects of the study focus on the location of the interim sanitary sewage pump station.

Note 2: A permanent sewage pump station will ultimately be constructed within the Inch Farm Residential Subdivision (as determined by the Schedule B Municipal Class EA Sewage Pumping Station, completed September 2012).

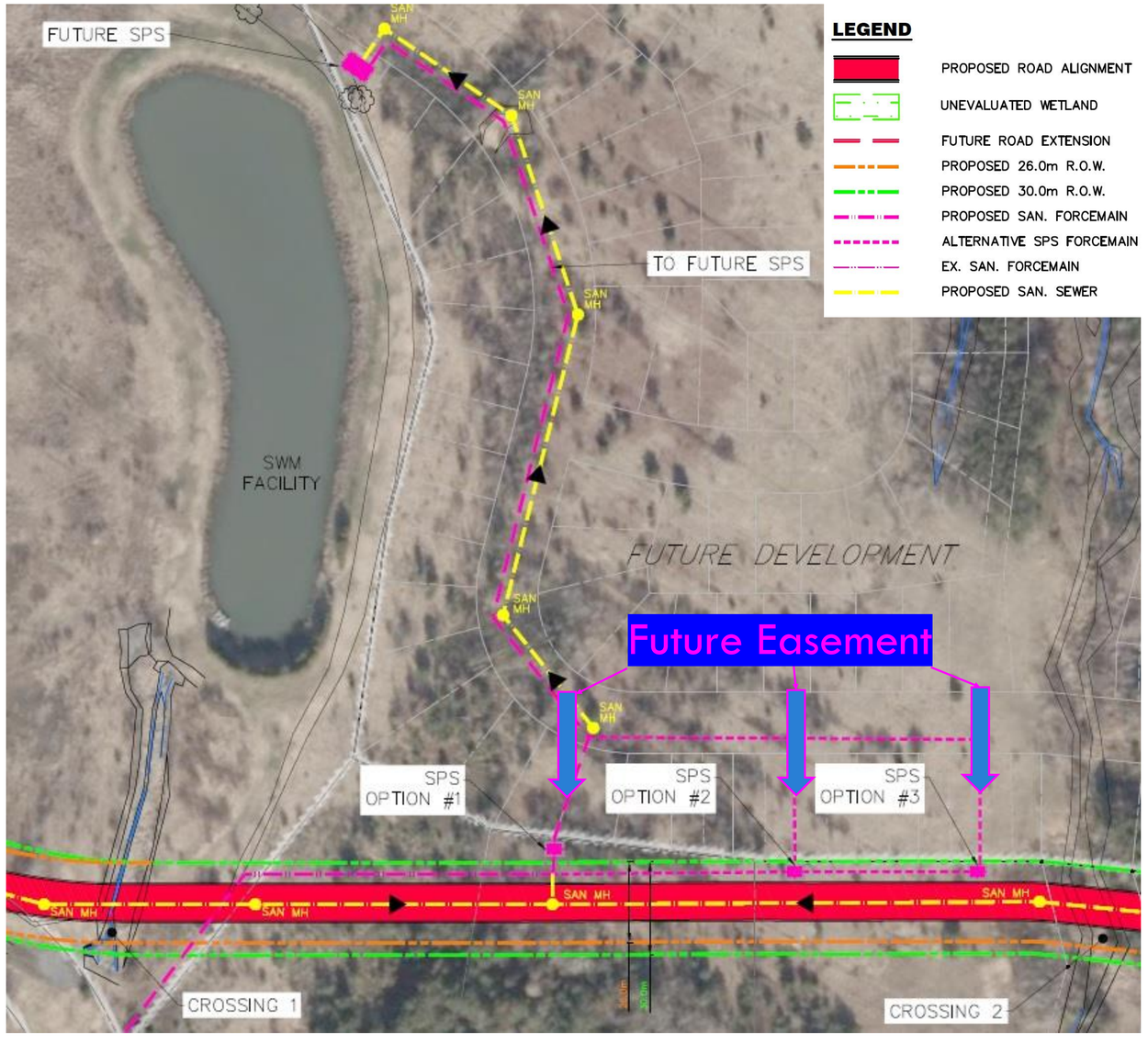
Key Considerations: Servicing

- **SERVICING** aspects of the study consider:
  1. Ultimate servicing conditions;
     1. Provide water, sanitary, and storm servicing to City of Orillia industrial lands;
     2. Accommodate contributing upstream sanitary sewage flows from Smart Centres;
     3. Accommodate future servicing and development of adjacent Inch Farm Residential Subdivision, to the west;
     4. Accommodate future servicing and development of adjacent Area 3 development in Severn Township, to the north;
     5. Accommodate future servicing and development of Mark Rich Homes development in Severn Township, to the south;
     6. Abandon/relocate interim sewage pump station to previously determined permanent location within Inch Farm Residential Subdivision.

Alternative Solutions: Servicing

SANITARY SEWAGE PUMPING STATION LOCATIONS

- Location 1
  1. Located in the triangular parcel of land west of the road alignment;
  2. Requires 6m deep wet-well;
  3. Requires no redundant or 'throw-away' infrastructure for the ultimate condition;
- Location 2
  1. Located within the arterial road right-of-way;
  2. Requires 5.2m deep wet-well;
  3. Requires some redundant, 'throw-away' infrastructure for the ultimate condition;
- Location 3
  1. Located within the arterial road right-of-way;
  2. Requires 4.5m deep wet-well;
  3. Requires greatest redundant, 'throw-away' infrastructure for the ultimate condition;



NOTE: The infrastructure shown within the future development area is outside the scope of this project and is only shown for information purposes.

Assessment of Alternatives: Servicing

Evaluation Criteria	Option 1 – SPS Location 1	Option 2 – SPS Location 2	Option 3 – SPS Location 3
Physical Environment	✓Provides the most space for utilities in the boulevard;	× Occupies space otherwise required for utilities;	× Occupies space otherwise required for utilities;
Natural Environment	✓Require directional drilling construction methods to mitigate impacts to tributaries;	✓Require directional drilling construction methods to mitigate impacts to tributaries;	✓ Require directional drilling construction methods to mitigate impacts to tributaries;
Social Environment	✓Makes use of triangular shaped lot which is otherwise unuseable space for industrial development. Easement required between future residential lots to provide connection to permanent pump station location; ✓Easement will be between two large lots and can be accommodated without restricting future lot development;	× Adequate space required in the boulevard for the SPS wet well and control panel, and parking for wastewater operator or service vehicle. Easement required between future residential lots to provide connection to permanent pump station location; × Easement will be between two narrow lots and may restrict future lot development.	× Adequate space required in the boulevard for the SPS wet well and control panel, and parking for wastewater operator or service vehicle. Easement required between future residential lots to provide connection to permanent pump station location; × Easement will be between two narrow lots and may restrict future lot development;
Cultural/Heritage Environment	✓No archaeological potential identified;	✓No archaeological potential identified;	✓No archaeological potential identified;
Economic Environment	× Highest SPS construction costs; × Deepest wet well depth (6m below grade); ✓Shortest forcemain length to connect between the interim SPS and Highway 11; ✓No 'throw-away' costs: future forcemain from the permanent SPS will connect at this location so interim forcemain can be reused;	× Slightly higher SPS construction costs than Location 3; × Deeper wet well depth (5.2m below grade); × Longer interim forcemain length required to connect between the interim SPS and Highway 11; × Some 'throw-away' costs: a portion of the forcemain from the interim SPS to the permanent SPS/forcemain configuration will be abandoned;	✓ Lowest SPS construction costs. ✓ Shallowest wet well depth (4.5m below grade); × Longest interim forcemain length to connect between the interim SPS and Highway 11; × Largest 'throw-away' costs: a significant portion of the forcemain from the interim SPS to the permanent pump station/forcemain configuration will be abandoned;
Climate Change	✓Space available to accommodate future expansion if necessary to address climate change;	× No space available for future expansion due to climate change;	×No space available for future expansion due to climate change;

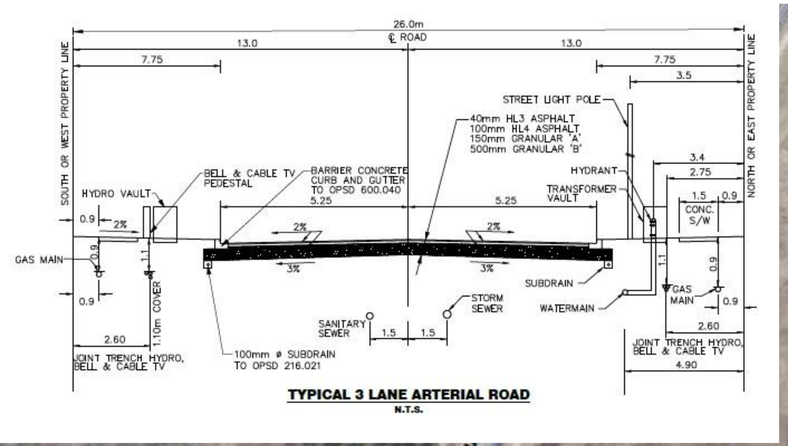
NOTE: A copy of the comprehensive evaluation matrix is available for review on the project website.

Preferred Solution

DESIGN COMPONENT SUMMARY:

Design Component	Preferred Alternative
Road Alignment	Option 1 – West Alignment
Road Cross Section	3-Lane Cross Section (30m R-O-W)
Pedestrian / Cycling Features	Sidewalk on one side, Multi-Use trail on one side
Water Crossings	Conventional Culvert for South Tributary, Open Bottom Structure for North Tributary
Stormwater Management	Roadside Bioswale & Storm Sewer
Servicing	Sewage Pump Station Location 1

Preferred Solution



TYPICAL 3 LANE ARTERIAL ROAD
N.T.S.

LEGEND

- PROPOSED ROAD ALIGNMENT
- UNEVALUATED WETLAND
- FUTURE ROAD EXTENSION
- PROPOSED 26.0m R.O.W.
- PROPOSED 30.0m R.O.W.
- PROPOSED SAN. FORCEMAIN
- ALTERNATIVE SPS FORCEMAIN
- EX. SAN. FORCEMAIN
- PROPOSED SAN. SEWER

Next Steps

- review/address stakeholder comments
- further develop the preferred solution with details for implementation & mitigation
- prepare final report for public review
- prepare Notice of Study Completion
- design & implementation

- have your questions been addressed?
- have you completed a comment sheet?
- For additional information please visit the City of Orillia Project Website

(https://www.orillia.ca/en/city-hall/inchfarm-arterial-road.aspx)

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Thank You

ORILLIA

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