



Transportation Planning Update

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Town of Paradise

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1 Introduction

Harbourside Transportation Consultants were retained by the Town of Paradise to conduct a review of transportation planning in the Town of Paradise. Over the last ten years, four (4) transportation planning documents have been developed to guide the decision-making process in terms of capital works and infrastructure improvements in the Town of Paradise. These transportation planning documents are:

- Paradise Transportation Study (2011)
- Paradise Active Transportation Plan (2011)
- Paradise Traffic Improvement Plan (2014)
- Karwood Market Area Traffic Study (2014)

The objective of the Transportation Planning Update is to complete a comprehensive review of these planning documents and the underlying assumptions used to formulate the recommended network improvement plans. The update includes a reprioritized list of short-term, medium-term and long-term improvements, complete with updated cost estimates, required to accommodate current and future traffic demand in the Town of Paradise.

2 Planning Document Review

2.1 Paradise Transportation Study (2011)

The *Paradise Transportation Study* was completed by Hatch Mott MacDonald in 2011. The transportation study was conducted to assess the existing and future traffic operations conditions at major intersections in the Town as well as intersections in areas where high levels of development are anticipated. Sixteen (16) study intersections were included in the analysis:

- Topsail Road and Topsail Pond Road
- Topsail Road and St. Thomas Line
- St. Thomas Line and Paradise Road
- St. Thomas Line and Seascap Drive
- Topsail Road and McNamara Drive
- Topsail Road and Paradise Road
- Topsail Road and Karwood Dr./Trails End Dr.
- Topsail Road and Route 1 SB
- Topsail Road and Route 1 NB
- Topsail Road and Carlisle Drive
- Topsail Road and Kenmount Road SB
- Topsail Road and Kenmount Road NB
- Kenmount Road and Karwood Drive
- Kenmount Road and Route 1 SB
- Kenmount Road and Bruce St./Route 1 NB
- Kenmount Road and Brougham Drive

Existing conditions were analyzed using Synchro software based on 2010 traffic volumes, lane configurations and traffic signal timing plans. The analysis of the existing conditions identified existing deficiencies in the road network.

To assess future conditions, 2020 traffic volumes through the study area were forecasted. The traffic forecasts accounted for background traffic growth and anticipated development in the Town of Paradise. A background traffic growth rate of 1.0 percent per year was applied to traffic passing through the Town of Paradise (on Topsail Road, Kenmount Road and St. Thomas Line) to account for growth outside of the Town of Paradise.



Future growth in the Town of Paradise was calculated based on the anticipated development over the next 10 years, the development projections assumed in the study are summarized in Table 1. The traffic volumes generated by the development project were quantified using trip generation rates from the *Trip Generation Manual (7th edition)* published by the Institute of Transportation Engineers. The development traffic volumes were distributed to the road network using the City of St. John’s QRSII transportation model. Future 2020 conditions were analyzed to identify where future deficiencies would occur and assess road network improvements required to meet anticipated traffic demand within the next 10 years.

Table 1: Transportation Study 10-year Development Projections

Development	Projection
Residential North of Topsail Road (Adams Pond; Meadow Heights; Paradise Ridge)	1,179 units
Residential Octagon Pond	600 units
Industrial Bremigens Pond	100 acres
Commercial Kenmount Road	260,000 sq. ft. (60 acres)

The study identified a prioritized list of short-term (0-5 year), medium-term (5-10 year) and long-term (over 10 year) road network improvements. The road network improvements were prioritized based on the severity of operational deficiencies, budget costs and benefits to the overall community. Order-of-magnitude budget cost estimates were developed based recent construction costs, the study noted that the estimates are subject to preliminary and detailed design and do not include land acquisition costs. The recommended short-term, medium-term and long-term improvements are summarized in Table 2 and the network improvement plan is illustrated in Figure 1.

Table 2: Transportation Study Network Improvements

ID	Improvement	Estimated Cost
Short-Term (0-5 year) Planned/Recommended Improvements		
TS-1	Widening of Karwood Drive to 4 lanes with traffic signals (or roundabout) at the Kenmount Road and Karwood Drive intersection	\$5 M
TS-2	Widening of Topsail Road to 5 lanes from McNamara Drive to St. Thomas Line	\$4 M
TS-3	Upgrade Paradise Road to 3 lanes with curb and gutter from Milton Road to St. Thomas Line.	\$4 M
TS-4	Traffic signal optimization at the Kenmount Road and Bruce Street intersection	-
TS-5	Traffic signals (or roundabout) at the Kenmount Road and TCH West intersection	-
TS-6	Upgrade the Kenmount Road and Topsail Road Interchange	-
Medium-Term (5-10 year) Recommended Improvements		
TS-7	Traffic signals at the Topsail Road and St. Thomas Line intersection	\$240,000
TS-8	Lane widening to 4 lanes at the Kenmount Road and TCH West intersection	-
TS-9	Construction of a new road from McNamara Drive to Kenmount Road	\$1.6 M
TS-10	Improvements to the Kenmount Road and Bruce Street intersection	-
Long-Term (10-15 year) Recommended Improvements		
TS-11	Extension of Trails End Drive and construction of new interchange with the TCH	>\$10 M
TS-12	Upgrade Trails End Drive from Topsail Road to Milton Road	\$1 M
TS-13	Upgrade Milton Road from Paradise Road to Trails End Drive	\$2 M
TS-14	Extension of Kenmount Road and construction of new interchange with Route 2	>\$10 M
TS-15	Construction of additional north south roadway parallel to St. Thomas Line	-

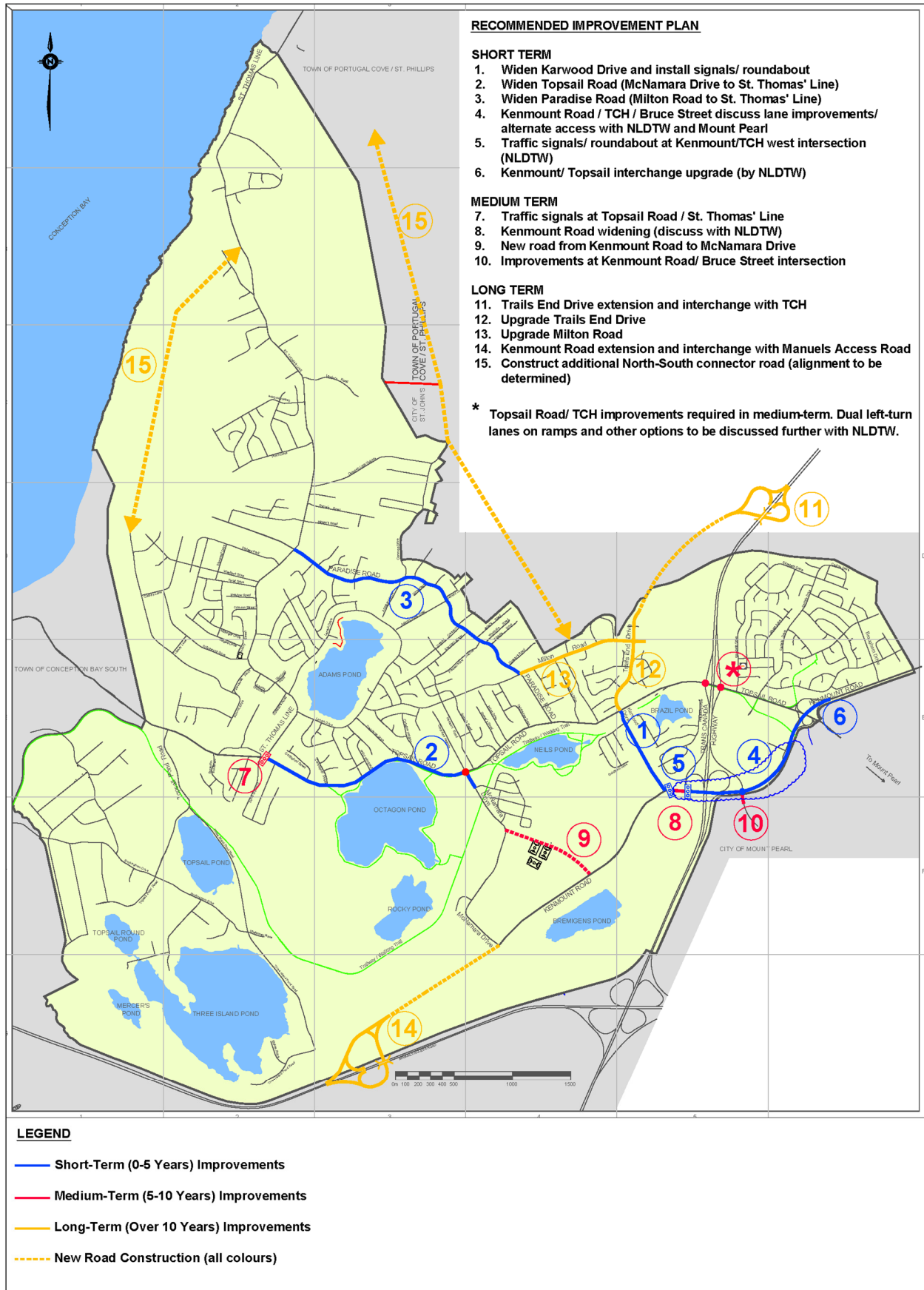


Figure 1: Paradise Transportation Study Network Improvement Plan



The background traffic growth projections and analyses techniques used in the *Paradise Transportation Study* comply with industry standards and no issues were noted. However, the assumed future development-based growth projections have not materialized to the extents assumed in the report. This is not uncommon for a wide variety of reasons that include many variables such as public policy, the local economy, market demand, etc.

2.2 Paradise Active Transportation Plan (2011)

The *Paradise Active Transportation Plan* was completed by Hatch Mott MacDonald in 2011. The intent of the active transportation plan was to develop a safe user-friendly network that will connect, integrate, enhance and expand existing trail, sidewalk and active transportation facilities in the Town of Paradise. The active transportation plan was developed through a process which included an assessment of existing facilities, stakeholder and the public consultations and a review of current policies.

A preferred active transportation network was developed through identifying linkages for existing routes, destinations and barriers. The recommended active transportation network includes trails, bikeways, parks, environmental and recreation corridors as well as designated streets that support active modes of transportation for lifestyle, leisure, tourism or commuting purposes in the Town of Paradise.

The active transportation plan identified policy and promotion recommendations and a network improvement plan. The recommended improvements are summarized in Table 3 and the network improvement plan is illustrated in Figure 2. Cost estimates for the improvements were developed based recent construction costs, the study noted that the estimates are subject to preliminary and detailed design and do not include land acquisition costs.

While the network improvements were not prioritized using the typical short-term, medium-term and long-term timeframes, the study indicated that the majority of improvements could be constructed as part of larger road improvement projects and provided a general indication of when improvements should be implemented.



Table 3: Active Transportation Plan Network Improvements

ID	Improvement	Estimated Cost	Status
AT-1	Topsail Road – McNamara Drive to St. Thomas Line: sidewalk on north side of Topsail Road; crosswalks at Christopher Street, Rockcliffe Avenue and near Octagon Heights. Explore opportunities for an underpass crossing of Topsail Road.	\$920,000	Partly planned for next phase of construction on Topsail Road (2011)
AT-2	Topsail Road – McNamara Drive to Karwood Drive: sidewalk	\$105,000	As opportunity allows
AT-3	Topsail Road – Karwood Drive to TransCanada Highway: sidewalk; traffic signals modifications to provide pedestrian phases at the TCH interchange.	\$164,000	As opportunity allows
AT-4	Karwood Drive: Pedestrian crossing near the Paradise Elementary School; evaluate need for actuated crossing control; explore opportunities for an underpass crossing of Karwood Drive.	\$285,000	With Karwood Drive upgrades (2011/2012)
AT-5	Paradise Road: sidewalks	\$210,000	With Paradise Road upgrade (2014)
AT-6	Adams Pond Trail/Sidewalk Connections: construction of Adams Pond Trails phased with development around Adams Pond; sidewalks on both sides on Lanark Drive; sidewalk on one side of subdivision streets.	\$222,000	As development occurs
AT-7	Paradise Elementary School Path: pathway from McNamara Drive to the Paradise Elementary School	\$54,500	As development occurs
AT-8	New Roadway by Soccer Fields: multi-use path on one side of the roadway and sidewalk on the other side of the roadway	\$97,750	With construction of new roadway (5-10 years)
AT-9	Topsail Pond Path: create circuit around Topsail Pond	\$58,500	As opportunity allows
AT-10	Elizabeth Park Path: continuous pathways through Elizabeth Park; crosswalks at Ellesmere Avenue and Carlisle Drive.	\$46,000	-
AT-11	St. Thomas Line: sidewalks along St. Thomas Line to connect with existing sidewalk and crosswalk at Ridgewood Drive near the Holy Family Elementary School.	\$630,000	Pursue with St. Thomas Line upgrades

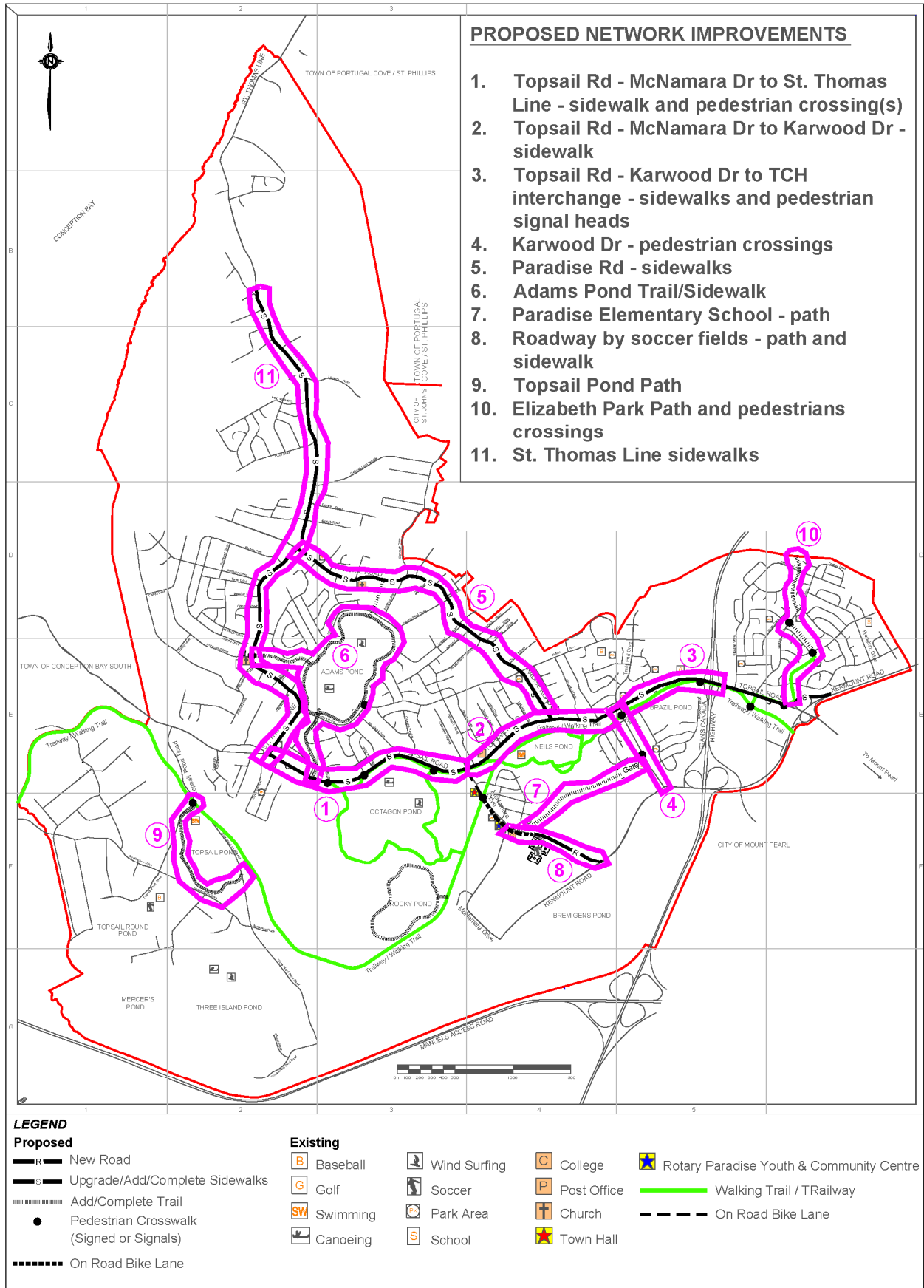


Figure 2: Active Transportation Plan Network Improvement Plan



2.3 Paradise Traffic Improvement Plan (2014)

The *Paradise Traffic Improvement Plan* was completed by Hatch Mott MacDonald in 2014. The traffic improvement plan was completed as an extension of the *Paradise Transportation Study*, providing more detail and a greater level of operational type analysis. The traffic improvement plan focused on the three major corridors that provide access to/from the Town of Paradise: Topsail Road, Kenmount Road and Karwood Drive. Nine (9) study intersections were included in the detailed analysis:

- Topsail Road and Karwood Drive
- Topsail Road and Route 1 SB
- Topsail Road and Route 1 NB
- Topsail Road and Carlisle Drive
- Topsail Road and Kenmount Road SB
- Topsail Road and Kenmount Road NB
- Kenmount Road and Karwood Drive
- Kenmount Road and Route 1 SB
- Kenmount Road and Bruce Street/Route 1 NB

Intersection performance was evaluated under a variety of different network conditions using PTV Vissim software. The 2013 traffic volumes were used to evaluate existing traffic conditions and assess short-term improvement alternatives under three (3) network scenarios.

Future traffic projections were obtained from the City of St. John's 2025 PTV Visum regional transportation demand model. The model produced peak hour traffic volume forecasts for 2025 based on regional projections of commercial, industrial and residential development. The projected 2025 traffic volumes were used to evaluate future traffic conditions and assess medium-term and long-term improvement alternatives under seven (7) network scenarios. The assessment scenarios were used to identify a preferred road network configuration required to accommodate existing and projected growth in the Town to the year 2025.

The study identified a prioritized list of short-term (0-5 year), medium-term (5-10 year) and long-term (over 10 year) road network improvements, complete with cost estimates. The recommended short-term, medium-term and long-term improvements are summarized in Table 4 and the preferred road network configuration is illustrated in Figure 3.

The background traffic growth projections and analyses techniques used in the *Paradise Traffic Improvement Plan* comply with industry standards and no issues were noted. However, the assumed future development-based growth projections have not materialized to the extents assumed in the report. This is not uncommon for a wide variety of reasons that include many variables such as public policy, the local economy, market demand, etc.



Table 4: Traffic Improvement Plan Network Improvements

ID	Improvement	Estimated Cost
Short-Term (0-5 year) Planned/Recommended Improvements		
TIP-1	Traffic signals at the intersection of Kenmount Road and Route 1 SB	\$162,500
TIP-2	NB right turn lane at the intersection of Kenmount Road and Bruce Street/Route 1 NB	\$105,000
TIP-3	NB right turn lane at the intersection of Topsail Road and Karwood Street	\$52,600
TIP-4	NB and SB dual left turn lanes at the Route 1 ramp terminals with Topsail Road	\$330,500
TIP-5	Optimize and coordinate signal timings	\$25,000
Medium-Term (5-10 year) Recommended Improvements		
TIP-6	Re-evaluate the need for traffic signals at the intersection of Topsail Road and St. Thomas Line	\$200,000
TIP-7	Widen Kenmount Road and install Roundabouts at Kenmount Road and Route 1 SB and Kenmount Road and Bruce Street/Route 1 NB	\$5,710,000
TIP-8	Roundabouts at the Route 1 ramp terminals with Topsail Road	\$3,000,000
TIP-9	New roadway connection between McNamara Drive and Kenmount Road	\$2,810,000
TIP-10	Install SB, EB and WB right turn lanes at the intersection of Topsail Road and Karwood Street	\$150,000
TIP-11	Traffic signals at the Kenmount Road ramp terminals with Topsail Road	\$325,000
Long-Term (10-15 year) Recommended Improvements		
TIP-12	New interchange on Route 2 with connection to Kenmount Road and Topsail Road	\$9,800,000
TIP-13	New interchange on Route 1 with connections to Paradise Road and to Trails End Drive	\$11,500,000
TIP-14	North- South connector road system	N/A



Figure 3: Preferred Road Network Configuration



2.4 Karwood Market Area Traffic Study (2017)

The *Karwood Market Area Traffic Study* was completed by Harbourside Transportation Consultants in 2017. The traffic study was completed to evaluate the impacts of the Karwood Market and Octagon Pond developments and identify road network improvements required to accommodate the anticipated levels of development expected over the 5-year and 10-year planning horizons. The traffic study focused on major intersections on Topsail Road, McNamara Drive, Kenmount Road and Karwood Drive. Eight (8) study intersections were included in the analysis:

- Topsail Road/McNamara Drive/Clearview Heights
- Topsail Road/Paradise Road
- Topsail Road/Karwood Drive/Trails End Drive
- Kenmount Road/McNamara Drive/Bremigens Boulevard
- Kenmount Road/Karwood Drive
- Kenmount Road/Route 1 SB Ramps
- Kenmount Road/Route 1 NB Off-Ramps
- Kenmount Road/Bruce Street/Route 1 NB On-Ramp

Existing conditions were analyzed using Synchro software based on 2016 traffic volumes, lane configurations and traffic signal timing plans. The analysis of the existing conditions identified existing deficiencies in the road network and was used to assess short-term (0-5 year) improvements.

To assess future conditions, 2021 and 2026 traffic volumes were forecasted using a background traffic growth of 1.0 percent per year and the anticipated development projections for the 5-year and 10-year timeframes. The development projections assumed in the study are summarized in Table 5.

The traffic volumes generated by the development project were quantified using trip generation rates from the *Trip Generation Manual (9th edition)* published by the Institute of Transportation Engineers. The development traffic volumes were distributed to the road network using City of St. John’s 2025 PTV Visum regional transportation demand model.

Table 5: Karwood Market Area 5-year and 10-year Development Projections

Land Use	0-5 year Projection	5-10 year Projection	Total Projection
Residential	377 dwelling units	421 dwelling units	798 dwelling units
Medical	30,000 ft ²	-	30,000 ft ²
Commercial	91,000 ft ²	157,000 ft ²	248,000 ft ²
Restaurant	8,350 ft ²	3,500 ft ²	11,850 ft ²
Gas Station	8 fueling stations	-	8 fueling stations
Office	93,050 ft ²	86,000 ft ²	179,050 ft ²
Institutional	1,000 students	-	1,000 students
Cultural	-	12,000 ft ²	12,000 ft ²
Industrial	193,315 ft ²	342,935 ft ²	536,250 ft ²



The analysis of the future conditions in 2021 identified future deficiencies in the road network and was used to assess medium-term (5-10 year) improvements. The analysis of the future conditions in 2026 identified future deficiencies in the road network and was used to assess long-term (over 10 year) improvements. An additional analysis scenario was completed to identify the impact of a new interchange connection from Kenmount Road to Route 2 in the Octagon Pond area.

The traffic study also included a review of active transportation infrastructure in the area and of previous network improvement recommendations from the *Active Transportation Plan*. The road network improvement plan outlined in the includes a comprehensive trail and sidewalk network throughout the study area.

The study identified a prioritized list of short-term (0-5 year), medium-term (5-10 year) and long-term (over 10 year) road network improvements. The road network improvements for each timeframe were further prioritized using a high, medium, low priority rating. 'Class D' cost estimates were prepared for each option, the study noted that the cost estimates are high level cost estimates and do not reflect balanced earthwork, land acquisition, overhead utility relocation or underground utilities other than storm sewer. The recommended short-term, medium-term and long-term improvements are summarized in Table 6 and the network improvement plan is illustrated in Figure 4.

The background traffic growth projections and analyses techniques used in the *Karwood Market Area Traffic Study* comply with industry standards and no issues were noted. However, the assumed future development-based growth projections have not materialized to the extents assumed in the report. This is not uncommon for a wide variety of reasons that include many variables such as public policy, the local economy, market demand, etc.



Table 6: Karwood Market Area Traffic Study Network Improvements

ID	Improvement	Estimated Cost	Priority
Short-Term (0-5 year) Planned/Recommended Improvements			
KM-1	Kenmount Road/Route 1 SB Ramps Roundabout	\$750,000	High
KM-2	Kenmount Road/McNamara Drive Extension Roundabout	\$750,000	Medium
KM-3	McNamara Drive Extension Internal Roundabout	\$500,000	Medium
KM-4	Kenmount Road/McNamara Drive/Bremigens Blvd Roundabout	\$500,000	High
KM-5	Sgt Donald Lucas Drive/Octagon Pond Connection Roundabout	\$500,000	Low
KM-6	McNamara Drive/McNamara Drive Extension Roundabout	\$500,000	Medium
KM-7	Topsail Road/McNamara Drive/Clearview Heights Roundabout	\$1,600,000	High
KM-8	Street 1 North/South Octagon Pond Connection (20% Complete)	\$1,040,000	Low
KM-9	Street 3 McNamara Drive Extension – 3-lane cross section	\$4,400,000	Medium
KM-10	Street 5 Kenmount Road Extension to Route 2 Interchange (30% complete)	\$1,740,000	Low
KM-11	Street 7 McNamara Drive Extension to Kenmount Road – 3-lane cross section	\$950,000	Medium
KM-12	Kenmount Road (2-lane to 4-lane cross section w/ median)	\$6,500,000	Medium
Medium-Term (5-10 year) Recommended Improvements			
KM-13	Kenmount Road/Bruce Street/Route 1 NB On-Ramp Roundabout	\$750,000	High
KM-14	Kenmount Road Extension/Octagon Pond Connection Roundabout	\$500,000	Medium
KM-15	Octagon Pond Connection, South of Sgt Donald Lucas Drive Roundabout	\$500,000	Low
KM-16	Street 1 North/South Octagon Pond Connection (60% Complete)	\$2,080,000	Low
KM-17	Street 3 McNamara Drive Extension – 5-lane cross section	\$800,000	Medium
KM-18	Street 5 Kenmount Road Extension to Route 2 Interchange (100% complete)	\$4,060,000	Medium
KM-19	Street 7 McNamara Drive Extension to Kenmount Road – 5-lane cross section	\$200,000	Medium
KM-20	McNamara Drive (3-lane to 5-lane cross section)	\$600,000	Medium
Long-Term (10-15 year) Recommended Improvements			
KM-21	Octagon Pond Connection, North of Kenmount Road Extension Roundabout	\$500,000	Medium
KM-22	Octagon Pond Connection/Shalloway Place Extension Roundabout	\$500,000	Medium
KM-23	Street 1 North/South Octagon Pond Connection (100% Complete)	\$2,080,000	Medium
KM-24	Street 2 Octagon Pond Connection to Shalloway Place	\$1,800,000	Low
KM-25	Street 4 Bremigens Boulevard Extension Connection to Kenmount Road	\$1,100,000	Low
KM-26	Street 6 Bremigens Boulevard Extension	\$1,800,000	Low

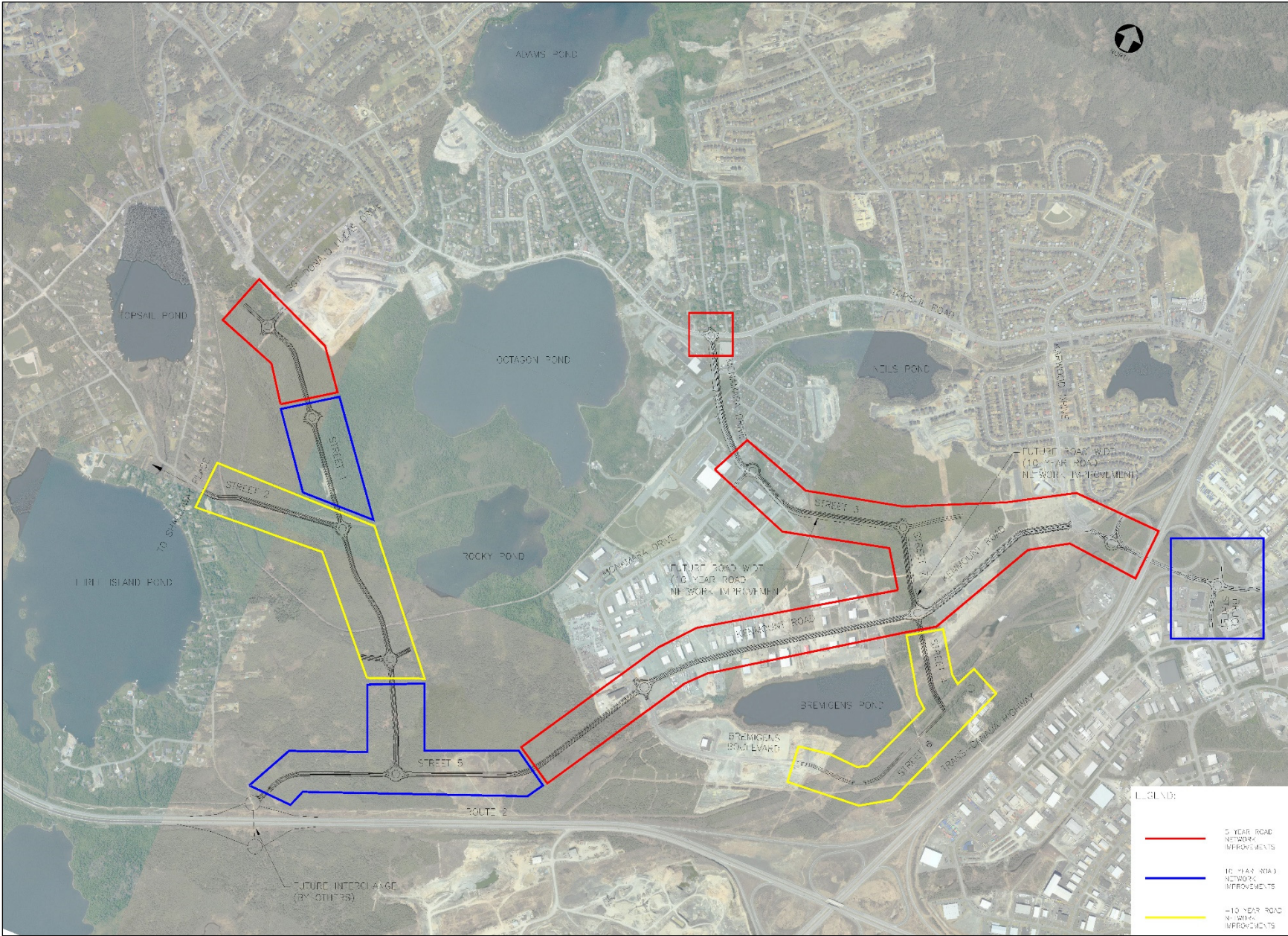


Figure 4: Karwood Market Area Traffic Study Network Improvement Plan



3 Detailed Improvements Review

The recommendations for short-term, medium-term and long-term improvements from the four transportation planning documents were reviewed to identify which improvements have been completed. The improvements that have not been completed to date were further reviewed; recommendations were confirmed, modified or updated based on the most recent traffic data and travel pattern information available.

3.1 Short Term Improvements (0 to 5 year)

There are 28 short-term improvement recommendations between the four planning documents; three of the recommendations reflect the same improvement repeated in multiple studies resulting in only 26 short-term improvements. The review of short-term improvements is detailed in Table 7.

12 short-term improvements have been completed to date and two short-term improvements have been partially completed and are expected to be completed during the 2020 construction season. One of the short-term improvements that have not been completed is no longer required:

1. NB and SB dual left turn lanes at the Route 1 terminals with Topsail Road: Operational issues on the southbound ramp are primarily caused by the high volume right turn movement. The southbound dual left turn movement would not significantly improve operations.

There are 11 remaining short-term improvements to reprioritize:

1. Kenmount Road/Route 1 SB Ramps Roundabout
2. Kenmount Road/McNamara Drive Extension Roundabout
3. McNamara Drive Extension Internal Roundabout
4. Kenmount Road/McNamara Drive/Bremigens Blvd Roundabout
5. Sgt Donald Lucas Drive/Octagon Pond Connection Roundabout
6. McNamara Drive/McNamara Drive Extension Roundabout
7. Street 1 – North/South Octagon Pond Connection (20% Complete)
8. Street 3 – McNamara Drive Extension – 3-lane cross section
9. Street 5 – Kenmount Road Extension to Route 2 Interchange (30% complete)
10. Street 7 – McNamara Drive Extension Connection to Kenmount Road – 3-lane cross section
11. Kenmount Road (2-lane to 4-lane cross section w/ median)



Table 7: Review of Short-Term Improvements

ID	Improvement	Status	Comment
TS-1	Widening of Karwood Drive to 4 lanes with traffic signals (or roundabout) at the Kenmount Road and Karwood Drive intersection	Completed	-
TS-2	Widening of Topsail Road to 5 lanes from McNamara Drive to St. Thomas Line	Completed	-
TS-3	Upgrade Paradise Road to 3 lanes with curb and gutter from Milton Road to St. Thomas Line.	Partially completed	Final phase in 2020
TS-4	Traffic signal optimization at the Kenmount Road and Bruce Street intersection	Completed	-
TS-5	Traffic signals (or roundabout) at the Kenmount Road and TCH West intersection	-	Replaced by KM-1
TS-6	Upgrade the Kenmount Road and Topsail Road Interchange	Completed	-
AT-1	Topsail Road – McNamara Drive to St. Thomas Line: sidewalk on north side of Topsail Road; crosswalks at Christopher Street, Rockcliffe Avenue and near Octagon Heights. Explore opportunities for an underpass crossing of Topsail Road.	Completed	One side from McNamara to Rockcliffe; both sides from Rockcliffe to St. Thomas
AT-4	Karwood Drive: Pedestrian crossing near the Paradise Elementary School; evaluate need for actuated crossing control; explore opportunities for an underpass crossing of Karwood Drive.	Completed	-
AT-5	Paradise Road: sidewalk	Partially completed	One side from Topsail to Stormont; both sides from Stormont to Archibald. Final phase in 2021
AT-10	Elizabeth Park Path: continuous pathways through Elizabeth Park; crosswalks at Ellesmere Avenue and Carlisle Drive.	Completed	-
AT-11	St. Thomas Line: sidewalks along St. Thomas Line to connect with existing sidewalk and crosswalk at Ridgewood Drive near the Holy Family Elementary School.	Completed	-
TIP-1	Traffic signals at the intersection of Kenmount Road and Route 1 SB	-	Replaced by KM-1
TIP-2	NB right turn lane at the intersection of Kenmount Road and Bruce Street/Route 1 NB	Completed	-
TIP-3	NB right turn lane at the intersection of Topsail Road and Karwood Street	Completed	-
TIP-4	NB and SB dual left turn lanes at the Route 1 terminals with Topsail Road	Not completed	Not recommended
TIP-5	Optimize and coordinate signal timings	Completed	-
KM-1	Kenmount Road/Route 1 SB Ramps Roundabout	Not completed	-
KM-2	Kenmount Road/McNamara Drive Extension Roundabout	Not completed	-
KM-3	McNamara Drive Extension Internal Roundabout	Not completed	-
KM-4	Kenmount Road/McNamara Drive/Bremigens Blvd Roundabout	Not completed	-
KM-5	Sgt Donald Lucas Drive/Octagon Pond Connection Roundabout	Not completed	-
KM-6	McNamara Drive/McNamara Drive Extension Roundabout	Not completed	In design phase



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KM-7	Topsail Road/McNamara Drive/Clearview Heights Roundabout	Completed	-
KM-8	Street 1 – North/South Octagon Pond Connection (20% Complete)	Not completed	-
KM-9	Street 3 – McNamara Drive Extension – 3-lane cross section	Not completed	In design phase
KM-10	Street 5 – Kenmount Road Extension to Route 2 Interchange (30% complete)	Not completed	-
KM-11	Street 7 – McNamara Drive Extension Connection to Kenmount Road – 3-lane cross section	Not completed	-
KM-12	Kenmount Road (2-lane to 4-lane cross section w/ median)	Not completed	-



3.2 Medium Term Improvements (5 to 10 year)

There are 24 medium-term improvement recommendations between the four planning documents; eight of the recommendations reflect the same improvements repeated in multiple studies resulting in only 17 medium-term improvements. The review of medium-term improvements is detailed in Table 8.

Three medium-term improvements have been completed to date. Two of the medium-term improvements that have not been completed are no longer recommended:

1. Topsail Pond Path: The area around Topsail Pond has been fully developed. While the immediate area around the pond is not private property, there are a number of residential properties backing onto the pond. Property owners may oppose the development of a trail around the pond.
2. Install SB, EB and WB right turn lanes at the intersection of Topsail Road and Karwood Street: Right turn lanes are not feasible on the eastbound and westbound approaches due to physical constraints including residential homes and grades. A right turn lane could be constructed on the southbound approach, however, traffic volumes at the intersection indicate that there is very low demand for the movement. The southbound right turn lane would not have a significant impact on intersection operations.

There are 12 remaining medium-term improvements to reprioritize.

1. Topsail Road – Karwood Drive to TransCanada Highway: sidewalk
2. Paradise Elementary School Path: pathway from McNamara Drive to the Paradise Elementary School
3. Roundabouts at the Route 1 ramp terminals with Topsail Road
4. Traffic signals at the Kenmount Road ramp terminals with Topsail Road
5. Kenmount Road/Bruce Street/Route 1 NB On-Ramp Roundabout
6. Kenmount Road Extension/Octagon Pond Connection Roundabout
7. Octagon Pond Connection, South of Sgt Donald Lucas Drive Roundabout
8. Street 1 – North/South Octagon Pond Connection (60% Complete)
9. Street 3 – McNamara Drive Extension – 5-lane cross section
10. Street 5 – Kenmount Road Extension to Route 2 Interchange (100% complete)
11. Street 7 – McNamara Drive Extension Connection to Kenmount Road – 5-lane cross section
12. McNamara Drive (3-lane to 5-lane cross section)



Table 8: Review of Medium-Term Improvements

ID	Improvement	Status	Comment
TS-7	Traffic signals at the Topsail Road and St. Thomas Line intersection	-	Replaced by TIP-6
TS-8	Lane widening to 4 lanes at the Kenmount Road and TCH West intersection	-	Replaced by KM-1/13
TS-9	Construction of a new road from McNamara Drive to Kenmount Road	-	Replaced by KM-9/11
TS-10	Improvements to the Kenmount Road and Bruce Street intersection	-	Replaced by KM-13
AT-2	Topsail Road – McNamara Drive to Karwood Drive: sidewalk	Completed	-
AT-3	Topsail Road – Karwood Drive to TransCanada Highway: sidewalk; traffic signals modifications to provide pedestrian phases at the TCH interchange.	Not completed	-
AT-6	Adams Pond Trail/Sidewalk Connections: construction of Adams Pond Trails phased with development around Adams Pond; sidewalks on both sides on Lanark Drive; sidewalk on one side of subdivision streets.	Completed	-
AT-7	Paradise Elementary School Path: pathway from McNamara Drive to the Paradise Elementary School	Not completed	-
AT-8	New Roadway by Soccer Fields: multi-use path on one side of the roadway and sidewalk on the other side of the roadway	-	Replaced by KM-9/11
AT-9	Topsail Pond Path: create circuit around Topsail Pond	Not completed	Not recommended
TIP-6	Re-evaluate the need for traffic signals at the intersection of Topsail Road and St. Thomas Line	Completed	-
TIP-7	Widen Kenmount Road and install Roundabouts at Kenmount Road and Route 1 SB and Kenmount Road and Bruce Street/Route 1 NB	-	Replaced by KM-1/13
TIP-8	Roundabouts at the Route 1 ramp terminals with Topsail Road	Not completed	-
TIP-9	New roadway connection between McNamara Drive and Kenmount Road	-	Replaced by KM-9/11
TIP-10	Install SB, EB and WB right turn lanes at the intersection of Topsail Road and Karwood Street	Not completed	Not recommended
TIP-11	Traffic signals at the Kenmount Road ramp terminals with Topsail Road	Not completed	Re-evaluate
KM-13	Kenmount Road/Bruce Street/Route 1 NB On-Ramp Roundabout	Not completed	-
KM-14	Kenmount Road Extension/Octagon Pond Connection Roundabout	Not completed	-
KM-15	Octagon Pond Connection, South of Sgt Donald Lucas Drive Roundabout	Not completed	-
KM-16	Street 1 – North/South Octagon Pond Connection (60% Complete)	Not completed	-
KM-17	Street 3 – McNamara Drive Extension – 5-lane cross section	Not completed	-
KM-18	Street 5 – Kenmount Road Extension to Route 2 Interchange (100% complete)	Not completed	-
KM-19	Street 7 – McNamara Drive Extension Connection to Kenmount Road – 5-lane cross section	Not completed	-
KM-20	McNamara Drive (3-lane to 5-lane cross section)	Not completed	-



3.3 Long Term Improvements (10 to 15 year)

There are 14 long-term improvement recommendations between the four planning documents; six of the recommendations reflect the same improvements repeated in multiple studies resulting in only 11 long-term improvements. The review of long-term improvements is detailed in Table 9.

None of the long-term improvements have been completed to date. One of the long-term improvements that has not been completed is no longer recommended:

1. Upgrade Trails End Drive from Topsail Road to Milton Road: Trails End Drive has been designed as a collector roadway and both sides of the roadway have been fully developed. In order to upgrade and widen the roadway the Town would have acquire land from the majority of property owners along Trails End Drive. A large portion of residential properties on the east side of Trails End Drive have short driveways lengths which can only one vehicle; any land acquisition along the frontage of these properties will have a significant impact on driveways.

There are 10 remaining long-term improvements to reprioritize:

1. New interchange on Route 2 with connection to Kenmount Road and Topsail Road
2. New interchange on Route 1 with connections to Paradise Road and to Trails End Drive
3. Upgrade Milton Road from Paradise Road to Trails End Drive
4. North-South connector road system
5. Octagon Pond Connection, North of Kenmount Road Extension Roundabout
6. Octagon Pond Connection/Shalloway Place Extension Roundabout
7. Street 1 – North/South Octagon Pond Connection (100% Complete)
8. Street 2 – Octagon Pond Connection to Shalloway Place
9. Street 4 – Bremigens Boulevard Extension Connection to Kenmount Road
10. Street 6 – Bremigens Boulevard Extension



Table 9: Review of Long-Term Improvements

ID	Improvement	Status	Comment
TS-11	Extension of Trails End Drive and construction of new interchange with the TCH	Not completed	Replaced by TIP-13
TS-12	Upgrade Trails End Drive from Topsail Road to Milton Road	Not completed	Not recommended
TS-13	Upgrade Milton Road from Paradise Road to Trails End Drive	Not completed	Upgrade from Paradise Road to Robert Heights
TS-14	Extension of Kenmount Road and construction of new interchange with Route 2	Not completed	Replaced by TIP-12
TS-15	Construction of additional north south roadway parallel to St. Thomas Line	Not completed	Replaced by TIP-14
TIP-12	New interchange on Route 2 with connection to Kenmount Road and Topsail Road	Not completed	-
TIP-13	New interchange on Route 1 with connections to Paradise Road and to Trails End Drive	Not completed	-
TIP-14	North-South connector road system	Not completed	-
KM-21	Octagon Pond Connection, North of Kenmount Road Extension Roundabout	Not completed	-
KM-22	Octagon Pond Connection/Shalloway Place Extension Roundabout	Not completed	-
KM-23	Street 1 – North/South Octagon Pond Connection (100% Complete)	Not completed	-
KM-24	Street 2 – Octagon Pond Connection to Shalloway Place	Not completed	-
KM-25	Street 4 – Bremigens Boulevard Extension Connection to Kenmount Road	Not completed	-
KM-26	Street 6 – Bremigens Boulevard Extension	Not completed	-



4 Reprioritized Improvement Plan

The remaining improvements were reprioritized within the three implementation timeframes – short-term, medium-term and long-term. Improvements within each timeframe were further prioritized by assigning a priority ranking of high, medium or low. The cost estimates for the improvements were reviewed and updated as required. The construction cost estimates provided are high-level estimates; the estimates do not include land acquisition and are subject to preliminary and detailed design. The reprioritized list of improvements and updated cost estimates are summarized in Table 10.

4.1 Short Term Improvements (0 to 5 year)

The short-term improvements focus primarily on improving traffic flow at congested intersections on the major corridors that provide access to/from the Town of Paradise. There are twelve (12) recommendations for short-term improvements; two of which will be completed by the Province with the construction of the Paradise Junior High School. The estimated cost to implement the ten (10) other short-term improvements is approximately \$16,650,000. The Town is expected to be responsible for the full cost of seven (7) of the short-term improvements; a total cost of approximately \$10,200,000. The Town of Paradise will not be responsible for the full cost of three (3) of the short-term improvements; these improvements will require cost sharing agreements with other jurisdictions including the Province and Mount Pearl.

4.2 Medium Term Improvements (5 to 10 year)

The medium-term improvements focus on upgrading a number of the major corridors that provide access to/from the Town of Paradise to accommodate future demand. There are seven (7) recommendations for medium-term improvements. The estimated cost to implement the medium-term improvements is approximately \$8,275,000. The Town is expected to be responsible for the cost of five (5) of the medium-term improvements; a total cost of approximately \$2,415,000. Two (2) of the medium-term improvements will be driven by development. The developer(s) is expected to be responsible for the full cost of these improvements; a total cost of approximately \$5,860,000.

4.3 Long Term Improvements (10 to 15 year)

The long-term improvements include focus on providing additional connections to the regional road network to accommodate future demand and alleviate congestion on existing corridors – primarily Topsail Road and Kenmount Road. There are eight (8) recommendations for long-term improvements. The cost of one (1) of the long-term improvements is not included in the cost estimates as a route planning study must be completed to estimate construction costs for the north-south connector roadways. The estimated cost to implement the seven (7) other long-term improvements is approximately \$35,840,000. The Town is expected to be responsible for the cost of one (1) of the long-term improvements; a total cost of approximately \$2,000,000. Four (4) of the long-term improvements will be driven by development. The developer(s) is expected to be responsible for the full cost of these improvements; a total cost of approximately \$12,340,000. The Town of Paradise be responsible for a portion of the cost of two (2) of the long-term improvements; these improvements will require cost sharing agreements with other jurisdictions including the Province and the City of St. John's.



Table 10: Reprioritized List of Improvements

ID	Improvement	Priority	Cost	Comment
Short-Term Improvements (0-5 year)				
1	Construct the McNamara Drive Extension from McNamara Drive to the new Paradise Junior High School (three-lane cross section with sidewalk)	-	-	Currently in design phase; will be completed by the Province with the construction of the new school
2	Construct a roundabout at the intersection of McNamara Drive and McNamara Drive Extension	-	-	
3	Upgrade the intersection of Kenmount Road and the Route 1 SB Ramps to a roundabout	High	\$1,200,000	Explore cost sharing with the Province
4	Construct the McNamara Drive Extension from the new Paradise Junior High School to Kenmount Road (3-lane cross section with sidewalk)	High	\$950,000	Paradise is responsible for the cost of the improvement
5	Construct a roundabout at the intersection of Kenmount Road and McNamara Drive Extension	High	\$1,000,000	Paradise is responsible for the cost of the improvement
6	Construct a roundabout at the intersection of McNamara Drive Extension and Internal Roadway	High	\$500,000	Paradise is responsible for the cost of the improvement
7	Install sidewalks along Topsail Road from Karwood Drive to the Route 1 interchange	High	\$200,000	Paradise is responsible for the cost of the improvement
8	Upgrade the intersections at the Route 1 interchange with Topsail Road to multilane roundabouts	Medium	\$3,500,000	Explore cost sharing with the Province
9	Upgrade the intersection of St. Thomas Line and Paradise Road to a roundabout	Medium	\$1,000,000	Paradise is responsible for the cost of the improvement
10	Upgrade Kenmount Road from Karwood Drive to the McNamara Drive Extension (four-lane cross section with raised median, sidewalk and active transportation trail)	Low	\$6,500,000	Paradise is responsible for the cost of the improvement
11	Upgrade the intersection of Kenmount Road and Bruce Street/Route 1 NB On-Ramp to a roundabout	Low	\$1,750,000	Explore cost sharing with Mount Pearl and the Province
12	Conduct a route planning exercise to identify and secure right-of-way for future north-south connector roadways. Explore opportunities to connect to the future interchange on Route 1.	Low	\$50,000	Paradise is responsible for the cost of the improvement
Medium-Term Improvements (5-10 year)				
13	Upgrade the intersection of Kenmount Road and McNamara Drive/Bremigens Blvd Roundabout to a roundabout	High	\$750,000	Paradise is responsible for the cost of the improvement
14	Construct a pedestrian connection (multiuse trail) from McNamara Drive to the Paradise Elementary School on Karwood Drive	High	\$60,000	Paradise is responsible for the cost of the improvement
15	Upgrade the McNamara Drive Extension from McNamara Drive to Kenmount Road (five-lane cross section with sidewalk and active transportation trail)	Medium	\$1,000,000	Paradise is responsible for the cost of the improvement
16	Upgrade McNamara Drive from Topsail Road to the McNamara Drive Extension (five-lane cross section)	Medium	\$600,000	Paradise is responsible for the cost of the improvement



17	Re-evaluate the need for traffic signals at the Kenmount Road interchange with Topsail Road	Low	\$5,000	Paradise is responsible for the cost of the improvement
18	Partial construction of the Octagon Pond Collector Roadway from Sgt. Donald Lucas Drive to the south. Construct roundabouts at the intersections with Sgt. Donald Lucas Drive and one development access.	Low	\$4,120,000	Driven by development; developer is responsible for the cost of the improvements
19	Partial construction of the Kenmount Road Extension from McNamara Drive to the west	Low	\$1,740,000	
Long-Term Improvements (over 10 year)				
20	Complete construction of the Octagon Pond Collector Roadway from Sgt. Donald Lucas Drive to Kenmount Road Extension. Construct roundabouts at the intersection of the Kenmount Road Extension and the Octagon Pond Collector Roadway and one development access.	High	\$3,080,000	Driven by development; developer is responsible for the cost of the improvements
21	Complete construction of the Kenmount Road Extension from McNamara Drive to the future Route 2 interchange	High	\$4,060,000	
22	Construct new interchange on Route 2 with connections to the Kenmount Road Extension and Octagon Pond Collector Roadway	Medium	\$10,000,000	Discussions are required with the Province; explore cost sharing with the Province and developer
23	Construct new interchange on Route 1 with connections to Paradise Road and to Trails End Drive	Low	\$11,500,000	Discussions are required with the Province; explore cost sharing with the Province, PC-SP and St. John's
24	Upgrade Milton Road from Paradise Road to Roberts Heights	Low	\$2,000,000	Paradise is responsible for the cost of the improvement
25	Construct north-south connector roadways and potential connection to the new Route 1 interchange. Construct	Low	TBD	Cost to be determined by route planning exercise. Explore cost sharing with PCSP
26	Construct connector roadway from Shalloway Place to the Octagon Pond Collector Road (two-lane cross section with sidewalk and active transportation trail). Construct a roundabout at the intersection of Octagon Pond Collector Roadway and Shalloway Place.	Low	\$2,300,000	Driven by development; developer is responsible for the cost of the improvements
27	Construct the Bremigens Boulevard Extension and connection to the roundabout at the intersection of Kenmount Road and McNamara Drive Extension	Low	\$2,900,000	

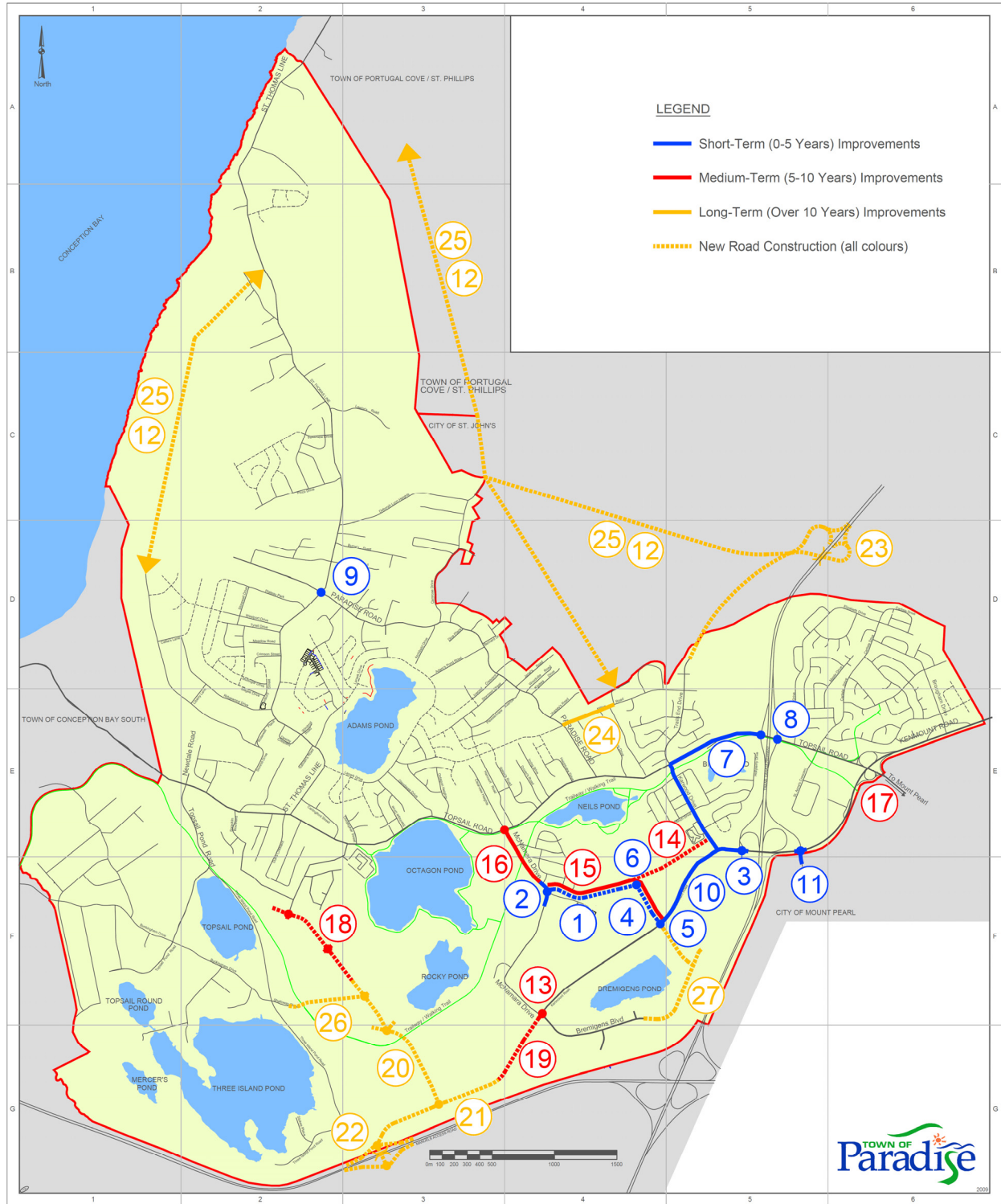


Figure 5: Reprioritized Network Improvement Plan



5 Road Network Connections

Five (5) potential roadway connections throughout the Town of Paradise were reviewed.

1. Lanark Drive: southern connection to St. Thomas Line
2. Lanark Drive: extension around Adams Pond
3. Mallow Drive: extension and connection to Paradise Road at Milton Road
4. Yellow Wood Drive: connection to Devaughn Street
5. McNamara Drive: extension from McNamara Drive to Kenmount Road

The implications of completing each roadway connection and the impacts on connectivity, emergency access, travel patterns, safety, land acquisition and development potential were identified. The positive and negative impacts of each connection were reviewed in order to make a recommendation on the completion of each roadway connection.

5.1 Lanark Drive to St. Thomas Line

This segment of Lanark Drive is classified as a local roadway. While this segment of Lanark Drive is currently classified as a local roadway, once Lanark Drive is fully constructed it is expected to be classified as a collector roadway and has been designed to collector roadway standards. Lanark Drive has a cross section width of approximately 14.0 metres with two travel lanes and permitted parking on both sides. The proposed connection would connect Lanark Drive to St. Thomas Line. St. Thomas Line is a collector roadway. St. Thomas Line has a three-lane cross section and a posted speed limit of 50 km/hr. A 2019 traffic count reported a daily traffic volume of 7,957 vehicles on St. Thomas Line. The proposed connection of Lanark Drive to St. Thomas Line is illustrated in Figure 6.



Figure 6: Lanark Drive to St. Thomas Line



5.1.1 Connectivity

This segment of Lanark Drive can be accessed from Topsail Road via Glenderek Drive, Stanhope Drive/Harmony Street and Clearview Heights/Mallow Drive. The connection of Lanark Drive to St. Thomas Line would provide a secondary connection to a major collector roadway.

5.1.2 Emergency Access

While this connection does provide a secondary connection to Lanark Drive from St. Thomas Line, which can certainly provide alternative access in emergency situations, there is no significant advantage or disadvantage to emergency access without it. It is noted that there are currently three existing disconnected segments of Lanark Drive, which could potentially be problematic for emergency responders - if they happened to be unaware that Lanark Drive is not presently continuous - however, this has not been identified as a recurring issue, and completing this connection of Lanark to St. Thomas Line does little to improve the continuity of Lanark Drive itself.

5.1.3 Travel Patterns

The Town has previously experienced shortcutting issues in this general area. Vehicles travelling to/from St. Thomas Line travel along Carlingford Street to avoid the traffic signals at Topsail Road and St. Thomas. This shortcutting pattern indicates that if the connection to Lanark Drive was made, vehicles travelling to/from St. Thomas Line would likely travel along Lanark Drive to avoid a longer segment of Topsail Road. It is anticipated that vehicles would enter/exit Topsail Road at the Clearview Heights roundabout. The shortcutting problem could potentially be exacerbated if the connection of Mallow Drive to Paradise Road was made. Traffic calming measures would be required to mitigate shortcutting issues through the residential neighbourhood.

5.1.4 Safety

The connection of Lanark Drive to St. Thomas Line creates an attractive route for shortcutting to avoid Topsail Road. The connection could lead to higher traffic volumes and speeds throughout the residential neighbourhood, which would have a negative impact on pedestrian safety.

5.1.5 Land Acquisition

The land required to complete the connection of Lanark Drive to St. Thomas Line is privately owned. The roadway connection has not been completed by the subdivision developer(s) because it requires crossing of a waterway and the land along the connection has no development potential. The Town of Paradise would need to acquire land to pursue the completion of this road segment. The land acquisition could potentially be included in a cost sharing type arrangement should the Town wish to pursue this matter in conjunction with the current owner.

5.1.6 Development Potential

Depending on the floodplain relating to the adjacent watercourse, the connection of Lanark Drive to St. Thomas Line could potentially create a couple of additional lots.



5.1.7 Summary of Impacts and Recommendation

The impacts of completing the roadway connection of Lanark Drive to St. Thomas Line on connectivity, emergency access, travel patterns, safety, land acquisition and development potential are summarized in Table 11. Each consideration was given a rating of negative impact (-), no impact (●) or positive impact (+).

This connection of Lanark Drive to St. Thomas line has been a part of the overall street network plan in this area for quite some time. While the connection will improve connectivity in the area, it will also introduce the opportunity for shortcutting through the residential neighbourhood to avoid Topsail Road. The potential increase in traffic volumes and vehicle speeds on residential roadways could have a negative impact on safety. The connection will require land acquisition. However, depending on the floodplain relating to the adjacent watercourse, the connection could potentially create a couple of additional lots, more information is required to determine development potential. The connection is not expected to have a significant impact on emergency access. There is no readily identifiable advantage that warrants the Town’s involvement to complete this connection in advance of the ‘natural development’ of the same. That said, the Town should encourage the developer(s) to complete this longstanding planned connection at their earliest opportunity, to complete this area of the subdivision and overall street network. It is also recommended that traffic volumes and speeds in this area be monitored prior to and after completion of the connection. If shortcutting traffic is identified as an issue, implementation of mitigative traffic calming measures should be considered.

Table 11: Lanark Drive to St. Thomas Line Summary of Impacts

Consideration	Impact
Connectivity	+
Emergency Access	●
Travel Patterns	-
Safety	-
Land Acquisition	-
Development Potential	+

5.2 Lanark Drive around Adams Pond

Lanark Drive is classified as a collector roadway. The proposed connections would extend Lanark Drive from the segment currently connected to St. Thomas Line, all the way around Adams Pond to connect the other existing segments in the Paradise Road and Mallow Drive areas, ultimately connecting back to St. Thomas Line via the connection discussed above in Section 5.1. The proposed extension of Lanark Drive around Adams Pond is illustrated in Figure 7.

5.2.1 Connectivity

The proposed extension of Lanark Drive around Adams Pond will connect to a number of residential roadways and increase connectivity in the area. The connections will eliminate cul-de-sacs with access only to/from Paradise Road/St. Thomas Line/Topsail Road. These connections are not expected to create significant shortcutting issues for vehicles travelling between Paradise Road/St. Thomas Line/Topsail Road.



5.2.2 Emergency Access

The proposed extension of Lanark Drive around Adams Pond will improve emergency access to the areas currently only accessible from either Paradise Road/St. Thomas Line/Topsail Road by providing secondary access and continuity along Lanark Drive. As noted in section 5.1 , there are currently three existing disconnected segments of Lanark Drive, which could potentially be problematic for emergency responders - if they happened to be unaware that Lanark Drive is not presently continuous - however, this has not been identified as a recurring issue

5.2.3 Travel Patterns

The proposed extension of Lanark Drive around Adams Pond is not expected to have a significant impact on travel patterns.

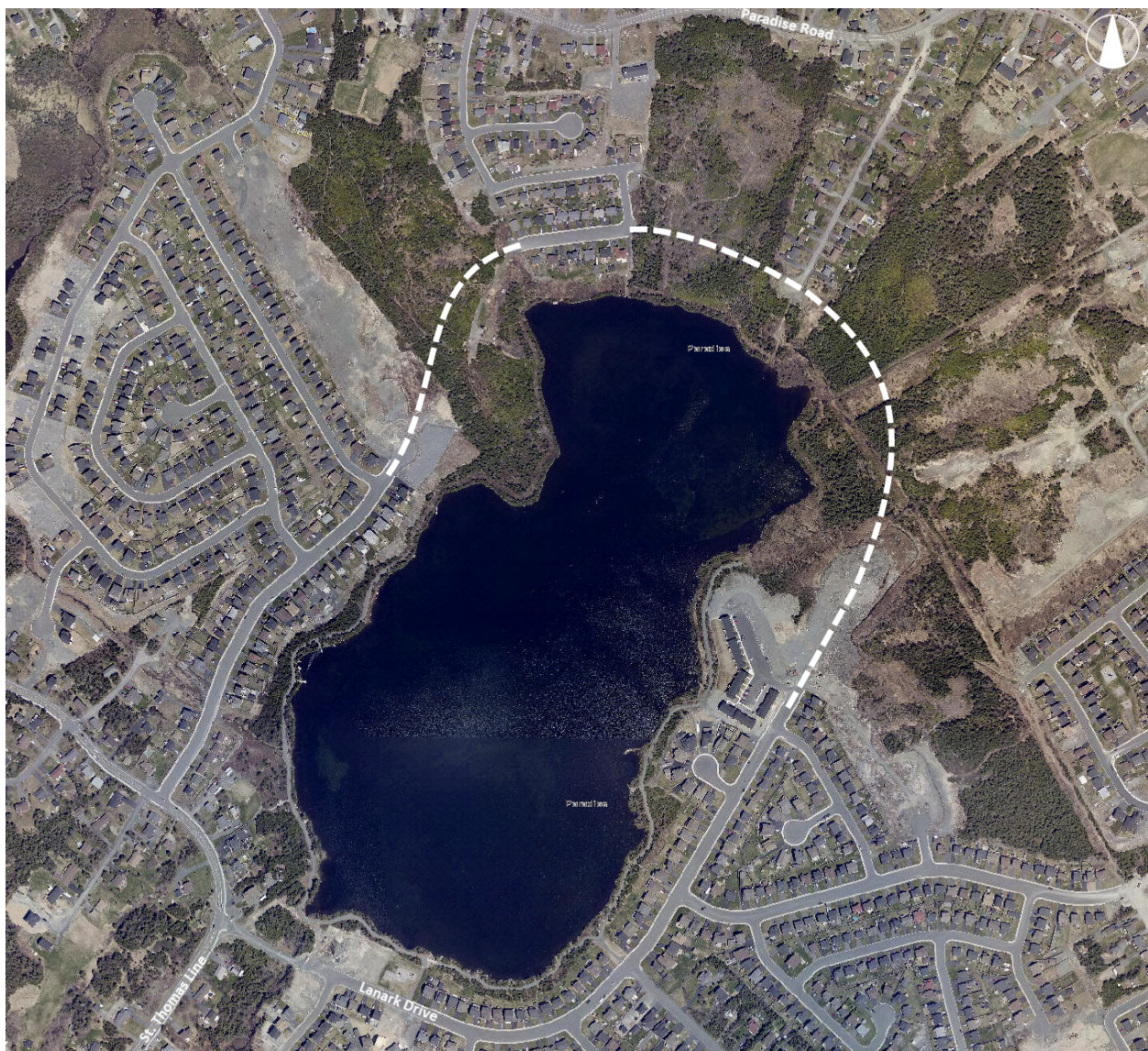


Figure 7: Lanark Drive around Adams Pond



5.2.4 Safety

The proposed extension of Lanark Drive around Adams Pond is not expected to have a significant impact on safety.

5.2.5 Land Acquisition

The land required to complete the extension of Lanark Drive around Adams Pond is privately owned by multiple land owners. Should the Town wish to pursue completion of this segment of roadway, negotiation with multiple parties to acquire the land would be required.

5.2.6 Development Potential

The proposed extension of Lanark Drive around Adams Pond will open up land for development.

5.2.7 Recommendation

The impacts of extending Lanark Drive around Adams Pond on connectivity, emergency access, travel patterns, safety, land acquisition and development potential are summarized in Table 12. Each consideration was given a rating of negative impact (-), no impact (●) or positive impact (+).

These roadway connections will increase connectivity, emergency access and development potential in the area and would also give this residential development greater sense of “completion”. The connections are not expected to have significant impacts on travel patterns and safety. The connections will require land acquisition from multiple landowners. There is no readily identifiable significant advantage that would warrant the Town’s involvement to complete these connections in advance of the ‘natural development’ of the same. That said, the Town should encourage the developer(s) to complete this longstanding planned connection at their earliest opportunity, to complete this area of the subdivision and overall street network.

Table 12: Lanark Drive around Adams Pond Summary of Impacts

Consideration	Impact
Connectivity	+
Emergency Access	+
Travel Patterns	●
Safety	●
Land Acquisition	-
Development Potential	+

5.3 Mallow Drive to Paradise Road

Mallow Drive is classified as a local roadway. While Mallow Drive is currently classified as a local roadway, once Mallow Drive is fully constructed it is expected to be classified as a collector roadway and has been designed to collector roadway standards. Mallow Drive has a cross section width of approximately 14.0 metres with two travel lanes and permitted parking on both sides. The proposed connection would connect Mallow Drive to Paradise Road at the intersection with Milton Road. Paradise Road is a collector roadway. Paradise Road has a three-lane cross section and a posted speed limit of 50 km/hr. A 2019 traffic



count reported a daily traffic volume of 6,248 vehicles on Paradise Road. The proposed extension and connection of Mallow Drive to Paradise Road is illustrated in Figure 8.



Figure 8: Mallow Drive to Paradise Road

5.3.1 Connectivity

The proposed connection of Mallow Drive to Paradise Road will increase connectivity in the area. Mallow Drive will provide a secondary access to existing residential roadways which can only be accessed from Topsail Road at present, including Harcourt Road, Gosses Road, Dovers Road, Irving Drive and Heightview Drive. The proposed connection will also provide a secondary access to the Fred W. Brown Drive, Stormont Street and Pleasant View Avenue area, which can only be accessed from Paradise Road at present.

5.3.2 Emergency Access

The proposed connection of Mallow Drive to Paradise Road will improve emergency access to the areas currently only accessible from Paradise Road by providing a secondary access via Mallow Drive.

5.3.3 Travel Patterns

The proposed connection of Mallow Drive to Paradise Road will create a collector roadway for the adjacent residential areas. It is anticipated that the Mallow Drive connection will reduce traffic volumes on Topsail Road by providing an alternate connection to Paradise Road.

5.3.4 Safety

The proposed extension of Mallow Drive to Paradise Road is not expected to have a significant impact on safety; however, a higher level of traffic control might eventually be required at the intersection of Paradise Road and Mallow Drive/Milton Road.



5.3.5 Land Acquisition

The land required to complete the extension of Mallow Drive to Paradise Road is privately owned by multiple land owners. The Town of Paradise will need to negotiate with multiple parties to acquire the land required to construct the roadway.

5.3.6 Development Potential

The proposed extension and connection of Mallow Drive to Paradise Road will open up land for development.

5.3.7 Recommendation

The impacts of completing the roadway connection of Mallow Drive to Paradise Road on connectivity, emergency access, travel patterns, safety, land acquisition and development potential are summarized in Table 13. Each consideration was given a rating of negative impact (-), no impact (●) or positive impact (+).

The roadway connection will increase connectivity in the area, provide an alternative access to a number of adjacent residential areas and improve emergency access. The roadway connection is expected to function as a residential collector roadway and potentially reduce traffic volumes on Topsail Road by providing an alternate connection to Paradise Road. The proposed extension of Mallow Drive to Paradise Road is not expected to have a significant impact on safety; however, a higher level of traffic control might eventually be required at the intersection of Paradise Road and Mallow Drive/Milton Road. The roadway connection will also increase development potential in the area and improve emergency access. This connection has been a longstanding planned connection in the Town’s overall street network, and there is little incentive for a developer to complete this connection as the connection will require land acquisition from multiple land owners. It is recommended that the Town of Paradise consider completing the extension and connection of Mallow Drive to Paradise Road as opposed to waiting for the developer(s) to make this connection.

Table 13: Mallow Drive to Paradise Road Summary of Impacts

Consideration	Impact
Connectivity	+
Emergency Access	+
Travel Patterns	+
Safety	●
Land Acquisition	-
Development Potential	+

5.4 Yellow Wood Drive to Devaughn Street

Yellow Wood Drive and Devaughn Street are local residential roadways. Both roadways have a two-lane cross section with permitted parking on both sides. The proposed connection of Yellow Wood Drive to Devaughn Street is illustrated in Figure 9.

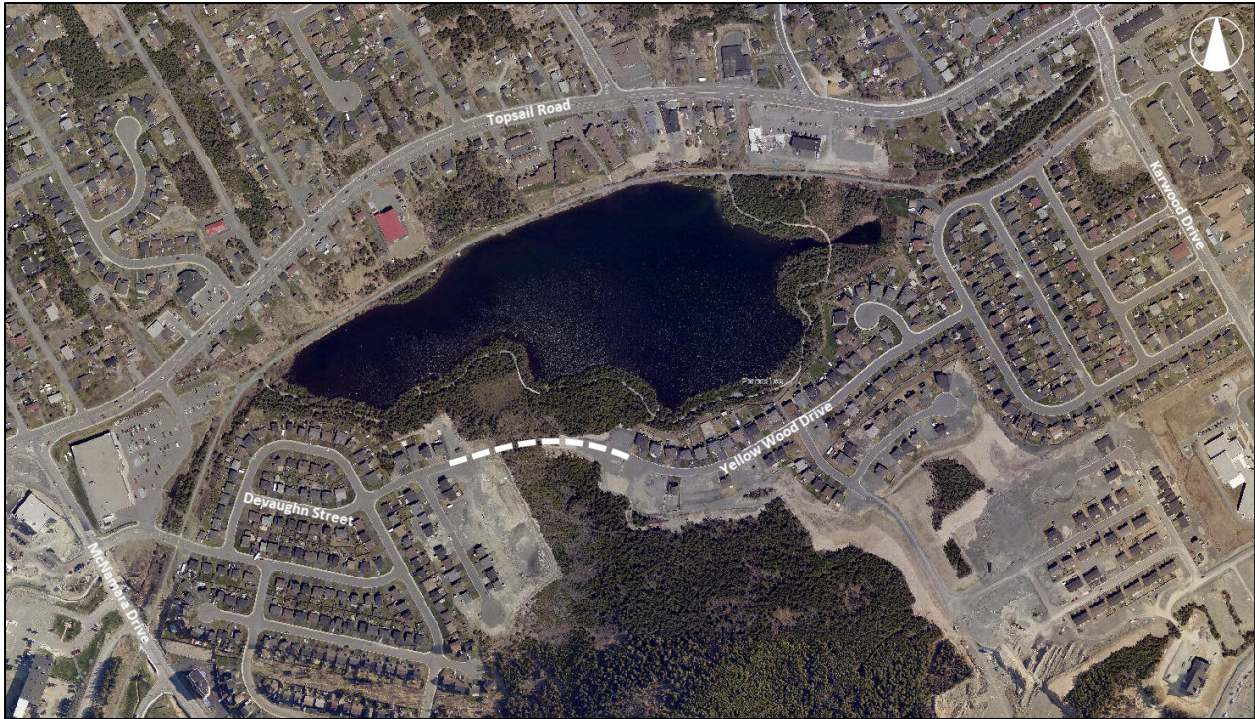


Figure 9: Yellow Wood Drive to Devaughn Street

5.4.1 Connectivity

The neighbourhood of Karwood Estates can only be accessed from Karwood Drive and the Valley Ridge neighbourhood can only be accessed from McNamara Drive. The connection of Yellow Wood Drive to Devaughn Street will provide a secondary connection to these neighbourhoods.

5.4.2 Emergency Access

The connection of Yellow Wood Drive to Devaughn Street is not expected to have a significant impact on emergency access.

5.4.3 Travel Patterns

The connection of Yellow Wood Drive to Devaughn Street is not expected to have significant impacts on travel patterns in the area. The connection will not create an attractive shortcutting route between McNamara Drive and Karwood Drive for non-residents of the two subdivisions. However, it will allow residents of these subdivisions to reach destinations such as Sobeys, the arena, Paradise Elementary, etc. without having to use Topsail Road and/or McNamara Drive.

5.4.4 Safety

The connection of Yellow Wood Drive to Devaughn Street is not expected to have a significant impact on safety.



5.4.5 Land Acquisition

The land required to complete the connection of Yellow Wood Drive to Devaughn Street is privately owned by two developers. The Town of Paradise will need to acquire the land required to construct the roadway; the amount of property required will be minimal.

5.4.6 Development Potential

The connection of Yellow Wood Drive to Devaughn Street will not create additional land for development.

5.4.7 Recommendation

The impacts of completing the roadway connection of Yellow Wood Drive to Devaughn Street on connectivity, emergency access, travel patterns, safety, land acquisition and development potential are summarized in Table 14. Each consideration was given a rating of negative impact (-), no impact (●) or positive impact (+).

The roadway connection is not expected to have a significant impact on travel patterns for non-residents of the two subdivisions. However, the connection will have a significant positive impact on connectivity allowing residents of these subdivisions to reach destinations such as Sobeys, the arena, Paradise Elementary, etc. without having to use Topsail Road and/or McNamara Drive. The roadway connection is not expected to have a significant impact on emergency access, safety or development potential. The connection will require land acquisition from multiple landowners. There is no readily identifiable advantage that would warrant the Town’s involvement to complete this connection in advance of the ‘natural development’ of the same. That said, the Town should encourage the developer(s) to complete this connection at their earliest opportunity, to complete this area of the subdivision and the overall street network.

Table 14: Yellow Wood Drive to Devaughn Street Summary of Impacts

Consideration	Impact
Connectivity	+
Emergency Access	●
Travel Patterns	+
Safety	●
Land Acquisition	-
Development Potential	●

5.5 McNamara Drive Extension to Kenmount Road

McNamara Drive and Kenmount Road are classified as collector roadways. Both roadways have a two-lane cross section. 2019 traffic counts reported daily traffic volume of 7,389 vehicles on McNamara Drive and 10,772 vehicles on Kenmount Road west of Karwood Drive. The proposed connection of McNamara Drive to Kenmount Road is illustrated in Figure 10.



Figure 10: McNamara Drive to Kenmount Road

5.5.1 Connectivity

The extension and connection of McNamara Drive to Kenmount Road will provide redundancy in the road network.

5.5.2 Emergency Access

The extension and connection of McNamara Drive to Kenmount Road will improve emergency access by providing a shorter route option with the ability to by-pass the industrial portion of McNamara Drive and Kenmount Road.

5.5.3 Travel Patterns

The proposed extension and connection of McNamara Drive to Kenmount Road will have a significant impact on travel patterns in and out of the Town of Paradise. The McNamara Drive extension will provide



an alternative route for travel in and out of the Town of Paradise and is expected to reduce traffic volumes on Topsail Road. The proposed extension and connection of McNamara Drive to Kenmount Road has been identified as a priority in a number of transportation planning studies completed for the Town of Paradise.

5.5.4 Safety

This connection has the potential to improve safety in the industrial area on McNamara Road and Kenmount Road by reducing through traffic volumes in an area where there are a high number of access points.

5.5.5 Land Acquisition

The majority of land required to complete the extension and connection of McNamara Drive to Kenmount Road has already been acquired by the Province to construct the extension of McNamara Drive to the new junior high school. The remaining land to be acquired is privately owned. The Town of Paradise will need to acquire the land required to construct the extension from the school to Kenmount Road.

5.5.6 Development Potential

The extension and connection of McNamara Drive to Kenmount Road will open up land for development.

5.5.7 Recommendation

The impacts of completing the extension and connection of McNamara Drive to Kenmount Road on connectivity, emergency access, travel patterns, safety, land acquisition and development potential are summarized in Table 15. Each consideration was given a rating of negative impact (-), no impact (●) or positive impact (+).

There are a number of positive implications associated with the roadway connection; the new roadway will provide redundancy in the road network and an alternative route for travel in and out of the Town of Paradise which is expected to have a significant impact on travel patterns and reduce congestion on Topsail Road. The connection is expected to have a positive impact on safety by reducing through traffic volumes in the industrial area on McNamara Road and Kenmount Road. The majority of land required to complete the extension and connection of McNamara Drive to Kenmount Road has already been acquired by the Province to construct the extension of McNamara Drive to the new junior high school. The roadway connection will also increase emergency access and development potential in the area. While the connection will require land acquisition, the Town of Paradise should consider completing the roadway connection of McNamara Drive to Kenmount Road as opposed to waiting for developer(s) to complete the same.

Table 15: McNamara Drive to Kenmount Road Summary of Impacts

Consideration	Impact
Connectivity	+
Emergency Access	+
Travel Patterns	+
Safety	+
Land Acquisition	-
Development Potential	+



6 Conclusions and Recommendations

Harbourside Transportation Consultants were retained by the Town of Paradise to conduct a review of transportation planning in the Town of Paradise. Over the last ten years, four (4) transportation planning documents have been developed to guide the decision-making process in terms of capital works and infrastructure improvements in the Town of Paradise. These transportation planning documents are:

- Paradise Transportation Study (2011)
- Paradise Active Transportation Plan (2011)
- Paradise Traffic Improvement Plan (2014)
- Karwood Market Area Traffic Study (2014)

The objective of the Transportation Planning Update is to complete a comprehensive review of these planning documents and the underlying assumptions used to formulate the recommended network improvement plans. The update includes a reprioritized list of short-term, medium-term and long-term improvements, complete with updated cost estimates, required to accommodate current and future traffic demand in the Town of Paradise.

The recommendations for short-term, medium-term and long-term improvements from the four transportation planning documents were reviewed to identify which improvements have been completed. The improvements that have not been completed to date were further reviewed; recommendations were confirmed, modified or updated based on the most recent traffic data and travel pattern information available.

The remaining improvements were reprioritized within the three implementation timeframes – short-term, medium-term and long-term. Improvements within each timeframe were further prioritized by assigning a priority ranking of high, medium or low. The cost estimates for the improvements were reviewed and updated as required. The construction cost estimates provided are high-level estimates; the estimates do not include land acquisition and are subject to preliminary and detailed design.

The short-term improvements focus primarily on improving traffic flow at congested intersections on the major corridors that provide access to/from the Town of Paradise. There are twelve (12) recommendations for short-term improvements; two of which will be completed by the Province with the construction of the Paradise Junior High School. The estimated cost to implement the ten (10) other short-term improvements is approximately \$16,650,000.

The medium-term improvements focus on upgrading a number of the major corridors that provide access to/from the Town of Paradise to accommodate future demand. There are seven (7) recommendations for medium-term improvements. The estimated cost to implement the medium-term improvements is approximately \$8,275,000.

The long-term improvements include focus on providing additional connections to the regional road network to accommodate future demand and alleviate congestion on existing corridors – primarily Topsail Road and Kenmount Road. There are eight (8) recommendations for long-term improvements. The cost of one (1) of the long-term improvements is not included in the cost estimates as a route planning study



must be completed to estimate construction costs of the north-south connector roadways. The estimated cost to implement the seven (7) other long-term improvements is approximately \$35,840,000.

The Town of Paradise is not responsible for the full costs of the short-term, medium-term and long-term improvements; developers will be responsible to complete a number of the proposed improvements and improvements to regional infrastructure will require cost sharing agreements with the Province and other jurisdictions.

Five (5) potential roadway connections throughout the Town of Paradise were reviewed. The implications of completing each roadway connection and the impacts on travel patterns, connectivity, emergency access, safety, land acquisition and development potential were identified. The positive and negative impacts of each connection were reviewed in order to make a recommendation on the completion of each roadway connection.

- 1. Lanark Drive to St. Thomas Line:** This connection of Lanark Drive to St. Thomas line has been a part of the overall street network plan in this area for quite some time. While the connection will improve connectivity in the area, it will also introduce the opportunity for shortcutting through the residential neighbourhood to avoid Topsail Road. The potential increase in traffic volumes and vehicle speeds on residential roadways could have a negative impact on safety. The connection will require land acquisition. However, depending on the floodplain relating to the adjacent watercourse, the connection could potentially create a couple of additional lots, more information is required to determine development potential. The connection is not expected to have a significant impact on emergency access. **There is no readily identifiable advantage that warrants the Town's involvement to complete this connection in advance of the 'natural development' of the same. That said, the Town should encourage the developer(s) to complete this longstanding planned connection at their earliest opportunity, to complete this area of the subdivision and overall street network. It is also recommended that traffic volumes and speeds in this area be monitored prior to and after completion of the connection. If shortcutting traffic is identified as an issue, implementation of mitigative traffic calming measures should be considered.**
- 2. Lanark Drive around Adams Pond:** The roadway connection will increase connectivity, emergency access and development potential in the area and would also give this residential development greater sense of "completion". The connection is not expected to have significant impacts on travel patterns and safety. The connection will require land acquisition from multiple landowners. **There is no readily identifiable advantage that warrants the Town's involvement to complete this connection in advance of the 'natural development' of the same. That said, the Town should encourage the developer(s) to complete this longstanding planned connection at their earliest opportunity, to complete this area of the subdivision and the overall street network.**
- 3. Mallow Drive to Paradise Road:** The roadway connection will increase connectivity in the area, provide an alternative access to a number of adjacent residential areas and improve emergency access. The roadway connection is expected to function as a residential collector roadway and potentially reduce traffic volumes on Topsail Road by providing an alternate connection to Paradise Road. The proposed extension of Mallow Drive to Paradise Road is not expected to have



a significant impact on safety; however, a higher level of traffic control might eventually be required at the intersection of Paradise Road and Mallow Drive/Milton Road. The roadway connection will also increase development potential in the area. **This connection has been a longstanding planned connection in the Town's overall street network, and there is little incentive for a developer to complete this connection as the connection will require land acquisition from multiple land owners. It is recommended that the Town consider completing the extension and connection of Mallow Drive to Paradise Road as opposed to waiting for developer(s) to make this connection.**

4. **Yellow Wood Drive to Devaughn Street:** The roadway connection is not expected to have a significant impact on travel patterns for non-residents of the two subdivisions. However, the connection will have a significant positive impact on connectivity allowing residents of these subdivisions to reach destinations such as Sobeys, the arena, Paradise Elementary, etc. without having to use Topsail Road and/or McNamara Drive. The roadway connection is not expected to have a significant impact on emergency access, safety or development potential. The connection will require land acquisition from multiple landowners. **There is no readily identifiable advantage that would warrant the Town's involvement to complete this connection in advance of the 'natural development' of the same. That said, the Town should encourage the developer(s) to complete this connection at their earliest opportunity, to complete this area of the subdivision and the overall street network.**
5. **McNamara Drive to Kenmount Road:** There are a number of positive implications associated with the roadway connection; the new roadway will provide redundancy in the road network and an alternative route for travel in and out of the Town of Paradise which is expected to have a significant impact on travel patterns and reduce congestion on Topsail Road. The connection is expected to have a positive impact on safety by reducing through traffic volumes in the industrial area on McNamara Road and Kenmount Road. The majority of land required to complete the extension and connection of McNamara Drive to Kenmount Road has already been acquired by the Province to construct the extension of McNamara Drive to the new junior high school. The roadway connection will also increase emergency access and development potential in the area. While the connection will require land acquisition, **the Town should consider completing the roadway connection of McNamara Drive to Kenmount Road as opposed to waiting for the developer(s) to make this connection.**