TOWNSHIP OF
Southwold

Road Needs Study

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Prepared by

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1.0 Introduction

Municipal infrastructure provides the foundation for the economic, social and environmental health and growth of a community by enabling the delivery of critical services. A municipality's road system is its most valuable core asset in terms of replacement cost, and a large portion of a municipality's budget is allocated to maintaining its transportation network.

Road networks evolve over time as growth, demand and age affect their condition. In order for municipalities to manage these critical core assets and develop capital investment plans that best serve the community at the lowest lifecycle cost, a detailed condition assessment and analysis must be completed regularly.

C. D. Watters Engineering Ltd. (CDW) was retained by the Township of Southwold (Southwold) in 2019 to complete the current Road Needs Study. In March 2024, CDW was once again retained by Southwold to complete a 5-year update of this plan. This assignment has included a visual assessment of Southwold's 237 kilometre road network in accordance with the guidelines of the Ministry of Transportation's *Inventory Manual for Municipal Roads* to reflect current conditions. Following this review, CDW met with Southwold staff to review the assessment's findings and incorporate future needs as a result of anticipated regional growth demands, planned projects and other relevant information with a view to formulate a 10-Year Capital Plan that meets Southwold's expectations and coincides with the Township's asset management strategy.

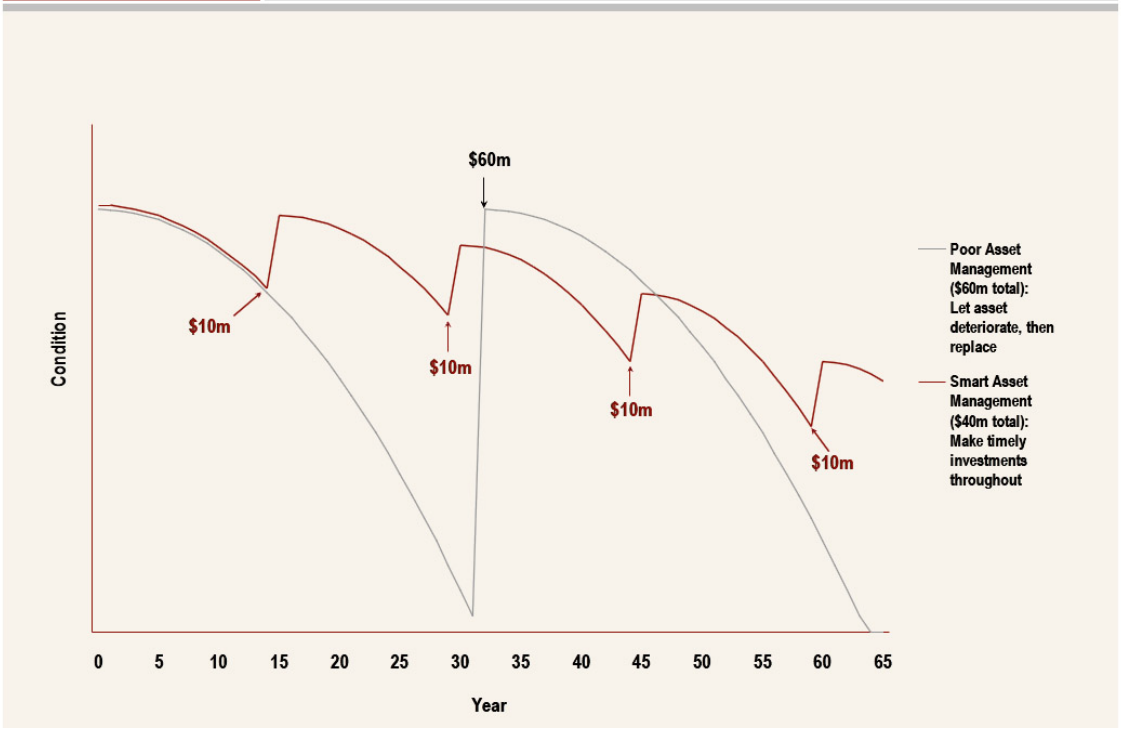
In 2022, Southwold adopted its Asset Management Plan which in part detailed how asset lifecycles are to be managed. Section 4.4 of that plan (Lifecycle Management Strategy), states,

> *"The condition or performance of most assets will deteriorate over time. This process is affected by a range of factors including an asset's characteristics, location, utilization, maintenance history and environment. The following lifecycle strategies have been developed as a proactive approach to managing the lifecycle of Township owned roads. Instead of allowing the roads to deteriorate until replacement is required, strategic rehabilitation is expected to extend the service life of roads at a lower total cost."*

Asset preservation investment strategies are also supported by the Ministry of Infrastructure as outlined in their "Building Together, Guide for Municipal Asset Management Plans" publication. Constructing capital assets account for only 10-20% of

their total lifecycle cost, while the remaining 80-90% comes from lifecycle investments. Therefore, asset capital plans must use a long-term perspective and focus scarce available funding on keeping good roads in good condition.

Figure 1 Small but Timely Renewal Investments Save Money



(Image and text from "Building Together, Guide for Municipal Asset Management Plans," Ministry of Infrastructure, Ontario, 2016)

This report follows the vision of Southwold's Asset Management Plan and industry best practices to develop a sustainable investment roadmap. Specifically, CDW has reviewed each of Southwold's 244 unique road sections that compose the entire network. Each road section has then been evaluated considering the presence and severity of its condition distresses, construction history, age and average daily traffic volume to create a road asset investment plan that proposes timely investments in order maintain the road's desired level of service at the lowest lifecycle cost and maximizes value to ratepayers.

2.0 Study Methodology

A visual assessment of the Township's 237 km road network was completed in May 2024 and in accordance with the guidelines of the *Inventory Manual for Municipal Roads, Ministry of Transportation.* This is the most popular method used for pavement condition evaluation in Ontario. This manual prescribes a system to catalogue and rate a number of road asset features other than the road's physical condition. Some of these characteristics, such as road surface/shoulder widths and geometry, are rated in order to identify lacking or substandard design features of a road section. This macro rating system includes categories that do not directly reflect the actual road condition and effectively dilute the physical condition rating of the network. Therefore, in order to better define and understand the road network's physical condition, a modified rating methodology was utilized to focus on only **key characteristics that are directly attributable to the asset's condition.**

A Physical Condition Rating was implemented, using the same methodologies as the broader *Inventory Manual for Municipal Roads;* however, it focuses on three (3) characteristics: **Surface Condition**, **Structural Adequacy** and **Maintenance Demand**.

A recent study was completed ("Towards Harmonization of Pavement Condition Evaluation for Enhanced Pavement Management: An Ontario Case Study", 2022 TAC Conference and Exhibition, Edmonton, AB), that showcased different methods used by agencies to evaluate pavement condition and their differences. The study showed that simple visual "Ride Condition Ratings" yielded similar evaluation scores as more complicated and time-consuming evaluation methods. In order to develop an accurate and repeatable evaluation method that can be understood by various stakeholders and decision makers, a simple and relatable system is preferred and proven to be effective.

A brief explanation of how each of these road characteristics is defined, reviewed and rated is provided below.

Surface Condition

Surface condition relates to the extent to which a road provides driving ease, comfort and safety. Inadequacies of paved surfaces include excessive or uneven cross fall, ravelling and bumpiness due to cracking and distress. The rating system follows the criteria outlined in **Table 1**, Surface Condition.

Table 1. Surface Condition	
Points	**Notes**
10	Fully adequate, no discomfort
7-9	Minor discomfort at speed limit
4-6	Uncomfortable to travel at speed limit
1-3	Requires reduced travel speed

Structural Adequacy

The structural adequacy point rating relates to the capability of the surface and base road structure to support traffic loads and resist deformation or rupture. Distress signs relating to the pavement's structure may include cracking, rutting, heaving, pot holes, roughness, alligator cracking, dishing, distortion and frost boils. The road's structural adequacy is an important metric that informs the type of improvement necessary to remedy the distresses noted. Some distresses are "top down" and can be remedied with simple resurfacing, however some distresses indicate "bottom up" issues that would require more a more robust structural or drainage remedy. **Table 2** below summarizes the point system used to rate and evaluate the structural adequacy of the road section.

Table 2. Structural Adequacy		
Points	**% of Structural Distress**	**Maintenance Demand**
20	<5%	Little to none
15-19	5-10%	Minor
12-14	11-15%	Average
8-11	16-20%	Above Average
1-7	>20%	Extreme

Maintenance Demand

The point rating for this characteristic is inversely related to the actual maintenance demand for a particular road section. Consideration is given to all road elements when making this evaluation, including winter maintenance activities, and the rating scale is detailed in **Table 3** below. Gravel roads have been rated 4 as their maintenance needs are relatively 'high' as compared to hard surfaced roads.

Table 3. Maintenance Demand

Points	Notes
8-10	Low
5-7	Average
3-4	High
1-2	Excessive

3.0 Benchmark Costs and Unit Rates

Benchmark costs are used to calculate estimated project costs by improvement activity type. The unit rates that formulate these estimates have been developed in consultation with Southwold staff and reflect current construction costs experienced by the Township. **Table 4** below lists the various road improvement projects, their associated activity descriptions, assumed quantities and unit costs that have been used in the development of the capital plan. Costs have been inflated by an anticipated consumer price index of 2% compounded in future years to support realistic financial planning.

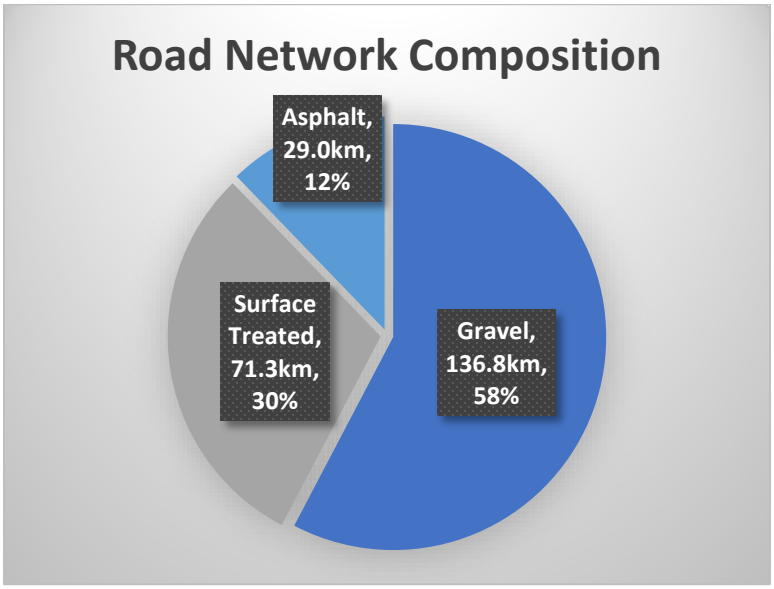
Table 4 - 2024 Road Capital Improvement Cost Unit Rates			
Activity	**Activity Code**	**Activity Description**	**Unit Rate per km**
Gravel Resurfacing	**G75mm**	Supply and install 75mm Granular 'A'	**$ 39,600.00**
Single Surface Treatment (no shouldering)	**SST no Shld**	Surface Treatment (Class 5 or 6), minor patching	**$ 30,000.00**
Microsurfacing or SST plus Gravel Shouldering	**SST + Shld**	Single Micro or SST + 165t/km Shouldering	**$ 50,775.00**
Asphalt Resurfacing (50mm) + shouldering	**R1**	3.5m lanes -50mm Hot Mix Asphalt ($115/t) + end joints, minor milling Granular Shouldering ($30/t) + Driveways + Line Paint	**$ 127,450.00**
Milling and Asphalt Resurfacing (50mm)	**MR1**	3.5m lanes -50mm Hot Mix Asphalt ($115/t) + end joints Asphalt Milling and Hauling	**$ 152,700.00**
Pulverize + Double Surface Treatment	**PDST**	Pulverize, Grade and Compact (incl. water)	$ 40,000.00
		50mm Granular A	$ 30,000.00
		Double Surface Treatment	$ 56,000.00
			$ 126,000.00
Pulverize + Asphalt Resurfacing (50mm)	**PR1**	Pulverize, Grade and Compact (incl. water)	$ 40,000.00
		50mm Granular A	$ 30,000.00
		50mm Hot Mix Asphalt ($115/t)	$ 117,600.00
		Shouldering + Driveways + Line Paint	$ 10,000.00
			$ 197,600.00
Gravel Road Converstion to DST	**DST+G**	Supply and Install 100mm Granular 'A'	$ 52,800.00
		Double Surface Treatment	$ 52,500.00
			$ 105,300.00
Cold In-Place Recycling + Asphalt Resurfacing	**CIP/R1**	CIREAM 100mm	$ 98,000.00
		50mm Hot Mix Asphalt ($115/t) + Driveways + Line Paint + shouldering	$ 126,700.00
			$ 224,700.00
Rural Reconstruction	**RREC**	Granular A (0.15mx10.5mx2.4x$30)	$ 86,400.00
		Granular B (0.45m x 10.5m x 2.4 x $25)	$ 216,000.00
		Excavation/Drainage (culverts, ditching, drains)	$ 100,000.00
		Line Painting, Guide Rail, signage	$ 25,000.00
		100mm Hot Mix Asphalt ($115/t)	$ 225,400.00
		Granular Shouldering ($30/t)	$ 21,600.00
		Engineering, utilities, driveways, restoration	$ 125,000.00
			$ 799,400.00
Urban Reconstruction	**UREC**	Excavation / Road Base	$ 800,000.00
		Milling / Asphalt / Driveways	$ 500,000.00
		Drainage (Storm Sewers, Curb and Gutter)	$ 1,450,000.00
		Eng. / Restoration / Utilities / Misc.	$ 600,000.00
			$ 3,350,000.00

4.0 Road Network Composition and Condition

The Township of Southwold's road network system is comprised of 244 unique road sections totalling 237.06 centerline kilometres. Each road section has been evaluated considering the presence and severity of its condition distresses, construction history, age and average daily traffic volume. A 'Physical Condition Rating' was derived, utilizing the methodology discussed in Section 2.0.

The Physical Condition Rating uses the same methodologies as the broader *Inventory Manual for Municipal Roads;* however, it assesses only three (3) characteristics: Surface Condition, Structural Adequacy and Maintenance Demand. The resulting analysis has been further defined by surface type (Gravel, Surface Treatment (Low Class Bituminous) and Asphalt (High Class Bituminous). The distinction in road surface types is necessary to provide a more accurate evaluation of the different asset types that form the road network. For example, asphalt surfaced roads have a longer lifecycle and deteriorate at a slower rate than a surface treated road. While gravel roads have been evaluated with a 'high maintenance demand' scoring to reflect ongoing operational requirements that affects their overall rating. The review and evaluation yielded the following results:

Asphalt Roads (29.0 total kilometres) – **84**/100 (**Good** Condition)
Surface Treated Rds (71.3 total kilometres) – **67**/100 (**Fair to Good** Condition)
Gravel Roads (136.8 total kilometres) – **55**/100 (**Fair** Condition)



5.0 Gravel Roads – Conversion to Hard Surface

Most residents would prefer hard surfaced roads as compared to gravel surfaces. Dirty cars, dust, potholes, poor ride condition, increased vehicle maintenance and safety are common concerns. It can also be perceived that residential property values increase for those who live on paved roads.

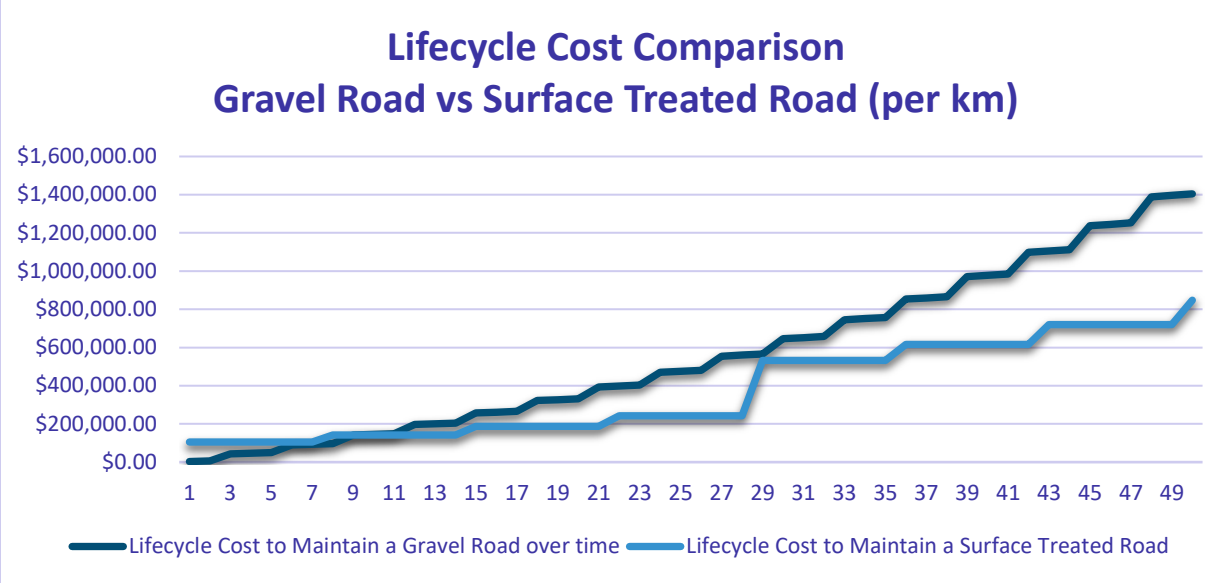
Fifty-eight percent (58%) of the Township's roads are gravel surfaced and have not been improved to a hard surface due to their relatively low usage and the cost of the initial investment necessary to implement that change. There are many factors to consider when deciding when to convert a gravel road to a hard surfaced road, however the most important consideration is to understand how many drivers use that road (average daily traffic volume). Historical Provincial guidelines suggest that gravel roads are not efficient to maintain once traffic volumes exceed 400 vehicles per day. Recent literature suggests that traffic volumes as low as 50 vehicles per day can result in a cost benefit to convert to a hard surface.

Prudent asset management philosophy is to maintain good roads in good condition as this strategy creates a robust road network that can be maintained at the lowest lifecycle cost while providing the greatest level of service to residents. This is especially true with gravel roads. In order to maintain gravel roads in optimal condition, regular maintenance operations are necessary which includes grading, spot improvements and the application of dust suppressant. Each year it can also be assumed that 25mm of gravel is lost from the road surface from traffic, rain, dust, grading and winter control activities. Therefore, in addition to regular maintenance, ongoing gravel resurfacing investment (typically 75mm every 3 years) is also required. These collective costs are significant and can exceed the cost to convert a gravel road to a hard surfaced road over time.

Table 5 below illustrates typical costs to maintain one kilometre of gravel road compared to the cost to convert and maintain a low class bituminous surface (surface treatment). This analysis utilizes current labour, equipment and material costs experienced by the Township to maintain gravel roads and inflates costs by 2% annually to account for inflation. The surface treatment conversion and maintenance assumptions also utilize current construction costs, single resurfacing every 7 years (pulverize, gravel and double surface treatment at year 29) and inflates those costs by 2% annually for inflation. The table below (until year 30) shows the cost of conversion to surface treatment to become cost effective at year 10 (highlighted). The graph below projects costs to year 50 to illustrate a continued cost savings.

Table 5 – Typical Lifecycle Cost Comparison (Gravel vs Surface Treatment)

Year	Annual Cost for Gravel Road Maintenance	Cost to Install 75mm Gravel every 3 years	Lifecycle Cost to Maintain a Gravel Road over time	Cost for simple Surface Treatment Conversion	Lifecycle Cost to Maintain a Surface Treated Road
1	3101.95		$3,101.95	$105,300.00	$105,300.00
2	3163.98		$6,265.93		$105,300.00
3	3227.26	33806.24	$43,299.44		$105,300.00
4	3291.81		$46,591.25		$105,300.00
5	3357.65		$49,948.89		$105,300.00
6	3424.80	36940.99	$90,314.69		$105,300.00
7	3493.30		$93,807.98		$105,300.00
8	3563.16		$97,371.14	$36,896.22	$142,196.22
9	3634.42	40366.42	$141,371.99		$142,196.22
10	3707.11		$145,079.10		$142,196.22
11	3781.25		$148,860.35		$142,196.22
12	3856.88	44109.48	$196,826.71		$142,196.22
13	3934.02		$200,760.73		$142,196.22
14	4012.70		$204,773.43		$142,196.22
15	4092.95	48199.62	$257,065.99	$45,377.69	$187,573.91
16	4174.81		$261,240.81		$187,573.91
17	4258.31		$265,499.11		$187,573.91
18	4343.47	52669.02	$322,511.61		$187,573.91
19	4430.34		$326,941.95		$187,573.91
20	4518.95		$331,460.90		$187,573.91
21	4609.33	57552.86	$393,623.09		$187,573.91
22	4701.52		$398,324.61	$55,808.84	$243,382.74
23	4795.55		$403,120.15		$243,382.74
24	4891.46	62889.57	$470,901.18		$243,382.74
25	4989.29		$475,890.46		$243,382.74
26	5089.07		$480,979.53		$243,382.74
27	5190.85	68721.13	$554,891.52		$243,382.74
28	5294.67		$560,186.19		$243,382.74
29	5400.56		$565,586.75	$288,278.89	$531,661.63
30	5508.57	75093.43	$646,188.76		$531,661.63



This simple example illustrates that it can be cost effective to convert gravel roads to surface treated roads and they can begin to realize a cost savings within 10 year's time. However, it should be noted that a simple conversion is not reconstruction. Other road improvements that were required prior to converting to a hard surface would remain to be completed. These considerations include adequate base structure, sub-base drainage (depth of ditch invert), drainage infrastructure (culverts and adequate outlets) and road geometry.

When a gravel road is converted to a hard surface it can be assumed that vehicle operating speeds will increase since drivers tend to travel at speeds they feel safe and comfortable travelling at. Therefore, any geometrical, roadside hazard and sight line deficiencies can pose a greater risk to drivers (less reaction time + greater energy impact potential). Therefore, prior to conversion, the gravel road candidate should be reviewed in greater detail. At a minimum, improvements such as the installation of road warning signage as recommended by the Ontario Traffic Manual should be completed to provide drivers with important information about the road.

5.1 Recommended Gravel Road Conversions

Existing gravel roads with average daily traffic volumes greater than 100 have been selected as candidates for conversion to surface treated roads within the recommended capital plan. In addition to these candidate roads, other road sections with less traffic (greater than 75 ADT) have also been included if they provide a connection to other hard surface roads, are isolated and/or at a greater distance from the works yard location in the Village of Fingal which would make gravel road maintenance inefficient.

In total **62.9 kilometres** of gravel roads are recommended to be converted to surface treatment within the next 10 years. This would leave 73.5 kilometres of roads remaining as gravel roads at that time. It is recommended that as anticipated growth and development occurs in an around the Township over then next 5 years, traffic volumes should be carefully reviewed to determine if additional roads would benefit from conversion to surface treatment. **Table 6** below lists the gravel road sections recommended to be converted to surface treatment within the recommended capital plan. **Appendix 'B'** includes maps that illustrate recommended gravel road sections to be converted in the plan and the roads that will remain as gravel surfaces.

Table 6 - Gravel Roads Recommended to be Converted to Surface Treatment

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Project Year	Estimated Project Cost (2025)
38C	Scotch Line	Jones Road	Boxall Road	2556	2027	$ 269,147
38B	Scotch Line	Fingal Line	Jones Road	2406	2027	$ 253,352
80B	Southdel Drive	West End	Magdala Road	1910	2027	$ 201,123
80C	Southdel Drive	Magdala Road	Ballpark Road	638	2027	$ 67,181
80D	Southdel Drive	Ballpark Road	Fairgrounds Road	1387	2027	$ 146,051
17E	Southminster Bourne	Sunset Road	Wonderland Road	2036	2027	$ 214,391
12	McIntyre Road	Union Road	Stafford Line	310	2029	$ 32,643
13D	Stafford Line	Morrow Road	Oneida Road	392	2029	$ 41,278
13C	Stafford Line	McIntyre Road	Morrow Road	1201	2029	$ 126,465
13B	Stafford Line	Union Road	McIntyre Road	359	2029	$ 37,803
13E	Stafford Line	Oneida Road	Mill Road	2068	2029	$ 217,760
13A	Stafford Line	Fifth Line	Union Road	716	2029	$ 75,395
15A	Woodplant Road	Southminster Bou	Clinton Line	1442	2029	$ 151,843
15B	Woodplant Road	Clinton Line	Longhurst Line	435	2029	$ 45,806
76A	Mellor Road	Fruit Ridge Line	351 M North of Fru	351	2030	$ 36,960
69A	Middle River Road	Bush Line	John Wise Line	1558	2030	$ 164,057
69C	Middle River Road	Fulton Bridge Lin	Begg Road	662	2030	$ 69,709
69B	Middle River Road	Begg Road	John Wise Line	1356	2030	$ 142,787
69F	Middle River Road	North of Munro Li	Mill Road	1078	2030	$ 113,513
69D	Middle River Road	Goodhue Road	Fulton Bridge Line	620	2030	$ 65,286
69E	Middle River Road	Mill Road	Goodhue Road	535	2030	$ 56,336
35H	Mill Road	Fingal Line	Bush Line	2025	2030	$ 213,233
35G	Mill Road	Fingal Line	Blind Line	2063	2030	$ 217,234
35F	Mill Road	Talbot Line	Blind Line	2063	2030	$ 217,234
68B	Begg Road	John Wise Line	Middle River Road	2337	2031	$ 246,086
65	Cattanach Line	Coon Road	End	756	2031	$ 79,607
72C	Coon Road	Scotch Line	Cattanach Line	439	2031	$ 46,227
72B	Coon Road	Cattanach Line	Union Road	1380	2031	$ 145,314
4D	Second Line	Union Road	Magdala Road	1179	2031	$ 124,149
4B	Second Line	Plain Road	Turner Road	2718	2031	$ 286,205
4A	Second Line	Iona Road	Plain Road	2728	2031	$ 287,258
4C	Second Line	Turner Road	Union Road	1222	2031	$ 128,677
73	Smith Road	Union Road	Munro Line	1379	2031	$ 145,209
53D	Lyle Road	Fingal Line	Bush Line	2027	2032	$ 213,443
53B	Lyle Road	Talbot Line	Blind Line	1825	2032	$ 192,173
53C	Lyle Road	Blind Line	Fingal Line	2041	2032	$ 214,917
2A	First Line	Iona Road	Routh Road	1494	2033	$ 157,318
2B	First Line	Routh Road	Plain Road	1220	2033	$ 128,466
62	Jones Road	Lake Line	Scotch Line	1377	2033	$ 144,998
61B	Lake Line	Jones Road	Boxall Road	3228	2033	$ 339,908
61A	Lake Line	Iona Road	Jones Road	1570	2033	$ 165,321
3	Plain Road	First Line	Second Line	1379	2033	$ 145,209
1A	Routh Road	1078 M North of F	Town Limit	1720	2033	$ 181,116
1B	Routh Road	First Line	1078 M North of Fi	1078	2033	$ 113,513

5.2 Gravel Road Maintenance

The Township will continue to own and maintain gravel roads for the foreseeable future. The current 136.8 kilometres of gravel roads will be systematically reduced as conversions to hard surface occur throughout the implementation of the recommended capital plan and 73.5 kilometres of gravel roads will remain after 10 year's time.

As candidate roads get converted to surface treatment over the next decade, a decreasing number of gravel roads will still have to be maintained. These roads will require periodic gravel resurfacing to replenish the 25mm of gravel anticipated to be lost annually. To accommodate these costs, the proposed capital plan recommends an annual investment of $1,100,000 to resurface gravel roads for the first 5 years (2025-2029) and then $700,000 annually for the later 5 years (2030-2034) of the plan. This value is calculated using labour, equipment and material rates experienced by the Township and is inflated by 2% annually over the duration of the plan ($39,600 per kilometre to install 75mm of Granular 'A', inflated by 2% annually). This cost assumes that each road section will receive 2 resurfacings (75mm x 2) over the next decade (once every 5 years). Although this is less than the best practice of installing 25mm per year (or once every 3 years), the majority of these road sections have low traffic volumes (<75 vehicles per day) and a lessor level of service can be justified.

This recommended investment is sufficient to resurface an average of 20 kilometres of gravel roads annually. Township staff should prioritize gravel resurfacing of roads based on grader operator feedback, who can best assess the quality and quantity of existing gravel on roads as they perform regular maintenance as well as identify specific areas of concern (standing water, base failures, etc.). Road sections that are scheduled to be converted in the near term can be deferred since the surface treatment conversion activity installs 100mm of gravel prior to placing a double surface treatment - unless there is an extraordinary circumstance to resurface with gravel on schedule (i.e. additional road base required to raise the road platform and/or provide additional structure).

6.0 Sidewalks

Sidewalks were inspected for visual defects in June, 2024 in the following communities within the Township of Southwold: Talbotville, Fingal, Shedden, Lawrence Station and Ferndale. The condition rating is based on a modified PASER rating by HWC Engineering as provided by the Township of Southwold. Visual rating scales are shown below:

There are 80 sections of sidewalk with an approximate total length of 9.99km.
The average sidewalk condition rating for the Township is 6.3 with general defects including scaling, spalling and hairline to medium sized cracking. **Table 7** details priority replacement sections identified during the inspection. Sidewalk condition ratings for each area are shown in **Figures 1 through 5** below:

Figure 1: Lawrence Station Sidewalk Condition Rating Map

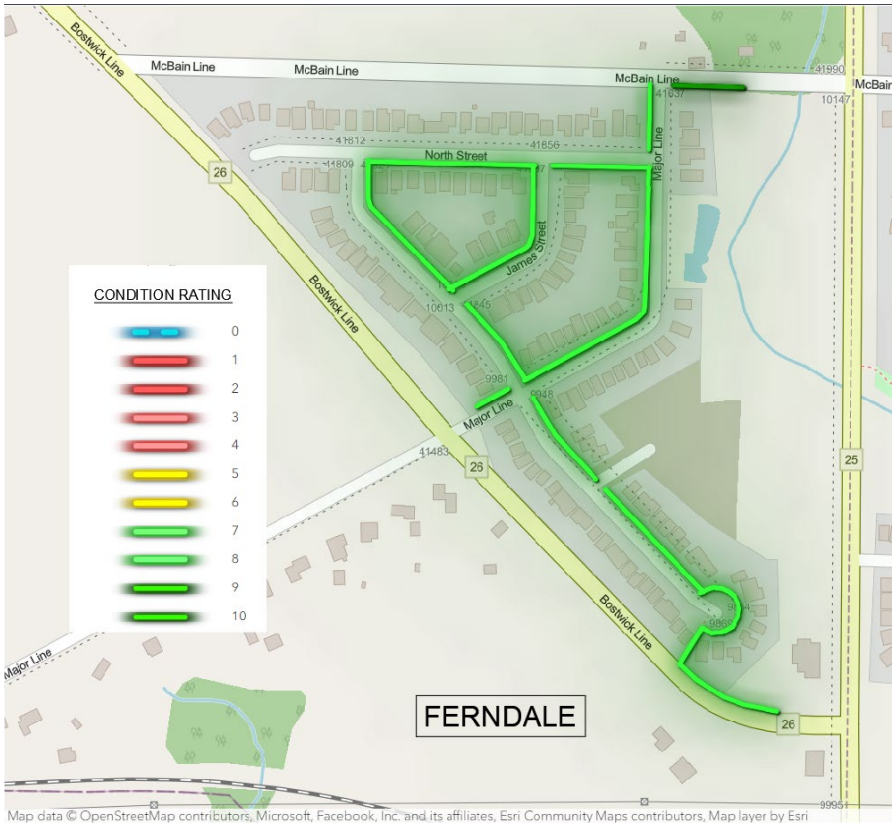


Figure 2: Ferndale Sidewalk Condition Rating Map

Figure 3: Talbotville Sidewalk Condition Rating Map

Figure 4: Shedden Sidewalk Condition Rating Map

Figure 5: Fingal Sidewalk Condition Rating Map

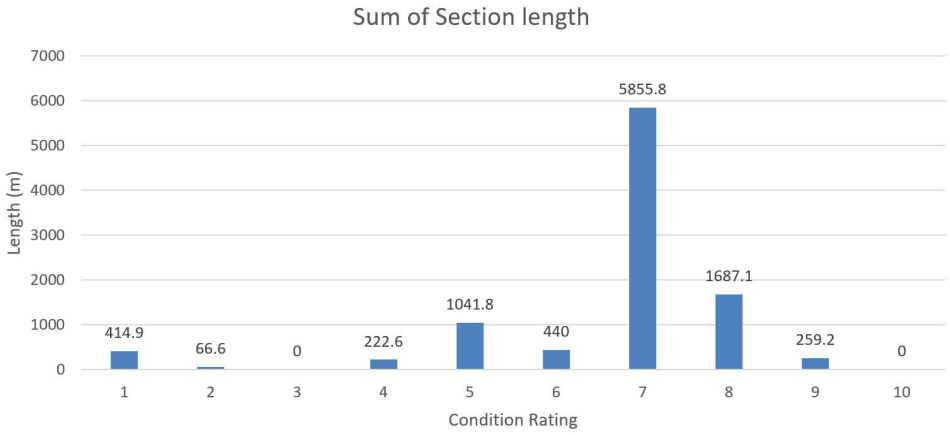


Table 7 - Sidewalk Priority Sections

Road Section	Road To	Road From	Rating	Width	Section Length (m)	Notes
ORCHARD STREET	Union Road	John Street	5	1.1	81.5	1.1m wide. Asphalt patch. 2 Trip ledge more than 20mm. General scaling and pop outs. Few medium cracks.
JOHN STREET	Brook Street	Orchard Street	5	1.1	87.0	1.1m wide. 3 trip ledge at 9654. Several medium sized cracks. Spalling and scaling present
JOHN STREET	Elizabeth Street	Orchard Street	5	1.1	230.7	Several medium cracks. 2 trip ledges over 20mm. General scaling, minor cracking and pop outs
WAUGH STREET	Union Road	55m East on Waugh Street	5	0.9	55.2	0.9m wide. General scaling and minor cracking. Sections overgrown with brush and grass. 1 trip ledge at 35854
TALBOT LINE	Union Road	John Street	6	1.2	87.7	1.2m wide. General scaling. 1 trip ledge at 35847. Few wide cracks
JOHN STREET	Orchard Street	Talbot Line	5	1.1	147.2	Trip ledge at 9628. 1.1m wide overall. General minor cracking and spalling and pop outs. 3m of wide cracking. Trip ledge 9590.
JOHN STREET	Orchard Street	Talbot Line	6	1.1	152.1	Medium scaling and spalling in several panels. 1.1m wide. Several medium sized cracks. Trip ledge at 9613 and at 9615
UNION ROAD	Orchard Street	76m North on Union Road	6	1.1	75.6	1.1m width. Spalling and pop outs. Vertical trip ledge more than 20mm. 6 medium size cracks
UNION ROAD	Fingal Line	348m South of Fingal Line	7	1.2	350.1	Trip ledge at 7836. 2 trip ledges near intersection near hydrant. Several wide cracks with spalling. Minor scaling. 1.2m wide.
FINGAL LINE	Glassgow Street	84m West on Fingal Line	7	1.5	88.8	Trip ledge at 35690. Few medium cracks with spalling. Trip ledge at 35706
CHURCH STREET	156m North of Fingal Line	Fingal Line	7	0.9	153.4	0.9m wide. Several medium size cracks with spalling. General scaling. Trip ledge across from 7978
MAJOR LINE	Florence Street	North Street	7	1.2	229.3	1.2m wide. Trip ledge at 41518. Trip ledge at 41534. General scaling Several medium cracks.
NORTH STREET	James Street	Major Line	7	1.2	79.2	Trip ledge at North and major. Couple Medium crack with spalling.
NORTH STREET	Florence Street	James Street	7	1.2	135.6	1.2 m wide. Heave at 41842. Trip ledge at 41837 due to tree. Trip ledge at 41829.
FLORENCE STREET	North Street	James Street	7	1.2	133.2	1.2 wide. General scaling. Few pop outs. Cracked panel with large chunk missing at 10020. Trip ledge at 10014.
JAMES STREET	Florence Street	North Street	7	1.2	138.7	1.2m wide. General scaling. Few medium cracks. Few panels with chunks missing. 2 Trip ledge around 41858 perimeter.
TALBOTVILLE GORE ROAD	Sunset Road	Optimist Drive	7	1.5	546.5	1.5m wide. Trip ledge at 10601. Several wide cracks with spalling. Some scaling. Trip ledge at south end of 10445
JOHN STREET	Brook St	Elizabeth St	4	1.1	112.8	1.1m wide. 2 trip ledges at 9712 and 1 near 9688. Few pop out and general spalling. 70% grass coverage on portion
TALBOT LINE	100m East of Sunset Rd	Sunset Rd	7	1.2	100.0	trip ledge west of 40114 at bell box. Trip ledge at 40114. Wide gap due to broken section at 40084. slighlty overgrown

Sidewalk Network Commentary

Sections where sidewalks have overgrown and show no signs of usage should be replaced or removed. Where the sidewalk condition rating is 1 (failed), these should be prioritized and replaced as soon as possible. Sidewalks less than 1.5 meters wide or less than 1.8m adjacent to curbs should be replaced in 1-5 years. A complete list of the sidewalk network inventory and condition rating is available in **Appendix 'C'**.

The table below lists sidewalk sections that are in poor condition and have no particular pedestrian connection or destination and are therefore recommended to be removed.

Sidewalk Removals

Road Section	Road To	Road From	Sidewalk Condition	Sidewalk Width (m)	Length (m)
THIRD LINE	William Street	35m East on Third Line	1	N/A	35.3
THIRD LINE	50m East of Intersection	160m East of Intersection	8	1.5	107.6
THIRD LINE	30m East of Intersection	46m East of Intersectionhird Line	1	N/A	16.2
THIRD LINE	46m West of Intersection	22m East of Intersectionhird Line	1	N/A	66.3
THIRD LINE	53m West of Intersection	161m West of Intersection	1	N/A	108.6
ARGYLE STREET	Fingal Line	38m North of Fingal Line	1	N/A	37.5
MILLPARK STREET	Fowler Street	Fingal Line	1	N/A	151.1
SUNSET ROAD	67m South of Talbot Line	Talbot Line	7	1.1	67.0
HWY 4	160m North of Talbot Line	Talbot Line	7	1.5	60.0
TALBOT LINE	64m East of Sunset Rd	Sunset Rd	7	1.2	64.0
TALBOT LINE	100m East of Sunset Rd	Sunset Rd	7	1.2	100.0
TALBOT LINE	115m west of Sunset Rd	Sunset Rd	7	1.1	72.0

It is recommended that the Township invest $54,000 annually for sidewalk replacements based on a 40-year life cycle (Source: Federation of Canadian Municipalities). This value has been included in the capital plan and inflated by 2% annually.

Replacement Cost Equation =

$$\left(\frac{\boldsymbol{total\ meters\ of\ sidewalk}}{\boldsymbol{life\ cycle}}\right) \boldsymbol{x\ 1.5m\ width\ x\ \$150m2\ replacement\ cost}$$

It is also recommended that the Township inspect their sidewalks on an annual basis in accordance with O. Reg. 239/02: Minimum Maintenance Standards for Municipal Highways. Sidewalks were not reviewed for compliance with the Accessibility for Ontarians with Disabilities Act (AODA, 2005).

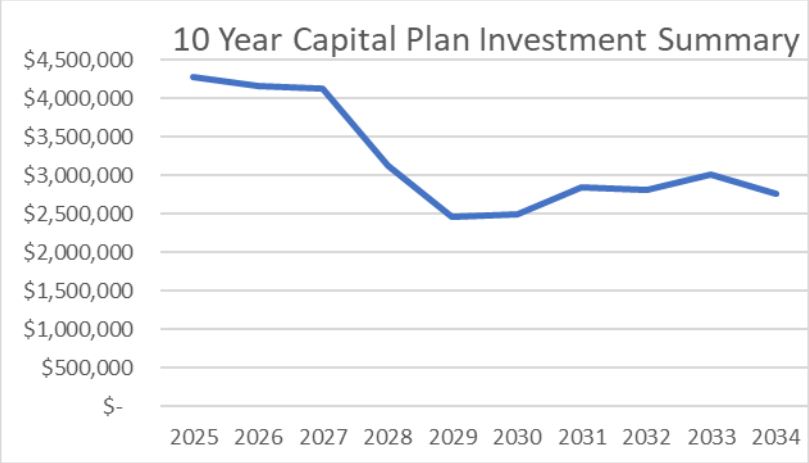
7.0 10-Year Capital Plan

The recommended 10-Year Capital Plan has been developed considering and incorporating the following information and strategies:

- Condition review and rating
- Construction history
- Most current average daily traffic counts
- Anticipating future area growth and needs
- Reuse of existing road materials, where feasible
- Preserving assets to extend useful life
- Typical construction improvement methods and costs experienced by Southwold
- Utilizing an anticipated 2% annual compound inflation rate
- Maintaining existing approved capital project schedule to coincide with other planned initiatives
- Input from Township staff

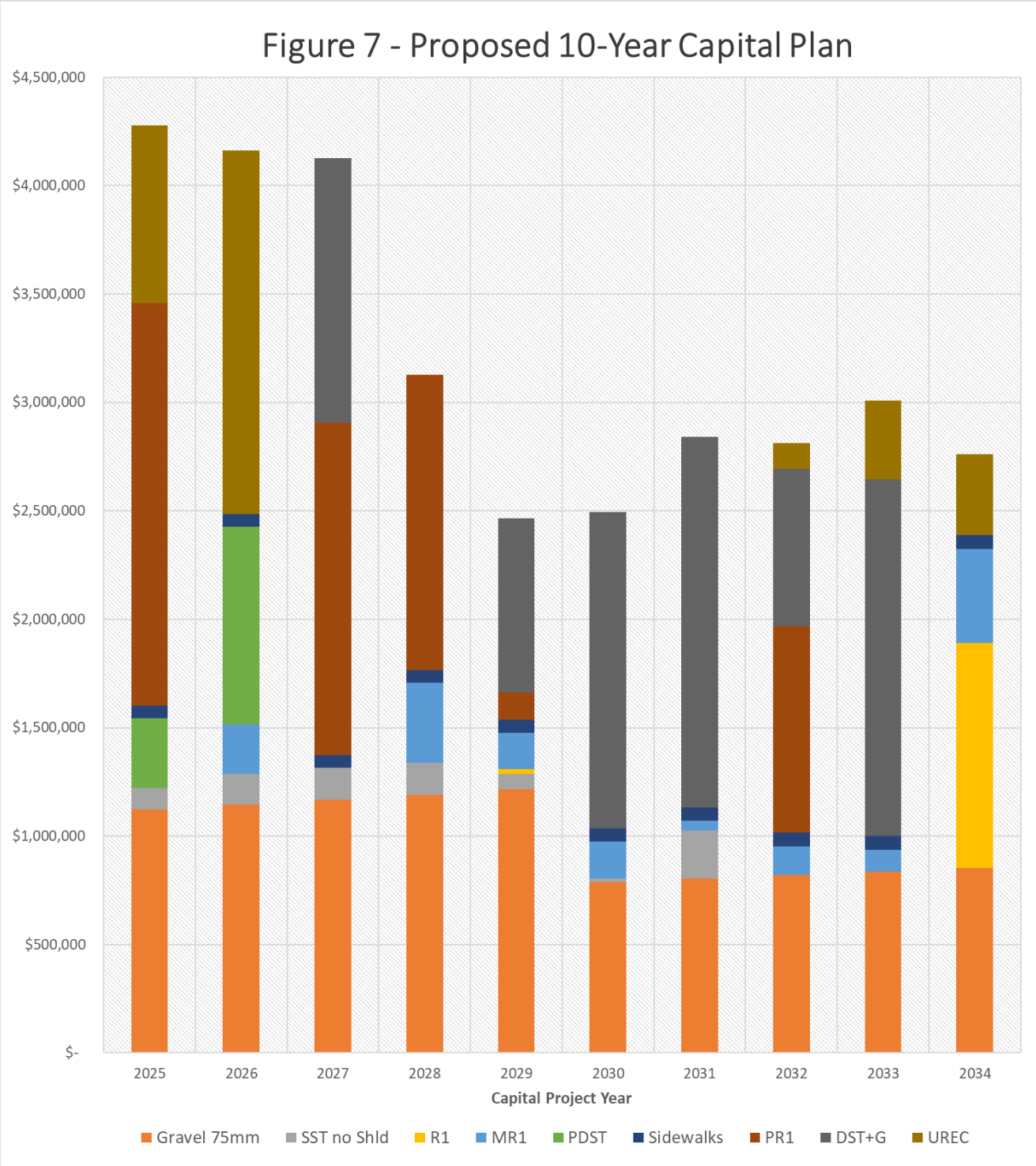
Figure 6 below (table and graph) provides the proposed annual investment funding summary, which yields a total 10-year investment value of $32.07M, **averaging $3,207,666 annually**.

Figure 6 – 10-Year Capital Plan Summary



Year	Total
2025	$ 4,277,286
2026	$ 4,160,614
2027	$ 4,125,924
2028	$ 3,127,180
2029	$ 2,466,051
2030	$ 2,494,593
2031	$ 2,842,231
2032	$ 2,812,641
2033	$ 3,008,602
2034	$ 2,761,533

Figure 7 below presents annual spending by proposed asset improvement activity type. Activity code definitions (i.e. DST+G) and their corresponding work scope and unit rates are provided in Section 3.0 – Benchmark Costs and Unit Rates.



7.1 Annual Investments by Improvement Activity

Table 8 below illustrates proposed annual spending by project activity category. Projected costs include an assumed 2% compound annual inflation rate beginning in 2025. Project activity codes, scope and unit rates are defined in Section 3.0.

Table 8 - Project Activity (Costs include Inflation)									
Year	Gravel 75mm	SST no Shld	R1	MR1	PDST	Sidewalks	PR1	DST+G	UREC
2025	$ 1,122,000	$ 100,368	$ -	$ -	$ 322,457	$ 55,080	$ 1,857,302	$ -	$ 820,080
2026	$ 1,144,440	$ 141,453	$ -	$ 228,260	$ 913,831	$ 56,182	$ -	$ -	$ 1,676,449
2027	$ 1,167,329	$ 148,389	$ -	$ -	$ -	$ 57,305	$ 1,531,191	$ 1,221,710	$ -
2028	$ 1,190,675	$ 148,596	$ -	$ 366,773	$ -	$ 58,451	$ 1,362,684	$ -	$ -
2029	$ 1,214,489	$ 72,671	$ 22,233	$ 166,726	$ -	$ 59,620	$ 125,446	$ 804,866	$ -
2030	$ 788,314	$ 15,507	$ -	$ 170,061	$ -	$ 60,813	$ -	$ 1,459,899	$ -
2031	$ 804,080	$ 223,063	$ -	$ 42,974	$ -	$ 62,029	$ -	$ 1,710,084	$ -
2032	$ 820,162	$ -	$ -	$ 132,395	$ -	$ 63,270	$ 952,010	$ 727,053	$ 117,752
2033	$ 836,565	$ -	$ -	$ 98,910	$ -	$ 64,535	$ -	$ 1,644,268	$ 364,324
2034	$ 853,296	$ -	$ 1,035,791	$ 435,010	$ -	$ 65,826	$ -	$ -	$ 371,610

Recommended project activities are determined based upon road use, condition and incorporate a lifecycle value approach. Some recommended investments may have an initial higher cost than other options and are purposely chosen since they provide a greater value over the investment lifecycle. For example, pulverizing, adding 50mm of granular ‘A’ and applying a double surface treatment (PDST) is less expensive than pulverizing, adding 50mm of granular ‘A’ and placing 50mm of hot mix asphalt (PR1), however, the later option is anticipated to last twice the amount of time thereby reducing the annual lifecycle cost. Additionally, asphalt pavement provides strength to the pavement structure (50mm of hot mix asphalt is equivalent to 100mm of granular ‘A’) and thereby will support greater axle loading. Raising road platforms has further benefits of aiding roadside ditches to convey stormwater, drain the road sub-base and provide snow storage.

It is prudent to coordinate urban reconstruction projects when water and wastewater servicing projects are completed, likely triggered by development needs. Water and wastewater servicing costs are not included in these figures. Therefore, the investment schedule presented may require revision to coincide with development servicing.

Alternative urban road reconstruction designs that utilize semi-urban cross sections, grassed swales and driveway culverts (as currently exist in some areas) instead of

installing curb and gutter with underground drainage systems may be considered at a significantly reduced cost where appropriate.

Annual gravel road resurfacing investments are discussed in Section 5.2 of this report. The recommended annual gravel resurfacing budget is $1,100,000 for the first 5 years (2025-2029) and then $700,000 annually for the later 5 years (2030-2034) of the plan. These costs are included in the plan.

Annual recommended sidewalk investments are discussed in Section 6 of this report. It is recommended that the Township invest $54,000 annually for sidewalk replacements based on a 40-year life cycle. These costs are included in the plan.

7.2 New Roads

It should also be noted that the Township has 7.14 kilometres of new subdivision roads that have either been recently commissioned and adopted by the Township or will be adopted in the near future. These roads are built to current design standards and it is not anticipated that any investment is required over the duration of this plan. It is recommended that a Roads Needs Study be updated within 5 year's time in order to identify future needs on these new road sections. Regular updates to this study will also ensure that the Township's priorities are identified with respect to needs resulting from anticipated growth in the region.

7.3 Drainage

The most important factor determining the longevity and performance of a road is drainage. Without adequate drainage, road investments will not perform as expected and result in higher lifecycle costs to maintain the road network. Some road sections reviewed would benefit from improved ditching and adequate outlets. **Appendix 'B'** identifies locations that would benefit from improved drainage. It recommended that regular ditch maintenance activities occur and coincide with road capital investment planning. The photo below depicts a typical example of a road section with substandard drainage. Shallow ditches prohibit water from shedding the surface and road base resulting in increased maintenance costs.

Substandard Ditching - Scotch Line west of Boxall Road

Road surface treatments have lower performance and service life if the road has substandard drainage. The photo below depicts road base distresses indicative of inadequate drainage resulting in ongoing repair costs.

Substandard Ditching - Scotch Line west of Coon Road

7.4 Annual Road Capital Plans

Appendix 'A' lists projects for each year of the proposed 10-Year Capital Plan. In practice, the timing and scope of the projects identified in the later half of the plan (2030-2034) may change, and, therefore, it is recommended that an updated Road Needs Study and Capital Plan be completed before 2030 to ensure the planned investments remain current with the Township of Southwold's priorities and reflect current growth and development conditions that affect the road network.

7.5 GIS Mapping

Appendix 'B' provides a number of maps created in AcrGIS that showcase the annual capital planned works, planned conversions of gravel roads, remaining gravel road sections and drainage maintenance locations as detailed in the report.

8.0 Concluding Remarks

This report has been prepared for the exclusive use of the Township of Southwold to complete a Road Needs Study. Its discussions and conclusions are summary in nature and cannot be properly used, interpreted or extended to other purposes without a detailed understanding and discussion with the author as to its mandated purpose, scope and limitations. This report was prepared for the sole benefit and use of the Township of Southwold and may not be used or relied on by any other party without the express written consent of C.D. Watters Engineering Ltd.

To the extent that this report is based on information supplied by other parties, C.D. Watters Engineering Ltd. accepts no liability for any loss or damage suffered by the client, whether through contract or tort, stemming from any conclusions based on data supplied by parties other than C.D. Watters Engineering Ltd. and used by C.D. Watters Engineering Ltd. in preparing this report.

Clayton Watters, P.Eng., MBA

President, C.D. Watters Engineering Ltd.

APPENDIX 'A' – Ten Year Capital Plan

2025 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
68A	Begg Road	John Wise Line	Bush Line	446	PDST	2025	$ 56,196
60F	Bush Line	Oneida Road	Ashmore Road	669	PR1	2025	$ 132,194
60G	Bush Line	Ashmore Road	Mill Road	1390	PR1	2025	$ 274,664
60D	Bush Line	Boxall Road	Munro Line	693	PR1	2025	$ 136,937
60C	Bush Line	Union Road	Boxall Road	835	PR1	2025	$ 164,996
60E	Bush Line	Munro Line	Oneida Road	588	PR1	2025	$ 116,189
25B	Elizabeth Street	Union Road	94 M E of Union R	94	UREC	2025	$ 804,000
36A	John Wise Line	Longhurst Line	Talbot Line	2075	PR1	2025	$ 410,020
8A	Magdala Road	Second Line	Southdel Drive	1615	PR1	2025	$ 319,124
8B	Magdala Road	Second Line	Third Line	1350	PR1	2025	$ 266,760
10B	Parson Road	Fourth Line	Longhurst Line	1240	SST no Shld	2025	$ 37,200
10A	Parson Road	Fourth Line	Southminster Stree	2040	SST no Shld	2025	$ 61,200
77	Thomas Road	Union Road	Union Road	2063	PDST	2025	$ 259,938

2026 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
58A	Ford Road	McBain Line	Talbot Line	1331	SST no Shld	2026	$ 39,930
58B	Ford Road	Wellington Road	McBain Line	795	MR1	2026	$ 219,397
43A	Fowler Street	Millpark Street	Union Road	87	UREC	2026	$ 291,450
81	Grand Canyon Rd	Lake Line	End	742	SST no Shld	2026	$ 22,260
35A	Mill Road	Southdel Drive	Third Line	1380	SST + Shld	2026	$ 70,070
35B	Mill Road	Third Line	Fourth Line	1392	SST + Shld	2026	$ 70,679
35C	Mill Road	Fourth Line	Longhurst Line	996	SST + Shld	2026	$ 50,572
35D	Mill Road	Longhurst Line	Stafford Line	358	SST + Shld	2026	$ 18,177
35E	Mill Road	Stafford Line	Talbot Line	1710	SST + Shld	2026	$ 86,825
44B	Millpark Street	Fowler Street	End	236	UREC	2026	$ 790,600
44A	Millpark Street	Fingal Line	Fowler Street	158	UREC	2026	$ 529,300
37	Paynes Mills Road	Longhurst Line	Talbot Line	2052	PDST	2026	$ 258,552
38E	Scotch Line	Coon Road	Lake Line	2390	PDST	2026	$ 301,140
38D	Scotch Line	Boxall Road	Coon Road	2529	PDST	2026	$ 318,654
4E	Second Line	Magdala Road	Mill Road	2459	SST no Shld	2026	$ 73,770

2027 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
14A	Longhurst Line	Mill Road	John Wise Line	2128	PR1	2027	$ 420,493
14E	Longhurst Line	Woodplant Road	Sunset Road	2082	PR1	2027	$ 411,403
14D	Longhurst Line	Parson Road	Woodplant Road	1494	PR1	2027	$ 295,214
14B	Longhurst Line	John Wise Line	Paynes Mills Road	1281	PR1	2027	$ 253,126
14C	Longhurst Line	Paynes Mills Roa	Parson Road	317	PR1	2027	$ 62,639
38C	Scotch Line	Jones Road	Boxall Road	2556	DST+G	2027	$ 269,147
38B	Scotch Line	Fingal Line	Jones Road	2406	DST+G	2027	$ 253,352
80B	Southdel Drive	West End	Magdala Road	1910	DST+G	2027	$ 201,123
80C	Southdel Drive	Magdala Road	Ballpark Road	638	DST+G	2027	$ 67,181
80D	Southdel Drive	Ballpark Road	Fairgrounds Road	1387	DST+G	2027	$ 146,051
80E	Southdel Drive	Fairgrounds Roa	Mill Road	1393	SST no Shld	2027	$ 41,790
80F	Southdel Drive	Mill Road	Carriage Road	1378	SST no Shld	2027	$ 41,340
80G	Southdel Drive	Carriage Road	Third Line	1890	SST no Shld	2027	$ 56,700
17E	Southminster Bourne	Sunset Road	Wonderland Road	2036	DST+G	2027	$ 214,391

2028 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
42	Argyle Street	Lanark Street	Fingal Line	207	MR1	2028	$ 31,609
60H	Bush Line	Mill Road	John Wise Line	2103	PR1	2028	$ 415,553
60K	Bush Line	Lyle Road	Middle River Road	1827	PR1	2028	$ 361,015
60J	Bush Line	Middle River Roa	Begg Road	1587	PR1	2028	$ 313,591
60L	Bush Line	Lyle Road	Reiger Road	546	PR1	2028	$ 107,890
60I	Bush Line	John Wise Line	Begg Road	308	PR1	2028	$ 60,861
90C	Florence Street	Major Line	End	256	MR1	2028	$ 39,091
90A	Florence Street	North Street	James Street	153	MR1	2028	$ 23,363
90B	Florence Street	James Street	Major Line	85	MR1	2028	$ 12,980
75B	Fulton Bridge Line	Middle River Roa	Mellor Road	1035	SST no Shld	2028	$ 31,050
47	Inverness Street	Lanark Street	Fingal Line	218	MR1	2028	$ 33,289
41A	Lanark Street	Union Road	Inverness Street	200	MR1	2028	$ 30,540
41B	Lanark Street	Inverness Street	Argyle Street	100	MR1	2028	$ 15,270
91A	Major Line	North Street	McBain Line	69	MR1	2028	$ 10,536
91B	Major Line	Florence Street	North Street	243	MR1	2028	$ 37,106
91C	Major Line	Ford Road	Florence Street	68	MR1	2028	$ 10,384
91D	Major Line	964 M NE of Sun	Ford Road	620	MR1	2028	$ 94,674
76C	Mellor Road	Fulton Bridge Lin	End	773	SST no Shld	2028	$ 23,190
76B	Mellor Road	Fulton Bridge Lin	Fruit Ridge Line	266	SST no Shld	2028	$ 7,980
35I	Mill Road	Bush Line	Middle River Road	2502	SST no Shld	2028	$ 75,060

2029 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
89	James Street	Florence Street	North Street	158	R1	2029	$ 20,137
71A	McBain Line	Ford Road	Major Line	434	PR1	2029	$ 85,758
71B	McBain Line	Major Line	Wellington Road	141	PR1	2029	$ 27,862
12	McIntyre Road	Union Road	Stafford Line	310	DST+G	2029	$ 32,643
88A	North Street	James Street	Major Line	88	MR1	2029	$ 13,438
88B	North Street	Florence Street	James Street	157	MR1	2029	$ 23,974
88C	North Street	Florence Street	End	95	MR1	2029	$ 14,507
19	Shorlea Line	Wonderland Roa	Wellington Road	2194	SST no Shld	2029	$ 65,820
13D	Stafford Line	Morrow Road	Oneida Road	392	DST+G	2029	$ 41,278
13C	Stafford Line	McIntyre Road	Morrow Road	1201	DST+G	2029	$ 126,465
13B	Stafford Line	Union Road	McIntyre Road	359	DST+G	2029	$ 37,803
13E	Stafford Line	Oneida Road	Mill Road	2068	DST+G	2029	$ 217,760
13A	Stafford Line	Fifth Line	Union Road	716	DST+G	2029	$ 75,395
15A	Woodplant Road	Southminster Bou	Clinton Line	1442	DST+G	2029	$ 151,843
15B	Woodplant Road	Clinton Line	Longhurst Line	435	DST+G	2029	$ 45,806

2030 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
31	Hall Street	Talbot Line	Horton Street	101	MR1	2030	$ 35,423
32A	Horton Street	Hall Street	Union Road	120	MR1	2030	$ 38,324
32B	Horton Street	Hall Street	End	104	MR1	2030	$ 35,881
76A	Mellor Road	Fruit Ridge Line	351 M North of Fru	351	DST+G	2030	$ 36,960
69A	Middle River Road	Bush Line	John Wise Line	1558	DST+G	2030	$ 164,057
69C	Middle River Road	Fulton Bridge Lin	Begg Road	662	DST+G	2030	$ 69,709
69B	Middle River Road	Begg Road	John Wise Line	1356	DST+G	2030	$ 142,787
69F	Middle River Road	North of Munro Li	Mill Road	1078	DST+G	2030	$ 113,513
69D	Middle River Road	Goodhue Road	Fulton Bridge Line	620	DST+G	2030	$ 65,286
69E	Middle River Road	Mill Road	Goodhue Road	535	DST+G	2030	$ 56,336
35H	Mill Road	Fingal Line	Bush Line	2025	DST+G	2030	$ 213,233
35G	Mill Road	Fingal Line	Blind Line	2063	DST+G	2030	$ 217,234
35F	Mill Road	Talbot Line	Blind Line	2063	DST+G	2030	$ 217,234
78	Roberts Line	Sparta Line	Town Limit	459	SST no Shld	2030	$ 13,770
51	Spring Street	Centre Street	End	83	MR1	2030	$ 12,674
50	St James Street	Centre Street	End	104	MR1	2030	$ 15,881
49	Victoria Street	Centre Street	End	84	MR1	2030	$ 12,827

2031 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
68B	Begg Road	John Wise Line	Middle River Road	2337	DST+G	2031	$ 246,086
65	Cattanach Line	Coon Road	End	756	DST+G	2031	$ 79,607
72C	Coon Road	Scotch Line	Cattanach Line	439	DST+G	2031	$ 46,227
72B	Coon Road	Cattanach Line	Union Road	1380	DST+G	2031	$ 145,314
61D	Lake Line	Grand Canyon Rd	Scotch Line	2754	SST no Shld	2031	$ 82,620
61C	Lake Line	Boxall Road	Grand Canyon Roa	2664	SST no Shld	2031	$ 79,920
61E	Lake Line	Scotch Line	Union Road	1055	SST no Shld	2031	$ 31,650
30B	Orchard Street	Union Road	John Street	99	MR1	2031	$ 15,117
30A	Orchard Street	John Street	End	146	MR1	2031	$ 22,294
4D	Second Line	Union Road	Magdala Road	1179	DST+G	2031	$ 124,149
4B	Second Line	Plain Road	Turner Road	2718	DST+G	2031	$ 286,205
4A	Second Line	Iona Road	Plain Road	2728	DST+G	2031	$ 287,258
4C	Second Line	Turner Road	Union Road	1222	DST+G	2031	$ 128,677
73	Smith Road	Union Road	Munro Line	1379	DST+G	2031	$ 145,209

2032 Capital Plan

(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
64A	Boxall Road	Union Road	Bush Line	768	PR1	2032	$ 151,757
64B	Boxall Road	Hunter Line	Union Road	1377	PR1	2032	$ 272,095
64D	Boxall Road	Lake Line	Scotch Line	654	PR1	2032	$ 129,230
64C	Boxall Road	Scotch Line	Hunter Line	1313	PR1	2032	$ 259,449
29	Brook Street	John Street	End	117	MR1	2032	$ 17,866
45	Church Street	Fingal Line	Fowler Street	151	MR1	2032	$ 23,058
43B	Fowler Street	Fingal Line	Millpark Street	472	MR1	2032	$ 72,074
5B	Lawrence Road	Third Line	Fourth Line	1382	SST no Shld	2032	$ 41,460
5C	Lawrence Road	Fourth Line	Gore Fifth Line	1377	SST no Shld	2032	$ 41,310
5A	Lawrence Road	Second Line	Third Line	1375	SST no Shld	2032	$ 41,250
5D	Lawrence Road	Gore Fifth Line	Sixth Line	1074	SST no Shld	2032	$ 32,220
53D	Lyle Road	Fingal Line	Bush Line	2027	DST+G	2032	$ 213,443
53B	Lyle Road	Talbot Line	Blind Line	1825	DST+G	2032	$ 192,173
53C	Lyle Road	Blind Line	Fingal Line	2041	DST+G	2032	$ 214,917

2033 Capital Plan

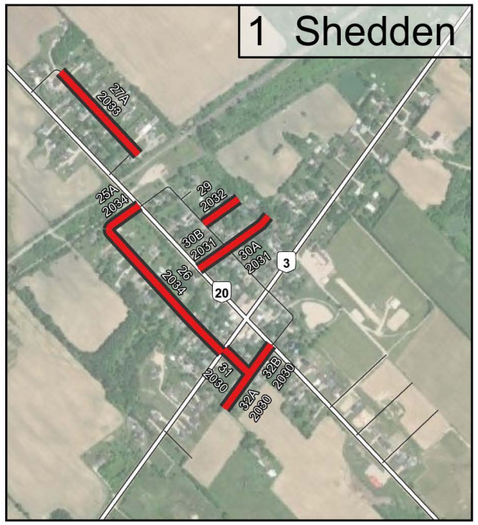
(excluding Gravel Resurfacing and Sidewalk Replacements)

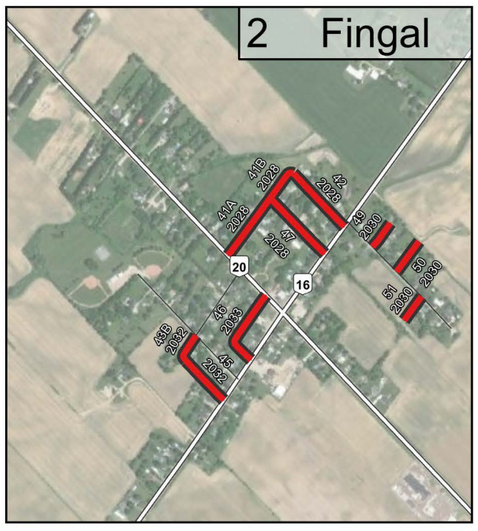
ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
2A	First Line	Iona Road	Routh Road	1494	DST+G	2033	$ 157,318
2B	First Line	Routh Road	Plain Road	1220	DST+G	2033	$ 128,466
46	Glasgow Street	Fingal Line	Union Road	224	MR1	2033	$ 34,205
27A	John Street N	Rose Ave	Courtney Street	318	MR1	2033	$ 48,559
62	Jones Road	Lake Line	Scotch Line	1377	DST+G	2033	$ 144,998
61B	Lake Line	Jones Road	Boxall Road	3228	DST+G	2033	$ 339,908
61A	Lake Line	Iona Road	Jones Road	1570	DST+G	2033	$ 165,321
3	Plain Road	First Line	Second Line	1379	DST+G	2033	$ 145,209
1A	Routh Road	1078 M North of F	Town Limit	1720	DST+G	2033	$ 181,116
1B	Routh Road	First Line	1078 M North of Fi	1078	DST+G	2033	$ 113,513

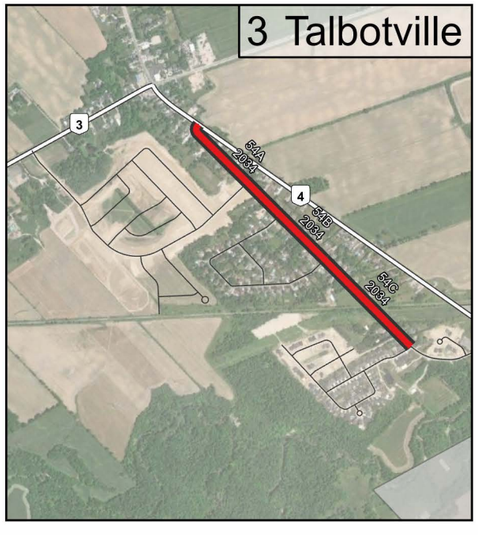
2034 Capital Plan

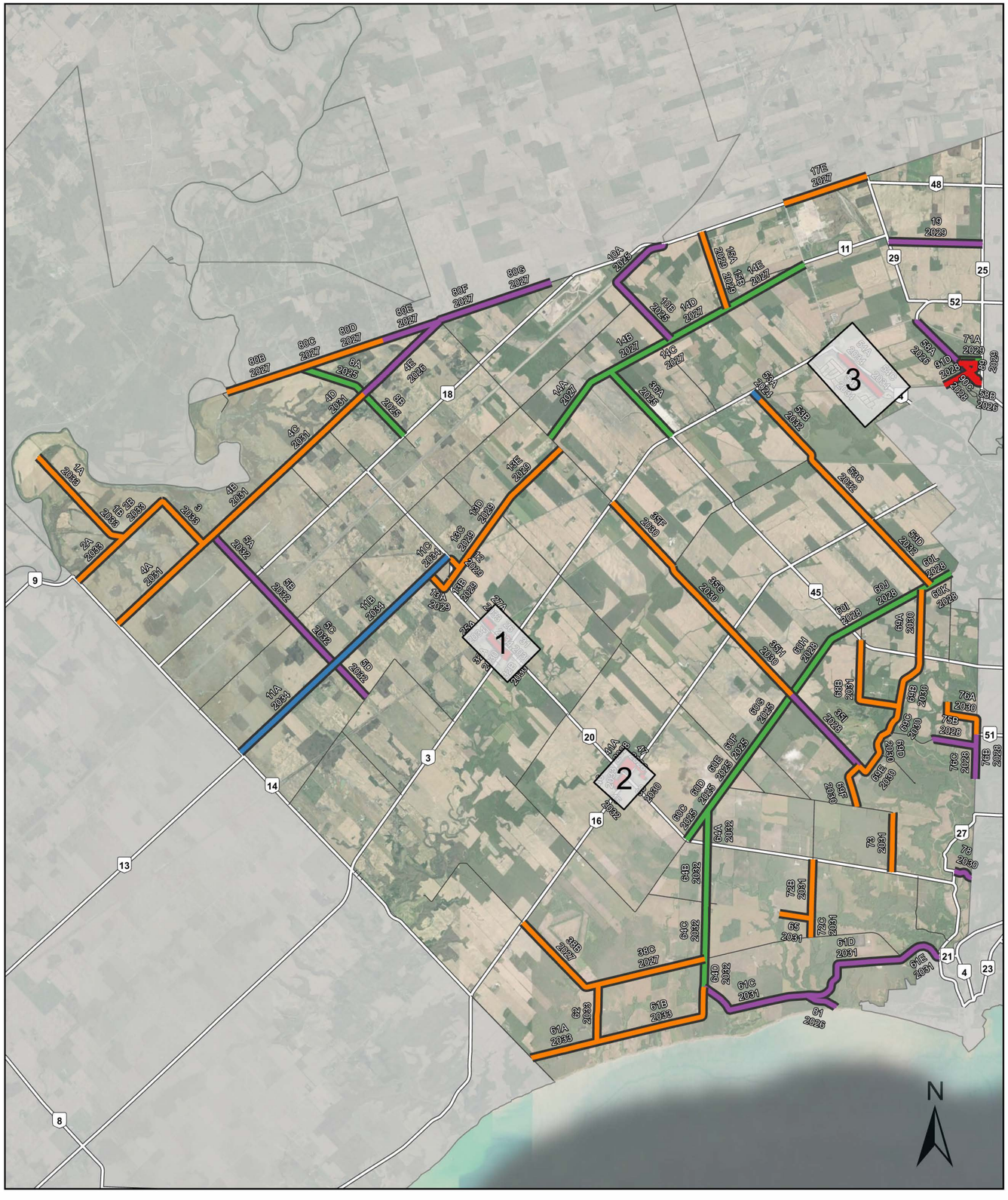
(excluding Gravel Resurfacing and Sidewalk Replacements)

ROAD SECTION	Street Name	Location (From)	Location (To)	Length from Citywide (m)	Proposed Work	Project Year	Estimated Project Cost (2025)
25A	Elizabeth Street	Francis Street	Union Road	106	MR1	2034	$ 16,186
11C	Fifth Line	Stafford Line	Union Road	3027	R1	2034	$ 385,791
11B	Fifth Line	Lawrence Road	Stafford Line	601	R1	2034	$ 76,597
11A	Fifth Line	Iona Road	Lawrence Road	3039	R1	2034	$ 387,321
26	Francis Street	Talbot Line	Elizabeth Street	462	MR1	2034	$ 70,547
54A	Talbotville Gore Rd	Shady Lane Cres	Sunset Road	546	MR1	2034	$ 83,374
54B	Talbotville Gore Rd	Shady Lane Cres	Shady Lane Cres	279	MR1	2034	$ 42,603
54C	Talbotville Gore Rd	Shady Lane Cres	Sunset Road	944	MR1	2034	$ 144,149









Appendix 'B'
Township of Southwold
10 Year Capital Plan

TOWNSHIP OF Southwold

Road Section

Proposed Work

- MR1 - 33 Sections
- R1 - 5 Sections
- PR1 - 24 Sections
- SST no Shld - 21 Sections
- DST+G - 44 Sections

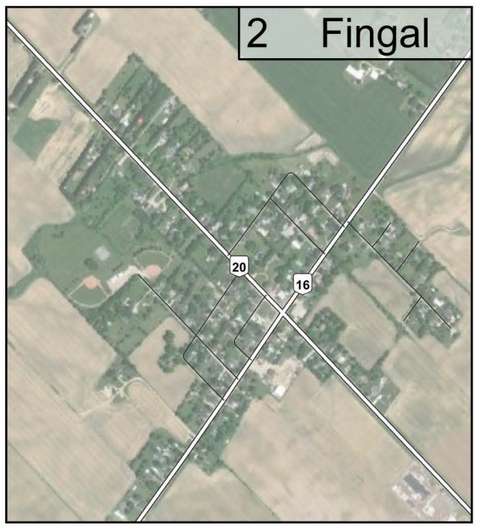
- Elgin County Roads
- Surrounding Boundaries

Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2025 Capital Plan



Road Section

Proposed Work 2025

- MR1 - 0 Sections
- R1 - 0 Sections
- PR1 - 8 Sections
- SST no Shld - 2 Sections
- DST+G - 0 Sections

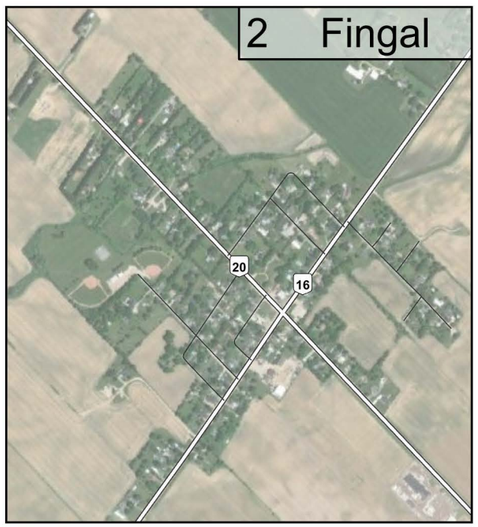
- Elgin County Roads
- Surrounding Boundaries

Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2026 Capital Plan



Road Section

Proposed Work 2026

- MR1 - 1 Sections
- R1 - 0 Sections
- PR1 - 0 Sections
- SST no Shld - 3 Sections
- DST+G - 0 Sections

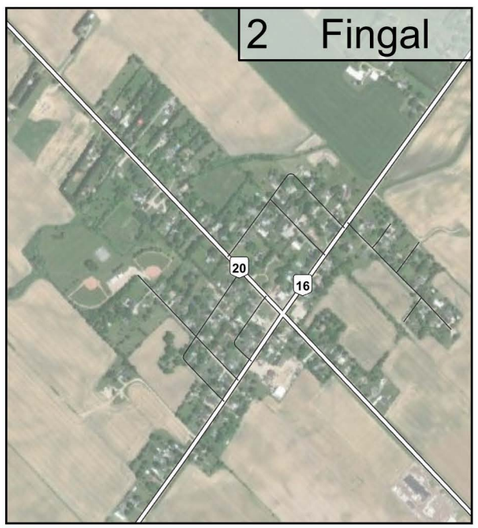
- Elgin County Roads
- Surrounding Boundaries

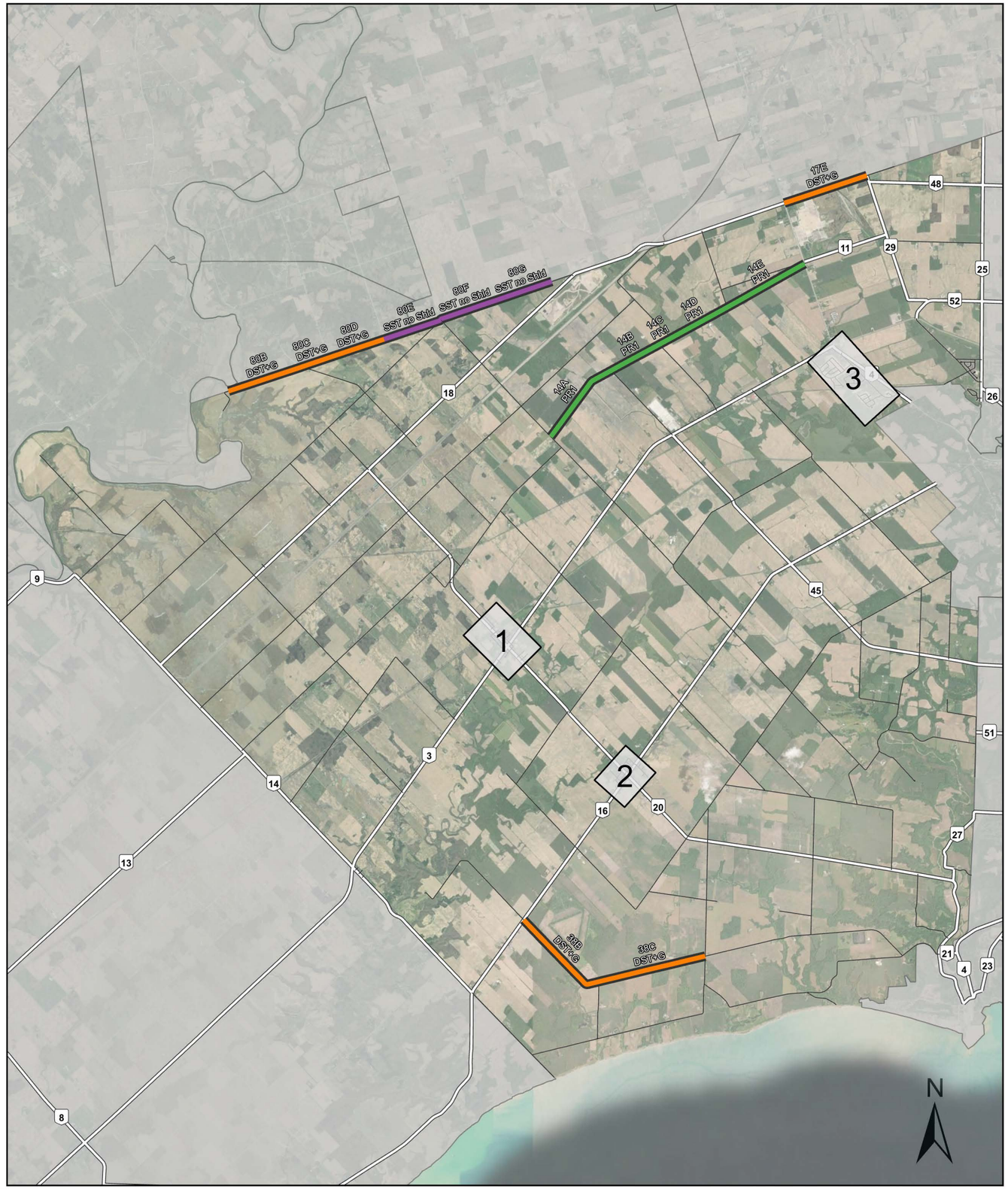
Meters

0 5000 1 0000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2027 Capital Plan





Road Section

Proposed Work 2027

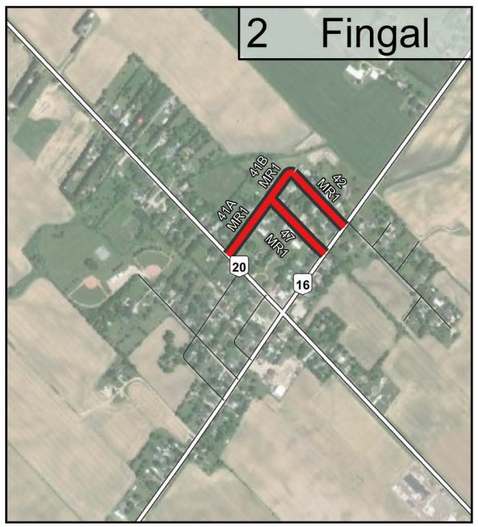
- MR1 - 0 Sections
- R1 - 0 Sections
- PR1 - 5 Sections
- SST no Shld - 3 Sections
- DST+G - 6 Sections

- Elgin County Roads
- Surrounding Boundaries

Meters

0 5000 1 0000

Coordinate System: NAD 1983 UTM Zone 17N



Township of Southwold 2028 Capital Plan

TOWNSHIP OF Southwold

Road Section

Proposed Work 2028

- MR1 - 11 Sections
- R1 - 0 Sections
- PR1 - 5 Sections
- SST no Shld - 4 Sections
- DST+G - 0 Sections

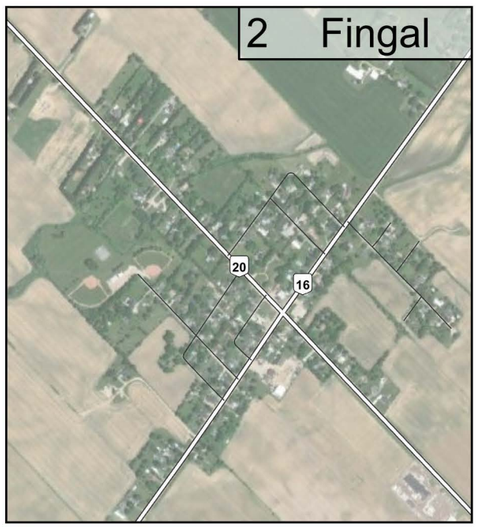
- Elgin County Roads
- Surrounding Boundaries

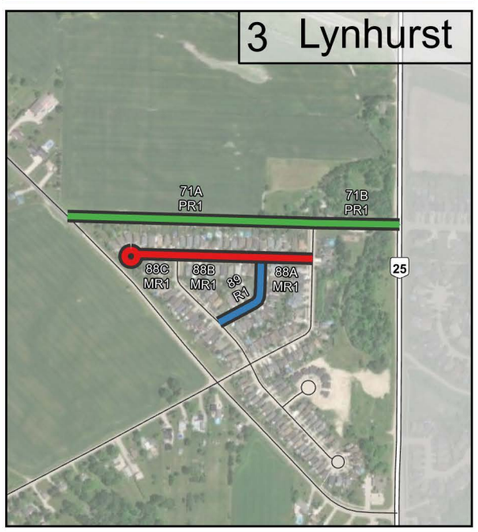
Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2029 Capital Plan





Road Section

Proposed Work 2029

- MR1 - 3 Sections
- R1 - 1 Sections
- PR1 - 2 Sections
- SST no Shld - 1 Sections
- DST+G - 8 Sections

- Elgin County Roads
- Surrounding Boundaries

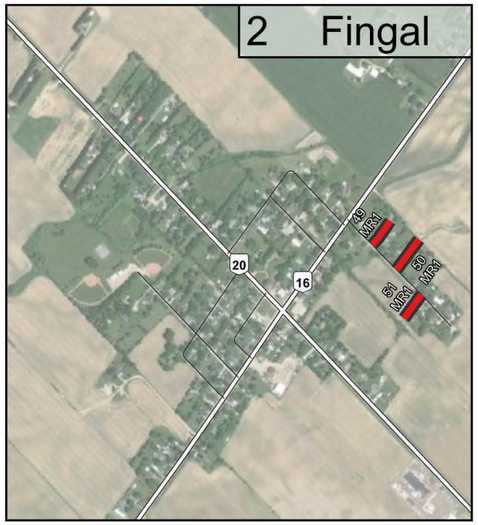
Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2030 Capital Plan

TOWNSHIP OF
Southwold



Road Section

Proposed Work 2030

- MR1 - 6 Sections
- R1 - 0 Sections
- PR1 - 0 Sections
- SST no Shld - 1 Sections
- DST+G - 10 Sections

- Elgin County Roads
- Surrounding Boundaries

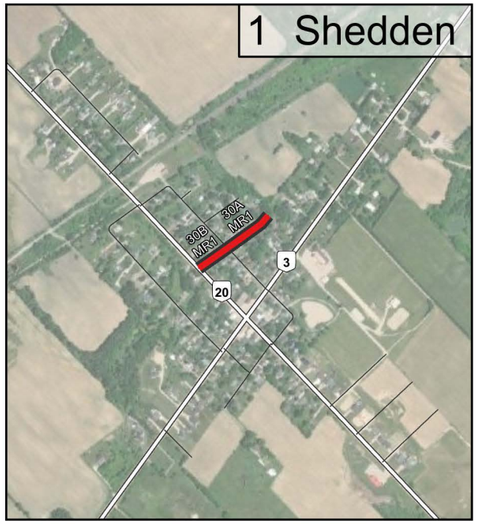
Meters

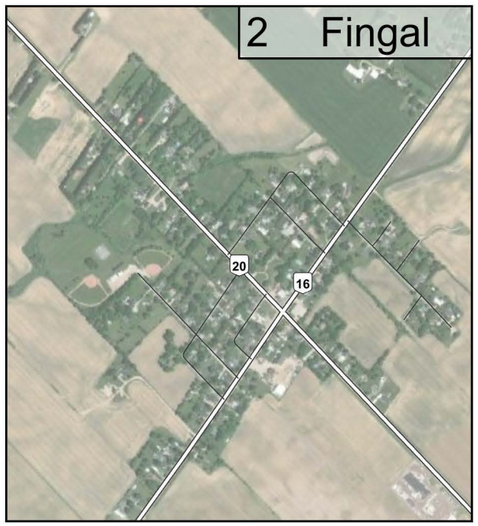
0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2031 Capital Plan

Township of Southwold





Road Section

Proposed Work 2031

- MR1 - 2 Sections
- R1 - 0 Sections
- PR1 - 0 Sections
- SST no Shld - 3 Sections
- DST+G - 9 Sections

- Elgin County Roads
- Surrounding Boundaries

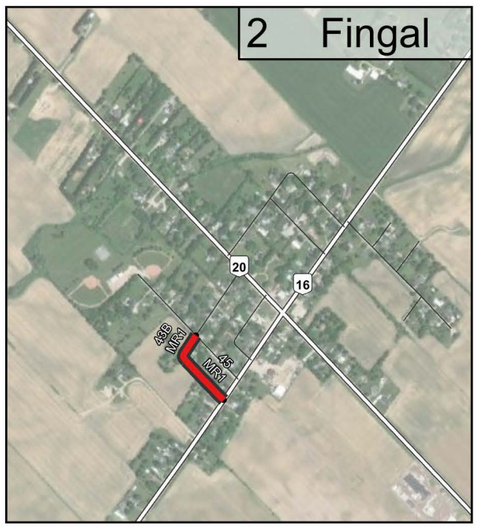
Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2032 Capital Plan

TOWNSHIP OF Southwold



Road Section

Proposed Work 2032

- MR1 - 3 Sections
- R1 - 0 Sections
- PR1 - 4 Sections
- SST no Shld - 4 Sections
- DST+G - 3 Sections

- Elgin County Roads
- Surrounding Boundaries

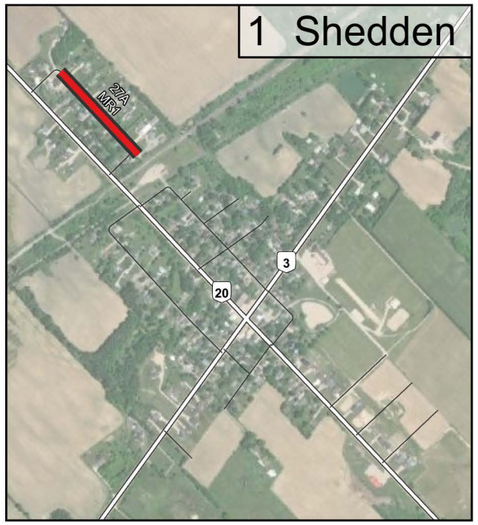
Meters

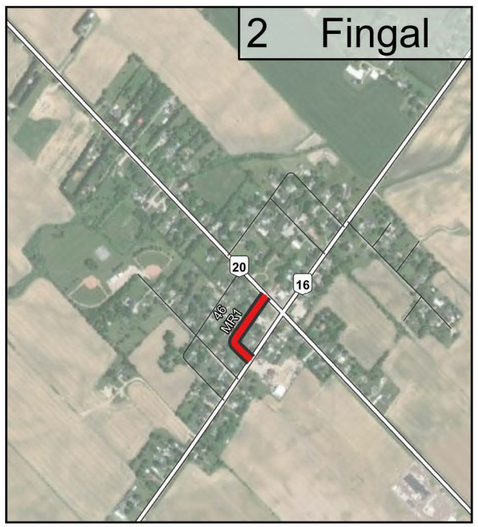
0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2033 Capital Plan

TOWNSHIP OF Southwold





Road Section

Proposed Work 2033

- MR1 - 2 Sections
- R1 - 0 Sections
- PR1 - 0 Sections
- SST no Shld - 0 Sections
- DST+G - 8 Sections

- Elgin County Roads
- Surrounding Boundaries

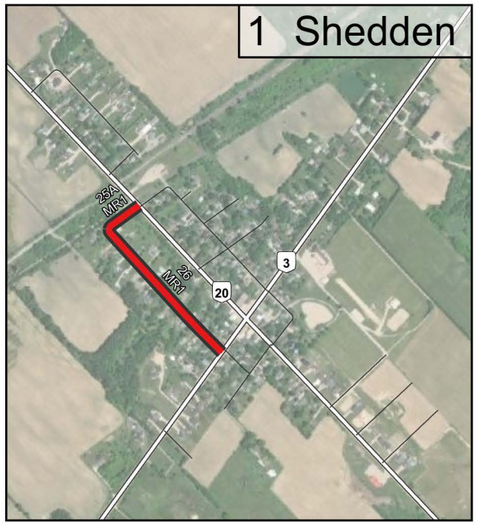
Meters

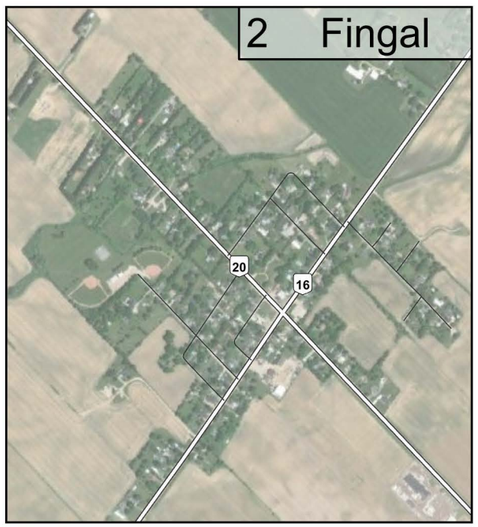
0 5000 10000

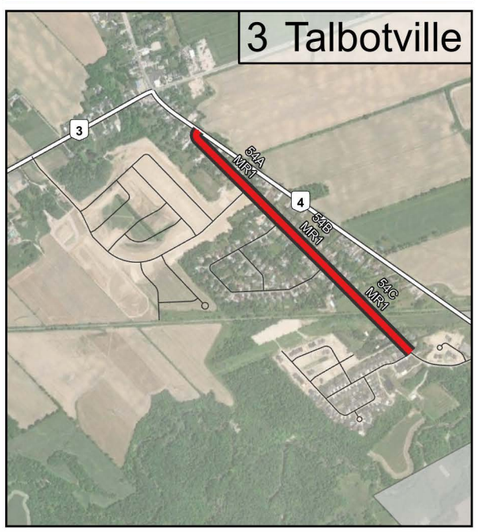
Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold
2034 Capital Plan

TOWNSHIP OF
Southwold







Road Section

Proposed Work 2034

- MR1 - 5 Sections
- R1 - 3 Sections
- PR1 - 0 Sections
- SST no Shld - 0 Sections
- DST+G - 0 Sections

- Elgin County Roads
- Surrounding Boundaries

Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold Capital Plan Gravel Road Conversions

TOWNSHIP OF Southwold

Gravel Road Conversions

Project Year

- 2027
- 2029
- 2030
- 2031
- 2032
- 2033

- Elgin County Roads
- Surrounding Boundaries

Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold Capital Plan Remaining Gravel Roads

Remaining Gravel Roads

Elgin County Roads

Surrounding Boundaries

Meters

0 5000 10000

Coordinate System: NAD 1983 UTM Zone 17N

Township of Southwold Drainage Maintenance

TOWNSHIP OF Southwold

Following Areas with Drainage Concerns

- Drainage Concerns
- Elgin County Roads
- Surrounding Boundaries

Lyle Road – Ditching and berm removal

Lawrence Road at 5th Line – Ditching required to existing catch basin and tile outlet

Lawrence Road at 6th Line – Catch basin plugs and may require a drain clean out or improvements

Surface Crossing replacement and ditch outlet to be cleaned out

Sixth Line replace surface crossing and ditch

Mellor Road – Increase road culvert crossing size and extend on south end

Mutual Agreement Drain to the east of the Jones Drain – These drains must be installed along with associated road ditching prior to road improvements being implemented

Jones Drain – Currently under design to improve drainage

Ditching and storm drainage system to be installed to prevent surface water eroding road edges

N

Meters

0 3750 7500

Coordinate System: NAD 1983 UTM Zone 17N

Appendix C - Sidewalk Inventory and Condition

Road Section	Road To	Road From	Sidewalk Conditon	Section Width (m)	Section Length (m)	Notes
ORCHARD STREET	Union Road	John Street	5	1.1	81.5	1.1m wide. Asphalt patch. 2 Trip ledge more than 20mm. General scaling and pop outs. Few medium cracks.
JOHN STREET	Brook Street	Orchard Street	5	1.1	87.0	1.1m wide. 3 trip ledge at 9654. Several medium sized cracks. Spalling and scaling present
JOHN STREET	Elizabeth Street	Orchard Street	5	0	230.7	Several medium cracks. 2 trip ledges over 20mm. General scaling, minor cracking and pop outs
ORCHARD STREET	John Street	Dead End	5	0	82.4	Asphalt taper. 1m length of wide crack. General minor cracking and scaling
WAUGH STREET	Union Road	55m East on Waugh Street	5	0.9	55.2	0.9m wide. General scaling and minor cracking. Sections overgrown with brush and grass. 1 trip ledge at 35854
HORTON STREET	Hall Street	Union Road	5	0.9	79.2	0.9m wide. General scaling. Few medium sized cracks. Debris covered.
UNION ROAD	Talbot Line	Waugh Street	5	1.2	82.0	1.2m wide. Few medium crack with spalling. Minor scaling. Minor pop outs
UNION ROAD	Talbot Line	Waugh Street	7	1.5	86.5	1.5m wide. Couple medium sized cracks. Light spalling.
UNION ROAD	Horton Street	68m South on Union Road	7	1.5	68.9	Overgrown brush. Minor scaling. 1.5m wide
UNION ROAD	Hall Street	140m South on Union Road	7	1.8	139.3	Section against curb 1.8m wide. 1.5m wide rest. Several minor cracks
TALBOT LINE	Francis Street	Union Road	8	1.2	103.8	1.2m wide. No cracking.
TALBOT LINE	Hall Street	Union Road	9	1.5	91.3	1.5m wide. Minor Hairline crack.
TALBOT LINE	Union Road	John Street	8	1.1	74.6	1.1m wide. 1 medium crack
TALBOT LINE	Union Road	John Street	6	1.2	87.7	1.2m wide. General scaling. 1 trip ledge at 35847. Few wide cracks
TALBOT LINE	John Street	95m East on Talbot Line	5	1.1	94.5	1.1m wide. 1 panel significant spalling. 1 section with wide crack. General minor cracking and spalling
TALBOT LINE	John Street	115m East on Talbot Line	8	1.8	110.6	1.8m wide.
TALBOT LINE	Francis Street	95m West on Talbot Line	7	1	93.4	1 medium cracked panel. Couple minor cracks. 1.2m wide
TALBOT LINE	Hall Street	111m West on Talbot Line	9	1.5	111.5	No issues. 1.5m wide.
BROOK STREET	John Street	Dead End	5	0.9	102.1	0.9m wide. General scaling. Minor cracking. Vegetation overhanging sidewalk in sections
FRANCIS STREET	Talbot Line	111m North on Francis Street	4	0.9	109.8	A lot of fully cracked panels. 0.9m wide. General pop outs and scaling
UNION ROAD	Orchard Street	Talbot Line	8	0.75	179.8	Minor cracking and spalling. 6 crack, medium width. 75mm width Asphalt taper patch
JOHN STREET	Talbot Line	41m South on John Street	6	0.9	41.6	0.9m wide. Several medium cracks with some spalling.
JOHN STREET	Orchard Street	Talbot Line	5	1.1	147.2	Trip ledge at 9628. 1.1m wide overall. General minor cracking and spalling and pop outs. 3m of wide cracking. Trip ledge 9590.
JOHN STREET	Orchard Street	Talbot Line	6	1.1	152.1	Medium scaling and spalling in several panels. 1.1m wide. Several medium sized cracks. Trip ledge at 9613 and at 9615
UNION ROAD	Orchard Street	76m North on Union Road	6	1.1	75.6	1.1m width. Spalling and pop outs. Vertical trip ledge more than 20mm. 6 medium size cracks
UNION ROAD	Talbot Line	80m North on Union Road	6	1.1	83.0	1.1m wide. Few medium sized cracks on few panels
THIRD LINE	William Street	35m East on Third Line	1	1.5	35.3	1.5m wide. Minor Pop outs, scaling. 1 medium sized crack 5mm wide. Evidence sidewalk at 34575 - did not inspect
THIRD LINE	50m East of Intersection	160m East of Intersection	8	1.5	107.6	1.5m wide. Minor Pop outs, scaling. 1 medium sized crack 5mm wide. Evidence sidewalk at 34575 - did not inspect
THIRD LINE	30m East of Intersection	46m East of Intersectionhird Line	1	1.5	16.2	1.5m wide. Minor Pop outs, scaling. 1 medium sized crack 5mm wide. Evidence sidewalk at 34575 - did not inspect
THIRD LINE	46m West of Intersection	22m East of Intersectionhird Line	1	1.5	66.3	1.5m wide. Minor Pop outs, scaling. 1 medium sized crack 5mm wide. Evidence sidewalk at 34575 - did not inspect
THIRD LINE	53m West of Intersection	161m West of Intersection	1	1.5	108.6	1.5m wide. Minor Pop outs, scaling. 1 medium sized crack 5mm wide. Evidence sidewalk at 34575 - did not inspect
FINGAL LINE	371m West of Union Road	Union Road	7	1.5	358.5	Trip ledge at ramp of intersection. Several medium cracks with spalling 1.5m wide. General scaling
UNION ROAD	Fingal Line	161m South of Fingal Line	7	1.5	155.1	1.5m wide. Several medium sized cracks with spalling. Minor scaling
UNION ROAD	Fingal Line	348m South of Fingal Line	7	1.2	350.1	Trip ledge at 7836. 2 trip ledges near intersection near hydrant. Several wide cracks with spalling. Minor scaling. 1.2m wide.
FINGAL LINE	Union Road	Centre Street	7	1.5	305.4	1.5m wide. Minor scaling and cracking. One heaved panel east of Inverness - trip ledge. Several panels with wide cracks
FINGAL LINE	Inverness Street	Argyle Street	7	1.2	82.0	Minor crack with scaling and spalling. 1.2m wide
FINGAL LINE	Union Road	Inverness Street	7	1.2	182.8	1.2m wide. Few medium sized cracks with spalling
UNION ROAD	Lanark Street	Fingal Line	7	0	209.1	Medium crack with spalling - 3 panels
UNION ROAD	227m North of Lanark Street	Lanark Street	7	1.5	223.3	1.5m wide. One medium crack
ARGYLE STREET	Fingal Line	38m North of Fingal Line	1	0	37.5	Short distance. Unrated
UNION ROAD	Glassgow Street	Fingal Line	7	1.2	50.3	1.2m wide
FINGAL LINE	Edge of New Sidewalk	Union Road	2	0	66.6	70m long. Asphalt section completely broken. Few medium cracks with spalling for concrete section with general scaling
FINGAL LINE	Glassgow Street	84m West on Fingal Line	7	0	88.8	Trip ledge at 35690. Few medium cracks with spalling. Trip ledge at 35706
FINGAL LINE	Millpark Street	Glassgow Street	8	1.5	65.3	1.5m wide. Minor scaling
FINGAL LINE	Church Street	Millpark Street	8	1.5	60.8	1.5m wide. Minor scaling
FINGAL LINE	118m West of Church Street	Church Street	7	0	125.1	Several medium sized cracks with spalling. Minor scaling.
CHURCH STREET	156m North of Fingal Line	Fingal Line	7	0.9	153.4	0.9m wide. Several medium size cracks with spalling. General scaling. Trip ledge across from 7978
MILLPARK STREET	Fowler Street	Fingal Line	1	0	151.1	Not rated. Overgrown l
GLASSGOW STREET	23m West of Union Road	Union Road	7	0	22.4	Some minor scaling
UNION ROAD	Flower Street	Glassgow Street	7	1.2	90.0	1.2m at county intersection. Minor pop out and scaling. One Minor crack
MAJOR LINE	29m West of Florence Street	Florence Street	8	1.2	28.7	Light scaling. 1.2 wide
MAJOR LINE	Florence Street	North Street	7	1.2	229.3	1.2m wide. Trip ledge at 41518. Trip ledge at 41534. General scaling. Several medium cracks.
NORTH STREET	James Street	Major Line	7	0	79.2	Trip ledge at North and major. Couple Medium crack with spalling.
NORTH STREET	Florence Street	James Street	7	1.2	135.6	1.2 m wide. Heave at 41842. Trip ledge at 41837 due to tree. Trip ledge at 41829.
FLORENCE STREET	North Street	James Street	7	1.2	133.2	1.2 wide. General scaling. Few pop outs. Cracked panel with large chunk missing at 10020. Trip ledge at 10014.
JAMES STREET	Florence Street	North Street	7	1.2	138.7	1.2m wide. General scaling. Few medium cracks. Few panels with chunks missing. 2 Trip ledge around 41858 perimeter.
MAJOR LINE	McBain Line	North Street	7	1.2	51.8	Trip ledge at McBain. 1.2 wide. General scaling.
FLORENCE STREET	Florence Court	Florence Street Culdisac	7	0	113.6	General scaling. Several medium sized cracks.
FLORENCE STREET	Major Line	Florence Court	8	1.2	83.5	General scaling. 1.2m wide.
FLORENCE STREET	Florence Street Culdisac	Ford Road	7	1.5	119.6	1.5m wide. Light scaling. Trip ledge at fire hydrant.
FORD ROAD	150m North/West of Intersection	Wellington Road	8	1.5	89.5	1.5m wide. Light scaling. Trip ledge at fire hydrant.
TALBOT GROVE LANE	Glengariff Drive East Side	Glengariff Drive West Side	7	1.5	177.0	1.5 wide. Minor pop outs. Few panels with scaling. Couple minor cracks.
GLENGARIFF DRIVE	Cerarvale Drive	Talbot Grove Lane	8	1.5	90.2	1.5 wide. 1 minor crack
TALBOT GROVE LANE	Glengariff Drive	Talbotville Gore Rd	7	1.5	226.8	1.5 wide. Few pop out. Couple medium cracks with spalling. Some minor cracks
TALBOTVILLE GORE ROAD	Shady Lane Cresent	Train Tracks	8	1.5	271.2	1.5 wide
TALBOTVILLE GORE ROAD	Shady Lane Cresent North Side	Shady Lane Cresent South Side	7	1.5	266.4	1.5 wide. General pop outs and scaling. Drop off at catch basin.
TALBOTVILLE GORE ROAD	Optimist Drive	Shady Lane Cresent North Side	7	1.5	184.8	1.5m wide. General scaling. Few pop outs and minor cracks. Cracked section in front of new build at 10425
TALBOTVILLE GORE ROAD	Sunset Road	Optimist Drive	7	1.5	546.5	1.5m wide. Trip ledge at 10601. Several wide cracks with spalling. Some scaling. Trip ledge at south end of 10445
TALBOTVILLE GORE ROAD	Train Tracks	Talbot Grove Lane	7	1.5	247.8	1.5 wide. Few pop outs and scaling
GLENGARIFF DRIVE	Sparky's Way	Cedarvale Lane	8	1.5	110.1	1.5m wide. Light scaling
GLENGARIFF DRIVE	End of Roadway	Sparky's Way	7	1.5	57.9	1.5m wide. Several minor cracks on older assumed portion. Light scaling on new section
TALBOTVILLE GORE ROAD	Talbot Grove Lane	Rea Court	8	1.5	236.1	Some pop outs. 1.5m wide. General scaling
FLORENCE STREET	James Street	Major Line	8	1.2	75.4	Few minor cracks. 1.2m wide
JOHN STREET	Brook St	Elizabeth St	4	1.1	112.8	1.1m wide. 2 trip ledges at 9712 and 1 near 9688. Few pop out and general spalling. 70% grass coverage on portion
MCBAIN LINE	Major Line	Wellington Rd	9	1.5	56.4	1.5 wide
SUNSET ROAD	67m South of Talbot Line	Talbot Line	7	1.1	67.0	Scaling. Several medium cracks. 1.1m wide. Overgrown with grass
HWY 4	160m North of Talbot Line	Talbot Line	7	1.5	60.0	1.5 wide. Few medium cracks and dips. Overgrown. Light scaling
TALBOT LINE	64m East of Sunset Rd	Sunset Rd	7	1.2	64.0	1.2m wide. Scaling. Overgrown with grass. Minor cracking
TALBOT LINE	100m East of Sunset Rd	Sunset Rd	7	1.2	100.0	trip ledge west of 40114 at bell box. Trip ledge at 40114. Wide gap due to broken section at 40084. slighlty overgrown
TALBOT LINE	115m West of Sunset Rd	Sunset Rd	7	1.1	72.0	1.1m wide. Scaling. Few medium cracks. Slightly overgrown