

THE MUNICIPALITY OF WEST GREY

GLENELG STRUCTURE RATING AND RATIONALE REPORT

DECEMBER 11, 2019

FINAL





GLENELG STRUCTURE RATING AND RATIONALE REPORT

THE MUNICIPALITY OF WEST GREY

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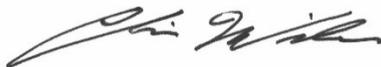
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1 INTRODUCTION

WSP has been retained by the Municipality of West Grey and tasked with the completion of a comprehensive evaluation of the current condition of the bridges under the Municipality's jurisdiction. The Municipality has a large number of structures under its jurisdiction, many of which are in the advanced stages of their lifecycle, and will require significant rehabilitation or replacement if they are to remain in use. It is understood that due to the available tax base for funding the maintenance and rehabilitation of its structures going forward, it is in the best interest of the Municipality to undergo strategic closures of a selection of its lowest value and importance structures, so that the remaining structures may be maintained and replaced to provide a functional, safe, and economically sustainable transportation network.

Each of the three (3) former townships of Bentinck, Glenelg, and Normanby within the Municipality of West Grey have their own specific and important histories and overall networks for transportation. Based on the unique attributes of each, it is recommended that each be analyzed and considered individually, as well as considered as part of the overall municipal transportation network. This report will focus on the evaluation and reporting related to the structure assets within the former Township of Glenelg.

The evaluations and reporting are based on all available information regarding the Municipality's roadway network and structure inventory. The condition and current and future needs of each structure are assessed on an ongoing basis during the biennial Ontario Structure Inspection Manual (OSIM) inspections.

It is the objective of this report to summarize the findings of the evaluation and assign an individual rating to each structure based on a number of criteria which will consider the condition, viability, and importance of each, identify those structures which are best suited for closure, and provide overall recommendations for the Municipality's consideration in moving forward with their structure asset management.

2 BACKGROUND INFORMATION

2.1 MUNICIPALITY OF WEST GREY STRUCTURES

The assets to be reviewed within this report include bridges and culverts greater than three (3) meters in span, as per the criteria for a structure defined by the Ontario Structure Inspection Manual (OSIM). The OSIM defines a bridge as; “A structure which provides a roadway or walkway for the passage of vehicles, pedestrians or cyclists across an obstruction, gap or facility and is greater than or equal to 3 m in span.”

The feasibility of maintaining each structure asset meeting the aforementioned criteria is assessed based on various criteria which consider the scale, value, condition, economy, importance in the community, and historical significance of each.

The Municipality of West Grey has a considerably large number of structure assets. There are a total of one-hundred and six (106) structures, including the Neustadt and Ayton Dams, as well as the Durham and Neustadt pedestrian bridges. **Figure 1** shows a location map of each structure, and can be found in **Appendix A**. The typical lifespan of a structure is between 75 and 100 years, depending on various factors. Many of the bridges within the Municipality were constructed prior to 1950, with thirty-six (36) of those structures at or approaching the end of their useful life span. The below chart depicts the age distribution of the structure (bridge and culvert) assets within the municipality.

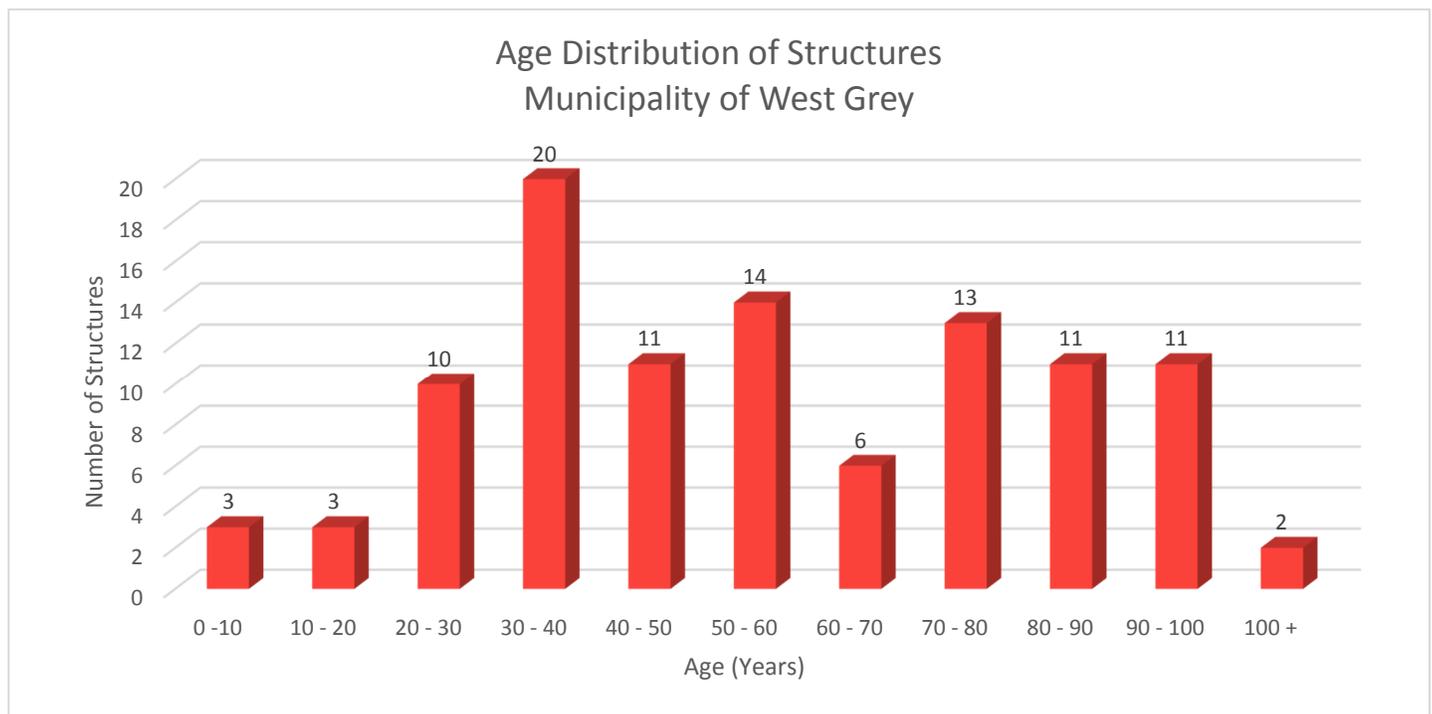


Chart 1 - Age Distribution of Structures - Municipality of West Grey

The current construction cost to replace a structure which has reached the end of its life spans and is no longer a viable candidate for rehabilitation ranges from \$300,000 (smaller structures and culverts) to \$1,750,000 (larger span structures). Given the current tax base and funding available to the Municipality, it is recommended that a strategic plan be developed going forward identifying which structures are best suited for closure. The development of a strategic plan for closures will assist the Municipality in allocating funding and scheduling projects such that it can maximize its investment in a sustainable transportation network which best suits the needs of its residents.

2.2 GLENELG AREA STRUCTURES

The former Township of Glenelg has twenty-five (25) structure assets; eighteen (18) bridges, and seven (7) culverts. **Figure 2** shows a location map of each structure, and can be found in **Appendix A**. The structures range in age from one (1) to ninety-eight (98) years. The age distribution of the Township of Glenelg's structures is displayed in **Chart 2** below. The distribution highlights eight (8) structures, which are approaching the end of their useful life span, which without replacement or significant rehabilitation, will face necessary closure in the near future.

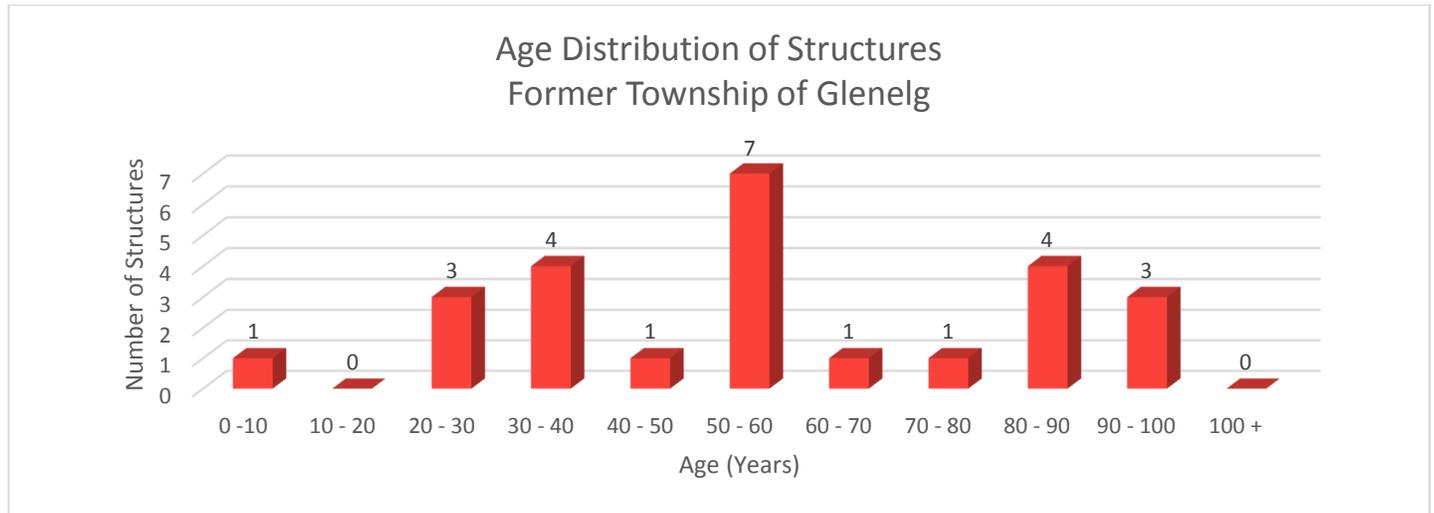


Chart 2 - Age Distribution of Structures - Township of Glenelg

2.2.1 BRIDGE CONDITION INDEX (BCI)

A mandatory biennial inspection and report based on the Ontario Structure Inspection Manual (OSIM) is undertaken for each structure (as defined within the OSIM) within the province of Ontario. One component generated during these inspections and reporting is the Bridge Condition Index (BCI), which weights the condition of each of the various elements of a structure and provides a numeric rating of its overall condition. This value is often one of the measures used in determining allocation of provincial funding. The BCI value ranges from 0 (poor condition) to 100 (excellent condition). As a general rule, structures with a BCI of less than 40 should be considered for immediate repair, rehabilitation, replacement, or closure. It is also recommended that planning for future rehabilitation and repairs be initiated for structures with a BCI between 40 and 60. **Chart 3** below illustrates the BCI distribution of the structures in the former Township of Glenelg.

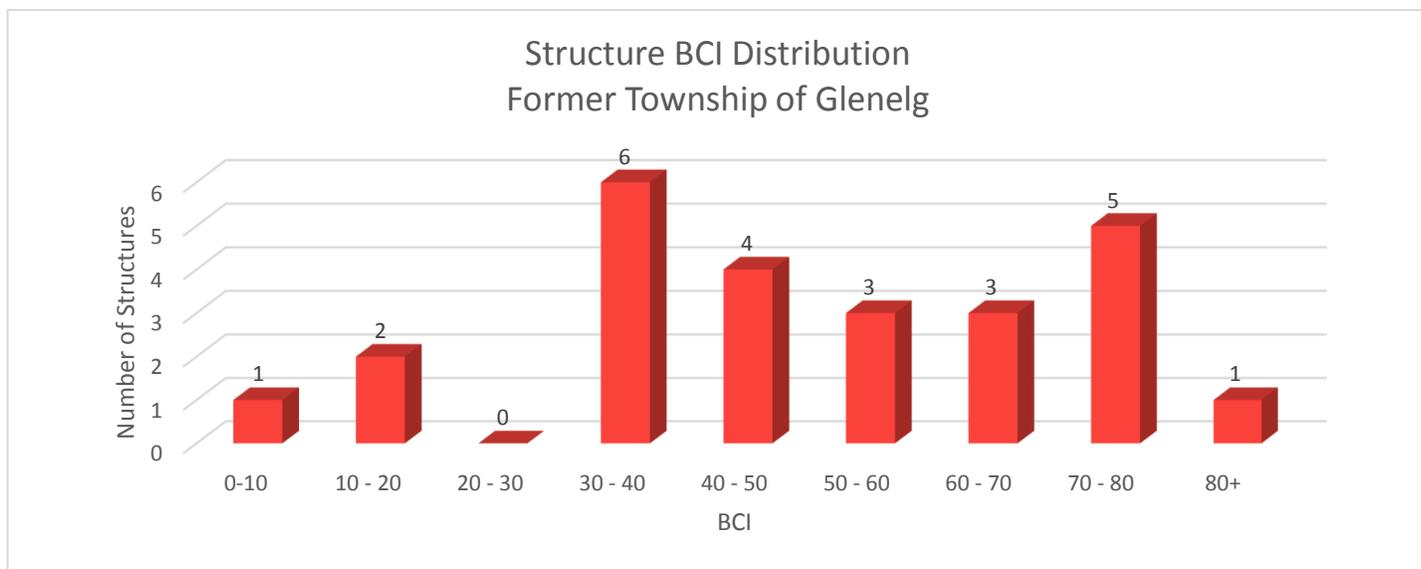


Chart 3 - Structure BCI Distribution - Township of Glenelg

In analyzing this distribution, it is noted that nine (9) structures in Glenelg have BCI values lower than 40, indicating that rehabilitation or replacement of the structure should be scheduled immediately if they are to remain in safe and useful operating condition. This distribution also highlights that seven (7) structures fall within the BCI range of 40 to 60, and future planning for rehabilitation should be initiated.

2.2.2 STRUCTURE ASSET SUMMARY

The condition criteria of the structures within the former Township of Glenelg area have been analyzed to provide a baseline for the overall rating of the structures. To better understand the needs of each structure moving forward, the timing, type and an approximate value of rehabilitation or replacement works have been established. Rehabilitation costs are provided for all structures where the structural condition is such that rehabilitation can restore the structure to a safe and useful condition. Replacement has been specified only where rehabilitation is no longer a structurally viable or economic option for a structure. Rehabilitation is not considered to be an economically viable option where the cost to rehabilitate equals or exceeds the cost of replacement. The approximate replacement value of each structure has also been provided to give an overall indication of the value of the asset.

These established values and information for each structure, along with the age and Bridge Condition Index (BCI), have been summarized in **Table 1** in **Appendix A**.

3 EVALUATION OF STRUCTURES

3.1 METHODOLOGY

In order to achieve a rating system which would clearly demonstrate the condition and value (as an asset to the Municipality) of each individual structure, as well as provide a platform for comparing the structures to one another in future decision-making processes, a universal procedure was developed and applied to each of the structures within the former Township of Glenelg. The procedure considers several criteria, each yielding its own numeric value ranging from 1 to 10 (1 being poor and 10 being excellent). Due to the varying overall impact of each criteria, each has then been classified as primary, secondary, or tertiary, and weighted accordingly in the development of each Overall Structure Rating. The overall structure rating is provided on a scale of 1 to 100, with 1 being poor and 100 being excellent.

Table 2 below summarizes the considered criterion, and indicates their classification and weight within the Overall Structure Rating matrix.

Table 2 – Structure Rating Criteria

RATING CRITERIA	CLASSIFICATION	RATING RANGE	OVERALL RATING WEIGHT
Bridge Condition index (BCI)	Primary	1 to 10	20
Asset Value	Primary	1 to 10	20
Emergency Services – EMS and Fire	Primary	1 to 10	20
Traffic	Secondary	1 to 10	10
Transportation Network	Secondary	1 to 10	10
Municipal Services – School Board and Waste Management	Secondary	1 to 10	10
Historical Significance	Tertiary	1 to 10	5
Detour Impact	Tertiary	1 to 10	5
TOTAL			100

3.2 PRIMARY CRITERIA

3.2.1 BRIDGE CONDITION INDEX (BCI)

To develop the rating for the Bridge Condition Index (BCI) criteria, the BCI determined in the 2017 or 2018 OSIM inspection was directly converted to a 1 to 10 scale (1 being poor and 10 being excellent structural condition). The weight of this primary criterion within the Overall Structure Rating matrix is 20 out of 100 points. **Table 3** below defines each structures rating for this criterion.

Table 3 Structure BCI Ratings

STRUCTURE ID	BCI VALUE	BCI RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)	STRUCTURE ID	BCI VALUE	BCI RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)
G-030	74.02	7.4	15	G-046	34.83	3.5	7
G-031	46.82	4.7	9	G-047	75.34	7.5	15
G-032	69.00	6.9	14	G-048	70.98	7.1	14
G-033	39.70	4.0	8	G-126	32.82	3.3	7
G-035	67.39	6.7	13	G-132	74.68	7.5	15
G-037	9.98	1.0	2	G-133	34.41	3.4	7
G-038	17.29	1.7	3	G-148	75.00	7.5	15
G-039	60.70	6.1	12	G-154	41.52	4.2	8
G-040	34.08	3.4	7	G-197	57.87	5.8	12
G-041	47.08	4.7	9	D-001	47.49	4.7	9
G-043	82.49	8.2	10	D-101	35.31	3.5	7
G-044	14.47	1.4	3	P-101	55.58	5.6	11
G-045	58.63	5.9	12				

3.2.2 ASSET VALUE

The asset value is assessed as a rating ranging from 1 (low overall value as an asset to the Municipality) to 10 (high overall value as an asset to the Municipality). The rating of this criterion is made up of two considerations, the replacement value of the structure, and its current stage within its estimated life cycle. A structure which has a high replacement value would be a large span or multi-span bridge, an intermediate replacement value would be a bridge or ridge frame concrete culvert with an average span, and low replacement value a small rigid frame or pipe culvert. This criterion's rating is intended to measure the structure's value (in its current condition) as either an asset to or burden on the Municipality's asset management. The following table illustrates the rating scale for the Asset Value rating:

		Replacement Value		
		High	Intermediate	Low
Lifecycle Stage (Years)	75 +	Poorest (1/10)	Poor (2/10)	Poor (3/10)
	50 to 75	Poor (2/10)	Poor (3/10)	Fair (4/10)
	25 to 50	Good (7/10)	Good (6/10)	Fair (5/10)
	0 to 25	Best (10/10)	Excellent (9/10)	Excellent (8/10)

Each Asset Value Rating is then weighted as 20 out of 100 points within the Overall Structure Rating matrix. **Table 4** below defines each structure's rating for this criterion.

Table 4 Asset Value Ratings

STRUCTURE ID	ASSET VALUE RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)	STRUCTURE ID	ASSET VALUE RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)
G-030	3	6	G-046	1	2
G-031	3	6	G-047	9	18
G-032	3	6	G-048	3	3
G-033	1	2	G-126	1	2
G-035	2	4	G-132	2	4
G-037	3	6	G-133	6	12
G-038	2	4	G-148	6	12
G-039	1	2	G-154	6	12

STRUCTURE ID	ASSET VALUE RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)	STRUCTURE ID	ASSET VALUE RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)
G-040	1	2	G-197	7	14
G-041	6	12	D-001	6	12
G-043	7	14	D-101	5	10
G-044	2	4	P-101	10	20
G-045	9	18			

3.2.3 EMERGENCY SERVICES – EMS AND FIRE

One of the critical considerations when assessing the importance of a structure within the context of the Municipality's transportation network is its use as a response route for emergency services. To measure this importance and provide a numeric rating (from 1 to 10) for each structure, a number of factors are taken into consideration. If a structure is part of a primary route used by the Fire Service and EMS, it is given the highest rating of 10 points. If the closure of a structure would result in a significant increase in the length of an emergency route or response time, it is assessed at a high rating of 8 to 10, depending on the scale of the increase. A structure which is not considered to be used as a primary route for emergency services, but is on a paved (asphalt or surface treatment) road is given a rating of 6 to 8 as it would be prioritized for use as a response route ahead of an unpaved road whenever possible. Structures which receive the lowest rating in all the aforementioned categories are rated from 1 to 5 for importance as a part of the overall municipal emergency service routes.

Table 5 below displays each structures rating from 1 to 10 (10 being of high and 1 being low) as a measure of its importance with regards to emergency services routes.

Table 5 Emergency Service Ratings

STRUCTURE ID	RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)	STRUCTURE ID	RATING (1-10)	OVERALL RATING (MAX. 20 POINTS)
G-030	9	18	G-046	8	16
G-031	10	20	G-047	8	16
G-032	7	14	G-048	7	14
G-033	5	10	G-126	3	6
G-035	9	18	G-132	10	20
G-037	3	6	G-133	5	10
G-038	3	6	G-148	4	8
G-039	7	14	G-154	9	18
G-040	6	12	G-197	5	10
G-041	6	12	D-001	10	20
G-043	7	14	D-101	10	20
G-044	9	18	P-101	1	1
G-045	9	18			

3.3 SECONDARY CRITERIA

3.3.1 TRAFFIC

The measured traffic volumes for a section of road can provide insight into many aspects of the decision-making process for the operation of a transportation network. They establish the number of users with respect to adjoining and adjacent road sections, give an overview of the traffic flow within a given area, and are a key indicator of the significance of a specific section of road within the overall network.

During the month of September 2016, the Municipality of West Grey's Public Works Department conducted traffic volumes counts for each roadway within the Municipality. The traffic volumes obtained are a key component utilized in ranking (from 1 to 10) the importance of each structure with regards to traffic within the Municipality.

Figure 3 illustrates the traffic volume data collected in the Glenelg area by the Public Works Department, and can be found in **Appendix A**. Each section of road has been colour coded and categorized by volume, and given a rating range which can be applied to each structure as follows:

Colour	Average Daily Traffic	Rating Range
	>1,000	8-10
	200 - 999	6-8
	100-199	4-6
	50 -99	2-4
	0 - 49	0-2

When rating each individual structure within the Glenelg area, the structure is bound by the rating range of its road (above), and is assessed within that range based on its proximity to higher ranked road sections, potential for seasonal volume fluctuation, and proximity to points of significant trip generation. It should be noted that as the Durham pedestrian structure does not convey vehicle traffic, it has been given a lower importance value of 2 with respect to traffic pattern importance. The individual rating of each structure (from 1 to 10) as a measure of its importance with regards to traffic considerations is defined below in **Table 6**.

Table 6 Traffic Ratings

STRUCTURE ID	RATING RANGE	OVERALL RATING (MAX. 10 POINTS)	STRUCTURE ID	RATING RANGE	OVERALL RATING (MAX. 10 POINTS)
G-030	2 - 4	4	G-046	4 - 6	6
G-031	6 - 8	8	G-047	4 - 6	6
G-032	2 - 4	2	G-048	4 - 6	5
G-033	2 - 4	3	G-126	0 - 2	2
G-035	6 - 8	8	G-132	0 - 2	2
G-037	2 - 4	3	G-133	2 - 4	4
G-038	2 - 4	3	G-148	2 - 4	4

STRUCTURE ID	RATING RANGE	OVERALL RATING (MAX. 10 POINTS)	STRUCTURE ID	RATING RANGE	OVERALL RATING (MAX. 10 POINTS)
G-039	4 - 6	5	G-154	4 - 6	6
G-040	2 - 4	4	G-197	2 - 4	3
G-041	2 - 4	4	D-001	8 - 10	10
G-043	4 - 6	6	D-101	8 - 10	10
G-044	4 - 6	6	P-101	NA	2
G-045	4 - 6	6			

3.3.2 TRANSPORTATION NETWORK

Within any transportation network, there are primary, secondary, and tertiary roadways, which provide varying levels of service to road users. The level of service of an individual section depends on the traffic volumes and quality of the roadway. The assessment of the quality of roadway should consider road and corridor width, the surface type (gravel, surface treatment, asphalt, concrete), condition, potential for congestion, and design and posted speeds. Based on these factors, each structure within the former Glenelg Township area has been assigned a level of service category of 'A' (primary road), 'B' (secondary road), or 'C' (tertiary road), and subsequently rated from 1 to 10 based on its overall importance within the overall transportation networks of the former Glenelg Township and the Municipality of West Grey. The level of service and individual rating of each structure (from 1 to 10) as a measure of its importance with regards to overall transportation network is defined below in *Table 7*.

Table 7 Transportation Network Ratings

STRUCTURE ID	LEVEL OF SERVICE	OVERALL RATING (MAX. 10 POINTS)	STRUCTURE ID	LEVEL OF SERVICE	OVERALL RATING (MAX. 10 POINTS)
G-030	B	6	G-046	B	7
G-031	A	9	G-047	B	7
G-032	B	5	G-048	B	6
G-033	B	5	G-126	C	2
G-035	A	8	G-132	C	2
G-037	C	3	G-133	C	3
G-038	C	3	G-148	C	3
G-039	B	6	G-154	B	5
G-040	B	5	G-197	C	4
G-041	B	5	D-001	A	10
G-043	B	7	D-101	A	10
G-044	C	4	P-101	C	4
G-045	C	4			

3.3.3 MUNICIPAL SERVICES – SCHOOL BOARD AND WASTE MANAGEMENT

This criterion is intended to assess and measure the importance of each individual structure for facilitating the municipal services such as school bus routes and waste pick up. Each structure has been individually assessed as to the impact its closure on the provision of these services. Each structure is rated from 1 to 10 (10 being a great impact on the provision of municipal services, and 1 being a very low impact) and that rating is then applied within the Overall Structure Rating matrix. When rating each structure, consideration was given to whether a structure’s closure would impede the provision of services for any resident, if a detour route is available, the additional distance and time of the ideal detour route, as well as to any site-specific concerns received from the School Board following their review.

Table 8 below displays each structure’s rating as a measure of its importance with regards to the provision of municipal services to the residents of West Grey.

Table 8 Municipal Services Rating

STRUCTURE ID	OVERALL RATING (MAX. 10 POINTS)	STRUCTURE ID	OVERALL RATING (MAX. 10 POINTS)
G-030	7	G-046	7
G-031	8	G-047	7
G-032	8	G-048	8
G-033	6	G-126	5
G-035	10	G-132	10
G-037	5	G-133	8
G-038	5	G-148	4
G-039	8	G-154	8
G-040	6	G-197	6
G-041	6	D-001	10
G-043	7	D-101	10
G-044	8	P-101	1
G-045	8		

3.4 TERTIARY CRITERIA

3.4.1 HISTORIC SIGNIFICANCE

The Ontario Heritage Act, introduced in 1975, is intended to give municipalities and provincial government agencies the power to preserve elements of their jurisdictions with established historic significance. Subsequently, the Ontario Heritage Bridge Guidelines (OHBG) were developed and published by the Ministry of Transportation (MTO) to provide direction regarding the conservation of bridges considered historically significant, or, “Heritage” bridges. Bridges are identified, evaluated, and, if they are determined to have “heritage value”, are listed on the Ontario Heritage Bridge List (OHBL). For the purpose of determining a numeric rating within the Overall Structure Rating matrix, each structure was assessed based on the following guideline:

Criteria	Rating
Listed on OHBL with significance of 8 or higher	5
Listed on OHBL with significance of 5 to 7	4
Listed on OHBL with significance of less than 5	3
Structure is more than 40 years old and has unique characteristics	2
Structure is more than 40 years old but has no unique characteristics	1
Structure is less than 40 years old	0

The historic significance rating of each structure (from 0 to 5) are shown below in **Table 9**.

Table 9 Historic Significance Ratings

STRUCTURE ID	OVERALL RATING (MAX. 5 POINTS)	STRUCTURE ID	OVERALL RATING (MAX. 5 POINTS)
G-030	1	G-046	4
G-031	1	G-047	0
G-032	1	G-048	1
G-033	2	G-126	0
G-035	2	G-132	0
G-037	1	G-133	1
G-038	2	G-148	0
G-039	4	G-154	0
G-040	4	G-197	0
G-041	1	D-001	2
G-043	1	D-101	2
G-044	4	P-101	2
G-045	0		

3.4.2 DETOUR IMPACT

The final criterion to be considered is the availability of a detour route at each structure, were it to be closed and decommissioned, and a temporary closure of a neighbouring structure be required. Each structure is considered individually and given a rating from 1 to 10 (1 being minimal detour impact, 10 being high detour impact), taking into account the availability of a detour route, suitability of the proposed detour to accept the re-routed traffic, and the additional distance and time required to travel the available route. **Table 10** below defines the individual rating of each structure (from 1 to 10) and weight within the Overall Structure Rating matrix.

Table 10 Detour Impact Ratings

STRUCTURE ID	RATING (1-10)	OVERALL RATING (MAX. 5 POINTS)	STRUCTURE ID	RATING (1-10)	OVERALL RATING (MAX. 5 POINTS)
G-030	3	2	G-046	8	4
G-031	5	3	G-047	8	4
G-032	5	3	G-048	9	5
G-033	3	2	G-126	3	2
G-035	8	4	G-132	10	5
G-037	5	3	G-133	7	4
G-038	5	3	G-148	9	5
G-039	9	5	G-154	4	2
G-040	7	4	G-197	3	2
G-041	7	4	D-001	10	5
G-043	6	3	D-101	10	5
G-044	8	4	P-101	3	2
G-045	8	4			

3.5 OVERALL STRUCTURE RATING MATRIX

To establish an Overall Structure Rating for each structure within the Glenelg Township area, each of the primary, secondary, and tertiary rating criteria have been given weight based on importance within the overall rating matrix. The results of the application of the Overall Structure Rating matrix for each structure are presented in *Table 11* below.

Table 11 Overall Structure Ratings

STRUCTURE ID	BCI (MAX 20)	ASSET VALUE (MAX 20)	EMS (MAX 20)	TRAFFIC (MAX 10)	TRANS-PORTATION NETWORK (MAX 10)	MUNICIPAL SERVICES (MAX 10)	HISTORIC SIG. (MAX 5)	DETOUR IMPACT (MAX 5)	OVERALL STRUCTURE RATING (MAX 100)
G-030	15	3	18	4	9	7	1	2	59
G-031	9	3	20	8	9	8	1	3	61
G-032	14	3	14	2	9	8	1	3	54
G-033	8	1	10	3	6	6	2	2	38
G-035	13	2	18	8	6	10	2	4	63
G-037	2	3	6	3	7	5	1	3	30
G-038	3	2	6	3	1	5	2	3	25
G-039	12	1	14	5	6	8	4	5	55
G-040	7	1	12	4	7	6	4	4	45
G-041	9	6	12	4	5	6	1	4	47
G-043	10	7	14	6	5	7	1	3	53
G-044	3	2	18	6	7	8	4	4	52
G-045	12	9	18	6	6	8	0	4	63
G-046	7	2	16	6	8	7	4	4	54
G-047	15	18	16	6	7	7	0	4	73
G-048	14	3	14	5	7	8	1	5	57
G-126	7	2	6	2	8	5	0	2	32
G-132	15	4	20	2	9	10	0	5	65
G-133	7	12	10	4	7	8	1	4	53
G-148	15	12	8	4	6	4	0	5	54
G-154	8	12	18	6	6	8	0	2	60
G-197	12	14	10	3	7	6	0	2	54
D-001	9	12	20	10	8	10	2	5	76
D-101	7	10	20	10	3	10	2	5	67
P-101	11	20	1	2	4	1	2	2	43

As highlighted in Table 11 above, there are seven (7) structures, including five (5) bridges and two (2) culverts, with a rating below 50 out of a possible 100 points. Each of these seven (7) structures are considered viable candidates for closure based on their low overall value to the municipality and a minimal impact of closure and are reviewed and presented in depth in the following section, *Individual Structure Assessment and Rationale*.

4 INDIVIDUAL STRUCTURE ASSESSMENT AND RATIONAL

4.1 STRUCTURE REVIEW

Each structure within the Glenelg area has been given a numeric rating to indicate its overall significance as an asset within the Municipality of West Grey. The below noted structures fall into the lowest rating class (less than 50 of a possible 100-point rating) have been identified as potential candidate for closure.

Structure	Bridge/Culvert	Rating
G-033	Bridge	38
G-037	Bridge	30
G-038	Bridge	25
G-040	Bridge	45
G-041	Bridge	47
G-126	Culvert	32
P-101	Bridge	43

Within this section, the site specific current conditions and future potential of each of the above noted structures will be summarized.

4.1.1 STRUCTURE G-033

Structure G-033, known as the Traverston Bridge is located on Traverston Road between Grey Road 12 and Concession 8 in the north-central portion of the former Township of Glenelg (see *Figure 2 – Structure location map* in **Appendix A**). The structure received an overall rating of 38 out of a possible 100 points, primarily attributable to its current poor condition and very high cost of replacement due to its scale and large span. The structure was originally constructed in 1930, having some rehabilitation work and maintenance completed since. The structure spans approximately thirty-five (35) metres and is a steel pony truss structure with one concrete abutment, one abutment founded on native bedrock, and a timber deck overlain by an asphalt wearing surface. A view of the structure from the south approaching perspective are shown in *Images 1 and 2* below.



Image 1 – G-033 View from South Approach



Image 2 - G-033 View from South Approach

Prior to its closure in 2018, structure G-033 (Traverston Bridge) served a relatively low number of road users with respect to other structures in the Municipality and is located on Traverston Road, which has a moderate level of service. The structure is in very poor overall condition and bearing instability was observed by municipal employees resulting in the interim closure of the structure, necessary for the preservation of public safety. Recent inspections have noted the overall poor condition of both the superstructure and substructure and indicated the need for additional indepth investigations to determine the safe load carrying capacity and material conditions. If further investigation determines the substructure has adequate load carrying capacity and the structure is to be re-opened, it will require significant rehabilitation including the replacement of the majority of the superstructure. Should detailed investigations indicate the substructure does not have adequate load carrying capacity, the structure will require full replacement, and holds one of the highest replacement costs of all structures within the Municipality of West Grey. In addition to the structural concerns, steel bridges constructed during this era were typically designed for a load of 15 imperial tons, which is the equivalent of 13.6 metric tonnes, and therefore, a full rehabilitation of the structure would still require an imposed load limit posting of 13 tonnes. Due to its necessary closure, provisions have already been made in establishing alternate detour routing of traffic and emergency and municipal services in the area, which will lessen the burden of a permanent closure. The current estimated replacement value of this structure is \$1,500,000 due to its long span and level of service.

In the case of this structure, replacement or permanent closure are the two feasible options. Due the high cost of replacement and low overall importance within the municipal transportation network, structure G-033 warrants consideration for closure by the Municipality in its future strategic planning.

4.1.2 STRUCTURE G-037

Structure G-037 is located on the North Line Road between Concession 2 and Camp Oliver Road in the central portion of the former Township of Glenelg (see **Figure 2 – Structure location map** in **Appendix A**). The structure received a rating of 30 points out of a possible 100 points, primarily attributable location and current condition. The structure was originally constructed in 1954, having few, if any, repairs completed since. The structure spans just over nine (9) metres and is a rigid frame concrete structure with concrete barrier railing and a concrete deck overlain by a granular wearing surface. A view of the structure in elevation and from the west approaching perspective are shown in **Images 3 and 4** below.



Image 3 - G-037 Elevation View



Image 4 - G-037 View from West Approach

Structure G-037 serves a relatively low number of road users with respect to other structures in the Municipality, as it is located on the North Line, which provides a low level of service and varies in condition throughout its east/west length. The structure is in poor overall condition, with recent inspections indicating that significant repairs are required if it is to remain open in a safe operating condition. The structure has an approximate replacement value of \$675,000, and the estimated cost to complete the immediate repairs required for the structure to remain open and in a safe condition is \$250,000. If the necessary repairs are completed, the structure could continue to serve road users for approximately 25 more years before requiring replacement. The structure has close proximity to Durham, Grey Road 4, and Concession 2, and may have future potential for serving an increased number of road users if the North Line is improved.

As structure G-037 is a viable candidate for rehabilitation and has the potential for future increase in importance of this asset within the Municipality of West Grey, the Municipality may consider the scheduling of repairs in order for it to remain open and in a safe operating condition. In the future, when rehabilitation is no longer a viable option, the structure may warrant consideration for closure by the Municipality in its future strategic planning.

4.1.3 STRUCTURE G-038

Structure G-038 is located on North Line between Concession 2 and Camp Oliver Road in the central portion of the former Township of Glenelg (see **Figure 2 – Structure location map** in **Appendix A**). The structure received the lowest rating within the former Township of Glenleg of 25 out of a possible 100 points, primarily attributable to its current very poor structural condition, low level of service, and high cost of replacement. The structure was originally constructed in 1920, having only minor repairs completed since. The structure spans approximately fourteen (14) metres and is a concrete arch structure with concrete abutments and deck overlain by a granular wearing surface. A view of the structure elevation and from the approaching perspective are shown in **Images 5 and 6** below.



Image 5 - G-038 Elevation View



Image 6 – G-038 View from East Approach

Structure G-038 serves a relatively low number of road users with respect to other structures in the Municipality, as it is located on the North Line, which provides a low level of service and varies in condition throughout its east/west length. The structure is in poor overall condition, with recent inspections indicating that rehabilitation is no longer an economically viable option. Replacement of the structure is required if it is to remain open in a safe operating condition. The structure has an approximate replacement value of \$800,000. The structure has close proximity to Durham, Grey Road 4, and Concession 2, and may have future potential for serving an increased number of road users if the North Line is improved.

In the case of structure G-038, replacement or permanent closure are the two feasible options. Due the high cost of replacement and low overall importance within the municipal transportation network, the structure warrants consideration for closure by the Municipality in its future strategic planning.

4.1.4 STRUCTURE G-040

Structure G-040 is located on Concession 4 between Baptist Church Road and the Glenelg Road 23 in the central portion of the former Township of Glenelg (see *Figure 2 – Structure location map* in **Appendix A**). The structure received a rating of 45 out of a possible 100 points, primarily attributable to poor condition of its main structural elements, its high cost of replacement, and importance within the overall transportation network. The structure was originally constructed in 1930, having only minor repairs completed since. The structure spans approximately thirty (30) metres and is a steel pony truss structure with concrete abutments and timber deck overlain by an asphalt wearing surface. A view of the structure elevation and from the approaching perspective is shown in *Images 7 and 8* below.



Image 7 – G-040 Elevation View



Image 8 – G-040 View from East Approach

Structure G-040 serves a relatively low number of road users with respect to other structures in the Municipality, as it is located on Concession 4, which has a moderate level of service throughout its length. The structure is in poor condition, and is approaching the end of its lifecycle, with necessary closure or replacement required in the immediate future. Recent inspections of structure G-040 indicate that rehabilitation of the structure is no longer an economically viable option due to the high cost of the repairs compared to the poor condition of its abutments, which will ultimately limit the lifespan of the structure once rehabilitated. In addition to the foundation concerns, steel bridges constructed during this era were typically designed for a load of 15 imperial tons, which is the equivalent of 13.6 metric tonnes, and therefore, a full rehabilitation of the structure would still require an imposed load limit posting of 13 tonnes. The current estimated replacement value of this structure is \$1,000,000 due to its large span.

In the case of this structure, replacement or closure are the two feasible options. Due to the high cost of replacement and low overall importance within the municipal transportation network, structure G-040 warrants consideration for closure by the Municipality in its future strategic planning.

4.1.5 STRUCTURE G-041

Structure G-041 is located on Concession 4 between Baptist Church Road and the Glenelg Road 23 in the central portion of the former Township of Glenelg (see *Figure 2 – Structure location map* in **Appendix A**). The structure received a rating of 47 points out of a possible 100 points, primarily attributable to its current condition, asset value, and overall importance within the West Grey transportation network. The structure was originally constructed in 1960, having few, if any, repairs completed since. The structure spans six and a half (6.5) metres and is an open footing rigid frame concrete structure and deck overlain by an asphalt wearing surface. View of the structure elevation and from the east approaching perspective are shown in *Image 9* and *Image 10* below.



Image 9 – G-041 Elevation View



Image 10 – G-041 East Approaching Perspective

Structure G-041 serves a relatively low number of road users with respect to other structures in the Municipality, as it is located on the Concession 4, which has a moderate level of service throughout its length. The structure is in fair overall condition, with recent inspections indicating that repairs and barrier protection upgrades are required if it is to remain open in a safe operating condition. The structure has an approximate replacement value of \$600,000 and the estimated cost to complete the immediate repairs required for the structure to remain open and in a safe condition is \$45,000. If the necessary repairs are completed, the structure could continue to serve road users for approximately 30 more years before requiring replacement.

As structure G-041 is a viable candidate for rehabilitation and has the potential to continue to serve the Municipality for many more years, the Municipality may consider the scheduling of repairs in order for it to remain open and in a safe operating condition. In the future, when rehabilitation is no longer a viable option, the structure may warrant consideration for closure by the Municipality in its future strategic planning.

4.1.6 STRUCTURE G-126

Structure G-126 is located on Baptist Church Road just south of Concession 8 in the central portion of the former Township of Glenelg (see *Figure 2 – Structure location map* in **Appendix A**). The structure received a rating of 32 points out of a possible 100 points, primarily attributable to its current condition, location, and overall importance within the West Grey transportation network. The structure was originally constructed in 1980, having only minor maintenance tasks completed since. The structure consists of two twin corrugated steel pipe culverts with a combined span of just over three (3) metres and is overlain by granular fill and wearing surface. A view of the structure elevation is shown in *Image 11* below.



Image 11 – G-126 Elevation View

Structure G-126 serves a relatively low number of road users with respect to other structures in the Municipality, as it is located on Baptist Church Road between Concessions 8 and 6. Recent inspections indicate that the north culvert is in fair overall condition, and the south culvert has an observed mid-span failure (depression) and will require replacement in the near future if the structure is to remain open and in a safe operating condition. The structure has an approximate replacement value of \$250,000, and the estimated cost to complete the necessary replacement of the south pipe is \$150,000. Due to constructibility and to achieve the optimum

economy, it is advisable to consider the simultaneous replacement of both pipes, which could then go on to serve the Municipality of West Grey for 75 years.

As structure G-126 has a relatively low cost of replacement, the Municipality may wish to consider the scheduling of the replacement in the near future in order for the structure to remain open and in a safe operating condition.

4.1.7 STRUCTURE P-101

Structure P-101, known as the Durham Pedestrian Bridge, is located in Durham just east of Provincial Highway 6 in the southwest portion of the former Township of Glenelg (see *Figure 2 – Structure location map* in **Appendix A**). Although the structure received a rating of 43 points out of a possible 100 points, below the 50 points flagging it as warranting further investigation for closure, the structure is not a candidate for closure. The low overall rating for this structure is primarily attributable to its type. As a pedestrian structure, it receives low ratings in several categories including vehicle traffic, emergency and municipal service provision, and overall asset importance and value within the municipality. The structure is in excellent condition having had its superstructure fully replaced in 2017, and has an important historical and recreational significance within the Municipality. The timber structure conveys pedestrian traffic across the scenic Upper Durham Dam to the downtown area. A view of the structure elevation is shown in *Image 12* below.



Image 12 – P-101, Durham Pedestrian Bridge Elevation View

The Durham Pedestrian Bridge (P-101) is in excellent overall condition and it is recommended that the Municipality continue the maintenance schedule in order to maintain its current condition.

5 RECOMMENDATIONS

Through the development of the Overall Structure Rating matrix, a universal classification and rating system, WSP has completed an in-depth review and evaluation of each of the Municipality of West Grey's structures within the former Township of Glenelg area. This review has identified seven (7) structures within the municipality which are of the lowest value and importance within the context of the overall transportation network. Each of these seven (7) structures were evaluated individually for their suitability for potential future closure, with considerations and general recommendations outlined hitherto.

It is understood that considering the available tax base for funding the maintenance and rehabilitation of its structures going forward, it is in the best interest of the Municipality to undergo strategic closures of a selection of the poorest condition structures, so that the remaining structures may be maintained and replaced to provide an adequate, safe, and economically sustainable road network. To that end, it is recommended that the Municipality consider the below action at each of the seven (7) structures:

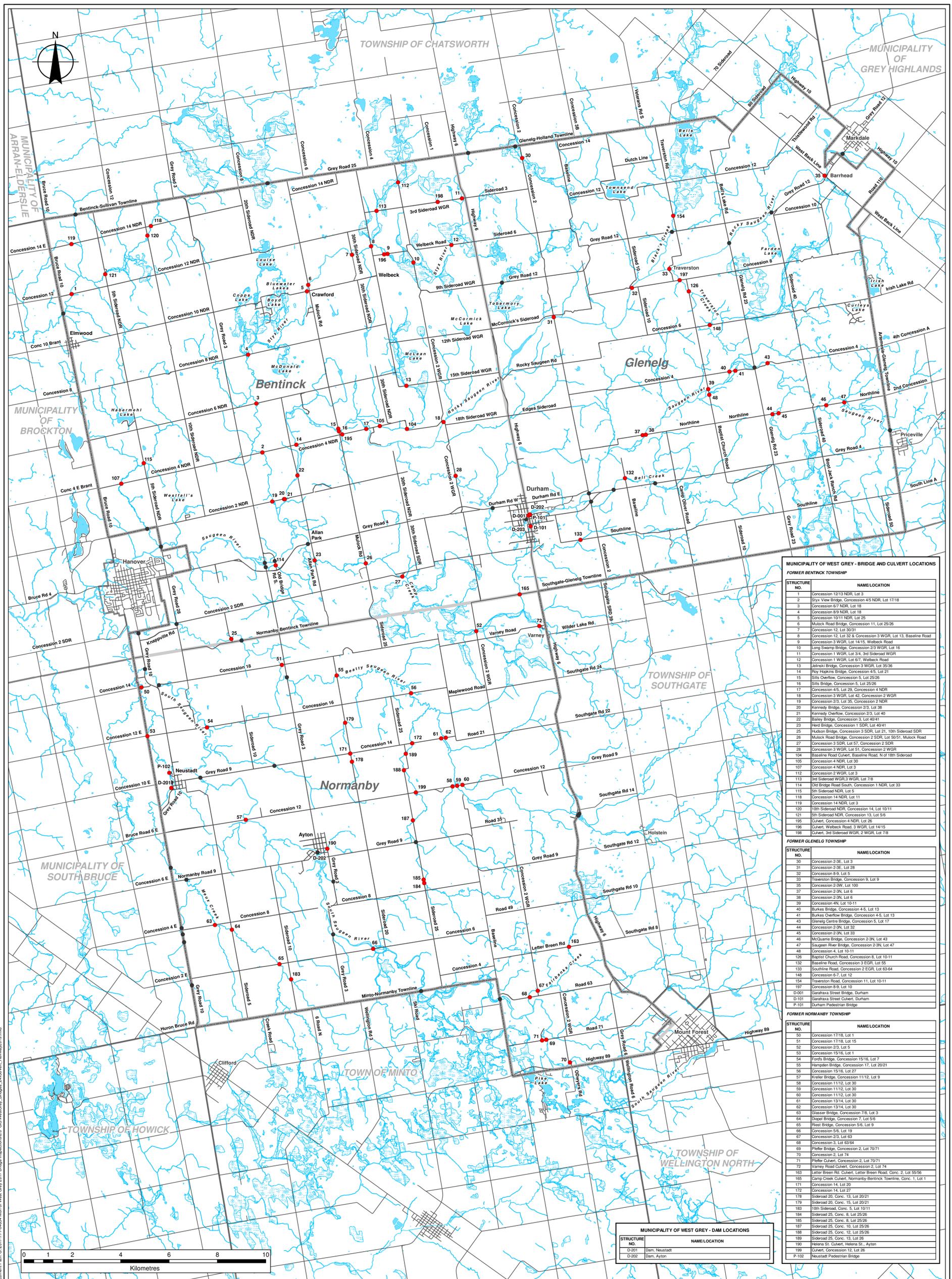
Structure	Recommended Action
G-033	Permanent Closure
G-037	Completion of Rehabilitation Work, Potential Closure at end of Lifecycle
G-038	Permanent Closure
G-040	Permanent Closure
G-041	Completion of Rehabilitation Work, Potential Closure at end of Lifecycle
G-126	Replacement of Structure
P-101	Continue Maintenance

The rating, assessments, and recommendations within are based on all available information regarding the Municipality's roadway network and structure inventory, and are intended to assist in the development of a strategic structure asset management plan to support and promote a functional, safe, and economically sustainable transportation network in the Municipality of West Grey.

A TABLES AND FIGURES

TABLE 1
Structure Rating and Rational Report
Former Township of Glenelg
The Municipality of West Grey

Structure	Location	Bridge or Culvert	Year Built	Year Replaced	Age (2018)	BCI Value	Work Required in Immediate Future	Work Required in Near Future	Ideal Candidate for Rehabilitation	Estimated Cost of Rehabilitation	Estimated Cost of Replacement	Asset Replacement Value (Present Day)
G-030	Concession 2 & 3E, Lot 3	Bridge	1965	-	53	74.02	No	No	Yes	\$ 15,000.00		\$ 650,000.00
G-031	Concession 2 & 3E, Lot 28	Bridge	1960	-	58	46.82	No	Yes	Yes	\$ 55,000.00		\$ 800,000.00
G-032	Concession 8 & 9, Lot 5	Bridge	1960	-	58	69.00	No	No	Yes	\$ 35,000.00		\$ 775,000.00
G-033	Traverston Bridge, Concession 9, Lot 9	Bridge	1930	-	88	39.70	Yes	Yes	No		\$ 1,500,000.00	\$ 1,500,000.00
G-035	Concession 2 & 3W, Lot 100	Bridge	1940	-	78	67.39	No	No	Yes	\$ 40,000.00		\$ 775,000.00
G-037	Concession 2 & 3N, Lot 6	Bridge	1954	-	64	9.98	Yes	Yes	Yes	\$ 250,000.00		\$ 675,000.00
G-038	Concession 2 & 3N, Lot 6	Bridge	1920	-	98	17.29	Yes	Yes	No		\$ 800,000.00	\$ 800,000.00
G-039	Concession 4, Lot 13	Bridge	1930	-	88	60.70	No	No	Yes	\$ 225,000.00		\$ 1,100,000.00
G-040	Burkes Bridge, Concession 4, Lot 12 & 13	Bridge	1930	-	88	34.08	Yes	Yes	No		\$ 1,000,000.00	\$ 1,000,000.00
G-041	Concession 4, Lot 12 & 13	Bridge	1960	-	58	47.08	No	Yes	Yes	\$ 25,000.00		\$ 600,000.00
G-043	Glenelg Centre Bridge, Concession 5, Lot 17	Bridge	1972	-	46	82.49	No	No	Yes	\$ 70,000.00		\$ 1,500,000.00
G-044	Concession 2 & 3N, Lot 32	Bridge	1920	-	98	14.47	Yes	Yes	No		\$ 800,000.00	\$ 800,000.00
G-045	Black's Bridge, Concession 2 & 3N, Lot 33	Bridge	1920	1993	25	58.63	No	Yes	Yes	\$ 65,000.00		\$ 800,000.00
G-046	McQuarrie Bridge, Concession 2 & 3N, Lot 43	Bridge	1928	-	90	34.83	Yes	Yes	Yes	\$ 275,000.00		\$ 1,000,000.00
G-047	Concession 2 & 3N, Lot 47	Bridge	1930	1995	23	75.34	No	No	Yes	\$ 30,000.00		\$ 900,000.00
G-048	Concession 4, Lot 10/11	Bridge	1967	-	51	70.98	No	No	Yes	\$ 60,000.00		\$ 625,000.00
G-126	Concession 8, Lot 10/11	Culvert	1980	-	38	32.82	Yes	Yes	No		\$ 250,000.00	\$ 250,000.00
G-132	Concession 3 EGR, Lot 55	Culvert	1990	-	28	74.68	No	No	Yes	\$ 40,000.00		\$ 275,000.00
G-133	Concession 2	Culvert	1965	-	53	34.41	Yes	Yes	Yes	\$ 110,000.00		\$ 350,000.00
G-148	Concession 6/7, Lot 12	Culvert	1980	-	38	75.00	No	No	Yes	\$ 50,000.00		\$ 625,000.00
G-154	Concession 11, Lot 10/11	Culvert	1981	-	37	41.52	No	Yes	Yes	\$ 55,000.00		\$ 350,000.00
G-197	Concession 8/9, Lot 10	Culvert	1980	-	38	57.87	No	Yes	No		\$ 350,000.00	\$ 350,000.00
D-001	Durham Bridge - Highway 6	Bridge	1930	-	88	47.49	No	Yes	Yes	\$ 40,000.00		\$ 1,750,000.00
D-101	Durham Culvert - Highway 6	Culvert	1960	-	58	35.31	Yes	Yes	Yes	\$ 250,000.00		\$ 450,000.00
P-101	Durham Pedestrian Bridge	Bridge	1907	2017	1	55.58	No	Yes	Yes			\$ 1,150,000.00
TOTALS =										\$ 1,690,000.00	\$ 4,700,000.00	\$ 19,850,000.00



MUNICIPALITY OF WEST GREY - BRIDGE AND CULVERT LOCATIONS

FORMER BENTINCK TOWNSHIP

STRUCTURE NO.	NAME/LOCATION
1	Concession 12/13 NDR, Lot 3
2	Sty View Bridge, Concession 4/5 NDR, Lot 17/18
3	Concession 6/7 NDR, Lot 18
4	Concession 8/9 NDR, Lot 18
5	Concession 10/11 NDR, Lot 23
6	Mulock Road Bridge, Concession 11, Lot 25/26
7	Concession 12, Lot 30/31
8	Concession 12, Lot 32 & Concession 3 WGR, Lot 13, Baseline Road
9	Concession 3 WGR, Lot 14/15, Welbeck Road
10	Long Swamp Bridge, Concession 2/3 WGR, Lot 16
11	Concession 1 WGR, Lot 3/4, 3rd Sideroad WGR
12	Concession 1 WGR, Lot 6/7, Welbeck Road
13	Jenkins Bridge, Concession 3 WGR, Lot 35/36
14	Roy Hopkins Bridge, Concession 4/5, Lot 21
15	Sixty Overflow, Concession 5, Lot 25/26
16	Sixty Bridge, Concession 5, Lot 25/26
17	Concession 4/5, Lot 29, Concession 4 NDR
18	Concession 3 WGR, Lot 42, Concession 2 WGR
19	Concession 2/3, Lot 35, Concession 2 NDR
20	Kennedy Bridge, Concession 2/3, Lot 38
21	Kennedy Overflow, Concession 2/3, Lot 40
22	Bailey Bridge, Concession 3, Lot 40/41
23	Head Bridge, Concession 3 SDR, Lot 40/41
24	Hudson Bridge, Concession 3 SDR, Lot 21, 10th Sideroad SDR
25	Mulock Road Bridge, Concession 2 SDR, Lot 50/51, Mulock Road
26	Concession 3 SDR, Lot 57, Concession 2 SDR
27	Concession 2 WGR, Lot 51, Concession 2 SDR
28	Baseline Road Culvert, Baseline Road, 1/4 of 18th Sideroad
104	Concession 4 NDR, Lot 30
105	Concession 4 NDR, Lot 30
107	Concession 4 NDR, Lot 30
112	Concession 2 WGR, Lot 32
113	3rd Sideroad WGR/3 WGR, Lot 7/8
114	Old Bridge Road South, Concession 1 NDR, Lot 33
115	5th Sideroad NDR, Lot 5
118	Concession 14 NDR, Lot 11
119	Concession 14 NDR, Lot 3
120	10th Sideroad NDR, Concession 14, Lot 10/11
121	5th Sideroad NDR, Concession 13, Lot 5/6
195	Culvert, Concession 4 NDR, Lot 28
196	Culvert, Welbeck Road, 3 WGR, Lot 14/15
198	Culvert, 3rd Sideroad WGR, 2 WGR, Lot 7/8

FORMER GLENELG TOWNSHIP

STRUCTURE NO.	NAME/LOCATION
30	Concession 2/3E, Lot 9
31	Concession 2/3E, Lot 28
32	Concession 8/9, Lot 5
33	Traverson Bridge, Concession 9, Lot 9
35	Concession 2/3N, Lot 10/9
37	Concession 2/3N, Lot 6
38	Concession 2/3N, Lot 6
39	Concession 2/3N, Lot 6
40	Burkes Bridge, Concession 4/5, Lot 13
41	Burkes Overflow Bridge, Concession 4/5, Lot 13
43	Glenelg Centre Bridge, Concession 5, Lot 17
44	Concession 2/3N, Lot 10/11
45	Concession 2/3N, Lot 33
46	McQuane Bridge, Concession 2/3N, Lot 43
47	Saugen River Bridge, Concession 2/3N, Lot 47
49	Concession 4, Lot 10/11
126	Baptist Church Road, Concession 8, Lot 10/11
132	Baseline Road, Concession 3 EGR, Lot 55
133	Southline Road, Concession 2 EGR, Lot 63/64
148	Concession 8/7, Lot 12
154	Traverson Road, Concession 11, Lot 10/11
197	Concession 8/9, Lot 10
D-001	Gartrava Street Bridge, Durham
D-101	Gartrava Street Culvert, Durham
P-101	Durham Pedestrian Bridge

FORMER NORMANBY TOWNSHIP

STRUCTURE NO.	NAME/LOCATION
50	Concession 17/18, Lot 1
51	Concession 17/18, Lot 15
52	Concession 2/3, Lot 5
53	Concession 15/16, Lot 1
54	Ford's Bridge, Concession 15/16, Lot 7
55	Hampden Bridge, Concession 17, Lot 20/21
56	Concession 15/16, Lot 27
57	Kruller Bridge, Concession 11/12, Lot 9
58	Concession 11/12, Lot 30
59	Concession 11/12, Lot 30
60	Concession 11/12, Lot 30
61	Concession 13/14, Lot 30
62	Concession 13/14, Lot 30
63	Slusser Bridge, Concession 7/8, Lot 3
64	Drapel Bridge, Concession 7, Lot 5/6
65	Riest Bridge, Concession 5/6, Lot 9
66	Concession 5/6, Lot 19
67	Concession 2/3, Lot 12
68	Concession 3, Lot 63/64
69	Pfeffer Bridge, Concession 2, Lot 70/71
70	Concession 2, Lot 74
71	Pfeffer Culvert, Concession 2, Lot 70/71
72	Varney Road Culvert, Concession 2, Lot 74
163	Letter Breen Rd Culvert, Letter Breen Road, Conc. 2, Lot 55/56
165	Camp Creek Culvert, Normanby/Bentinck Townline, Conc. 1, Lot 1
171	Concession 14, Lot 20
172	Concession 14, Lot 27
178	Sideroad 20, Conc. 13, Lot 20/21
179	Sideroad 25, Conc. 13, Lot 20/21
183	10th Sideroad, Conc. 5, Lot 10/11
184	Sideroad 25, Conc. 8, Lot 25/26
185	Sideroad 25, Conc. 8, Lot 25/26
187	Sideroad 25, Conc. 10, Lot 25/26
188	Sideroad 25, Conc. 12, Lot 25/26
189	Sideroad 25, Conc. 13, Lot 25/26
190	Helena St. Culvert, Helena St., Aylon
199	Culvert, Concession 12, Lot 26
P-102	Neustadt Pedestrian Bridge

MUNICIPALITY OF WEST GREY - DAM LOCATIONS

STRUCTURE NO.	NAME/LOCATION
D-201	Dam, Neustadt
D-202	Dam, Aylon

LEGEND

- WEST GREY MUNICIPAL BOUNDARY
- MUNICIPAL BOUNDARY
- WEST GREY BRIDGE/CULVERT/DAM ASSET
- GREY COUNTY BRIDGE/CULVERT ASSET
- WATERBODY
- WETLAND - EVALUATED
- STREAM

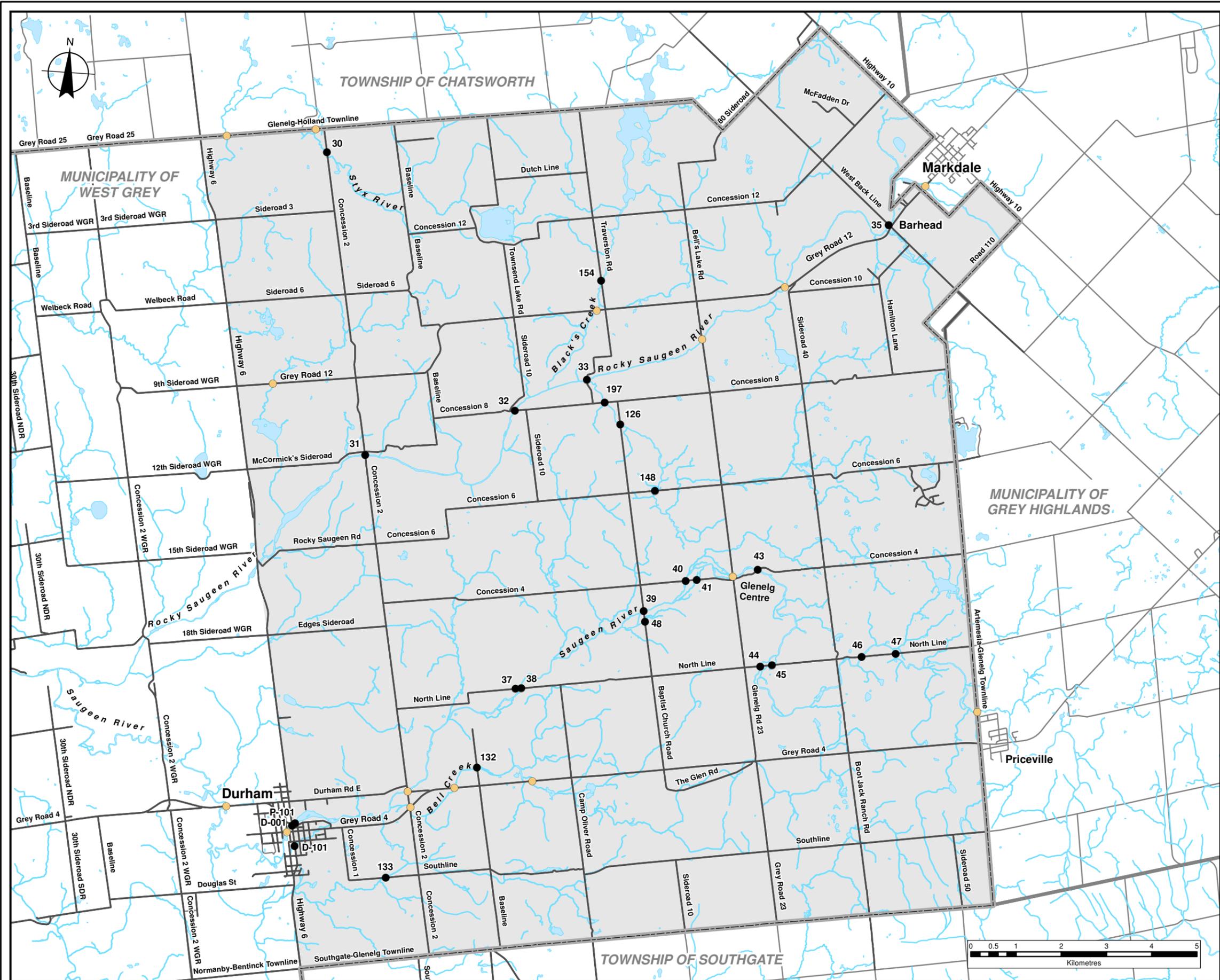
**BRIDGE, CULVERT & DAM LOCATIONS
MUNICIPALITY OF WEST GREY**

PROJECT:	171-04854-00	DATE:	MAY 2019
DRAWN/APPROVED:	JET/CW/KH	SCALE:	SEE SCALE BAR



FIGURE:

Document Path: G:\2017\171-04854_Mun of West Grey 2017 Bridge Inspection\8.0 GIS\171-04854-00_FIG2_StructureLocationMap_Glenelg_RevMay2019.mxd



STRUCTURE NO.	NAME/LOCATION
30	Concession 2-3E, Lot 3
31	Concession 2-3E, Lot 28
32	Concession 8-9, Lot 5
33	Traverston Bridge, Concession 9, Lot 9
35	Concession 2-3W, Lot 100
37	Concession 2-3N, Lot 6
38	Concession 2-3N, Lot 6
39	Concession 4N, Lot 10-11
40	Burkes Bridge, Concession 4-5, Lot 13
41	Burkes Overflow Bridge, Concession 4-5, Lot 13
43	Glenelg Centre Bridge, Concession 5, Lot 17
44	Concession 2-3N, Lot 32
45	Concession 2-3N, Lot 33
46	McQuarrie Bridge, Concession 2-3N, Lot 43
47	Saugeen River Bridge, Concession 2-3N, Lot 47
48	Concession 4, Lot 10-11
126	Baptist Church Road, Concession 8, Lot 10-11
132	Baseline Road, Concession 3 EGR, Lot 55
133	Southline Road, Concession 2 EGR, Lot 63-64
148	Concession 6-7, Lot 12
154	Traverston Road, Concession 11, Lot 10-11
197	Concession 8-9, Lot 10
D-001	Garafraxa Street Bridge, Durham
D-101	Garafraxa Street Culvert, Durham
P-101	Durham Pedestrian Bridge

LEGEND

- WEST GREY MUNICIPAL BOUNDARY
- FORMER GLENELG TOWNSHIP
- WATERBODY
- RIVER/STREAM
- ROAD MAINTAINED IN WINTER
- WEST GREY BRIDGE/CULVERT/DAM ASSET
- GREY COUNTY BRIDGE/CULVERT ASSET

BASE MAP DATA PROVIDED BY THE COUNTY OF GREY AND THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, LAND INFORMATION ONTARIO, RETRIEVED FROM <https://www.jvacoapp.lrc.gov.on.ca>

WSP

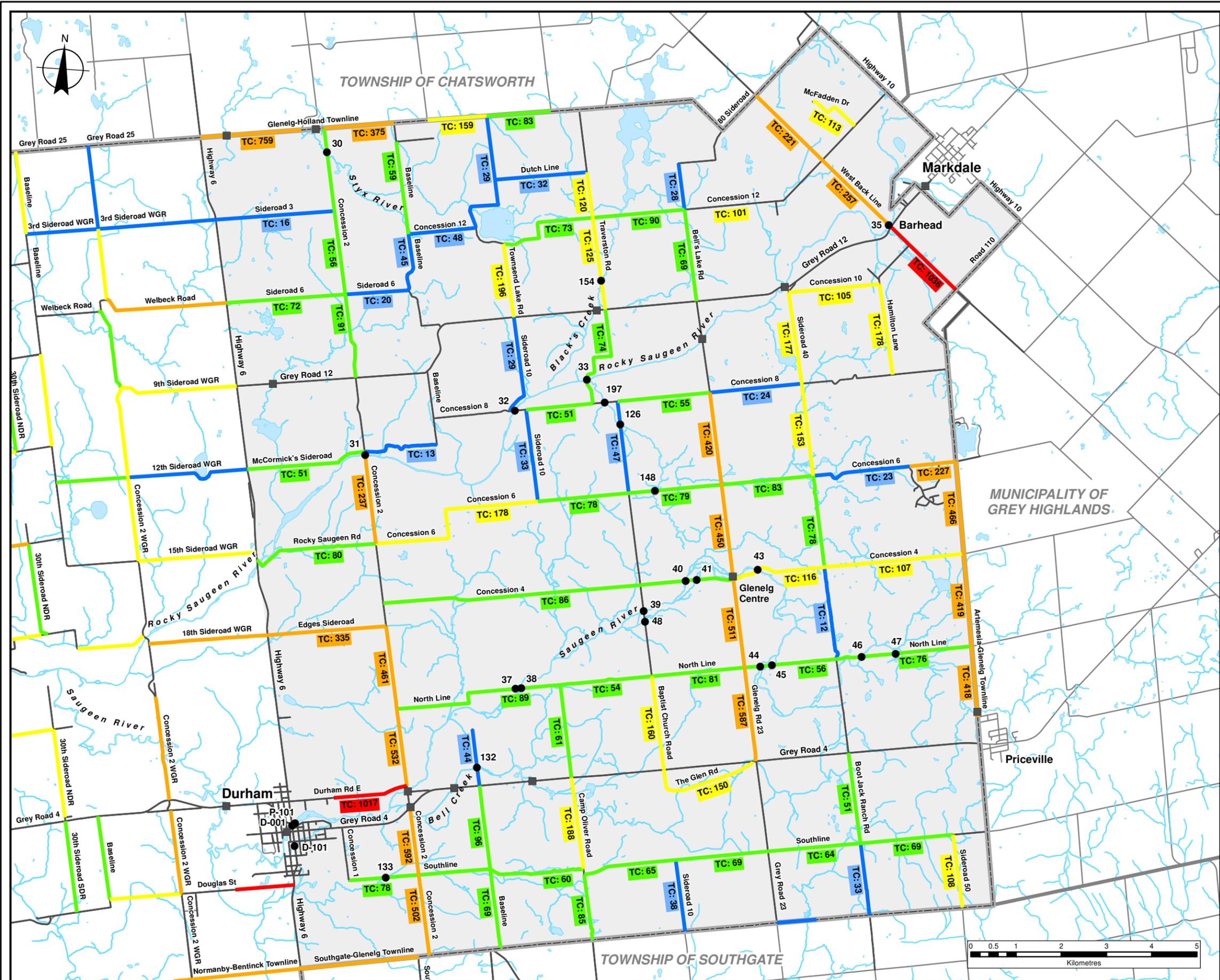
1450 1st AVENUE WEST, SUITE 101
OWEN SOUND, ONTARIO CANADA N4K 6W2
PHONE: 519 376-7612 - FAX: 519 376-8008 - WWW.WSP.COM

**STRUCTURE LOCATION MAP
STRUCTURE RATING AND RATIONAL REPORT
FORMER GLENELG TOWNSHIP
MUNICIPALITY OF WEST GREY**

SCALE: 1:85,000	DATE: MAY 2019
DRAWN: JET	PROJECT: 171-04854-00
APPROVED: KH/CW	FIGURE: 2



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STRUCTURE NO.	NAME/LOCATION
30	Concession 2-3E, Lot 3
31	Concession 2-3E, Lot 28
32	Concession 8-9, Lot 5
33	Traverston Bridge, Concession 9, Lot 9
35	Concession 2-3W, Lot 100
37	Concession 2-3N, Lot 6
38	Concession 2-3N, Lot 6
39	Concession 4N, Lot 10-11
40	Burkes Bridge, Concession 4-5, Lot 13
41	Burkes Overflow Bridge, Concession 4-5, Lot 13
43	Glenelg Centre Bridge, Concession 5, Lot 17
44	Concession 2-3N, Lot 32
45	Concession 2-3N, Lot 33
46	McQuarrie Bridge, Concession 2-3N, Lot 43
47	Saugeen River Bridge, Concession 2-3N, Lot 47
48	Concession 4, Lot 10-11
126	Baptist Church Road, Concession 8, Lot 10-11
132	Baseline Road, Concession 3 EGR, Lot 55
133	Southline Road, Concession 2 EGR, Lot 63-64
148	Concession 6-7, Lot 12
154	Traverston Road, Concession 11, Lot 10-11
197	Concession 8-9, Lot 10
D-001	Garafraxa Street Bridge, Durham
D-101	Garafraxa Street Culvert, Durham
P-101	Durham Pedestrian Bridge

LEGEND

- WEST GREY MUNICIPAL BOUNDARY
- WEST GREY STRUCTURE - BRIDGE/CULVERT/DAM
- GREY COUNTY BRIDGE/CULVERT ASSET

WEST GREY ROADS - AVERAGE DAILY TRAFFIC (ADT)

- 1,000 AND OVER ADT (2016 TRAFFIC COUNT)
- 200 - 999 ADT (2016 TRAFFIC COUNT)
- 100 - 199 ADT (2016 TRAFFIC COUNT)
- 50 - 99 ADT (2016 TRAFFIC COUNT)
- 0 - 49 ADT (2016 TRAFFIC COUNT)

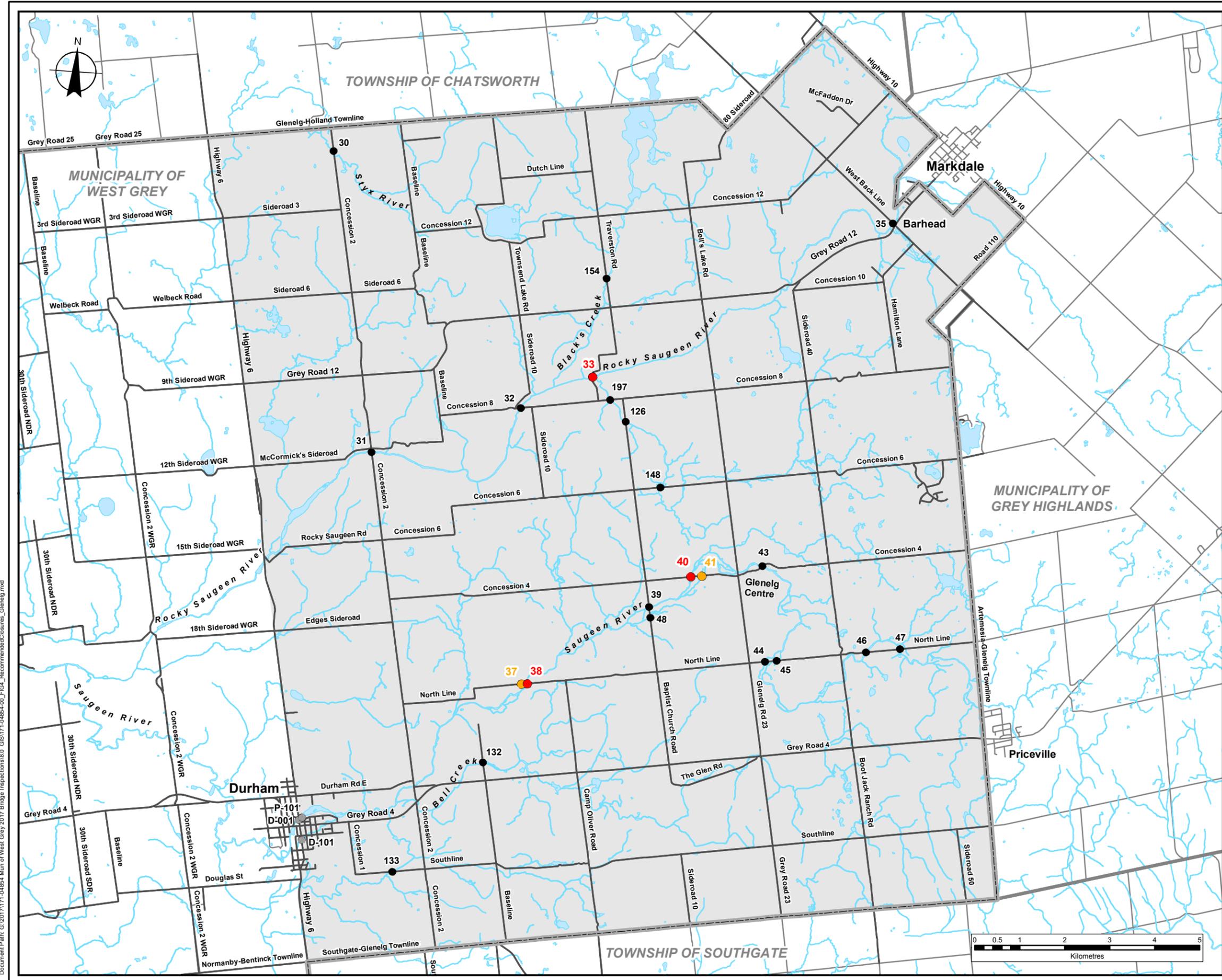
BASE MAP DATA PROVIDED BY THE COUNTY OF GREY AND THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, LAND INFORMATION ONTARIO, RETRIEVED FROM <https://www.javacoeapp.lrc.gov.on.ca>

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**TRAFFIC COUNT DATA
STRUCTURE RATING AND RATIONAL REPORT
FORMER GLENELG TOWNSHIP
MUNICIPALITY OF WEST GREY**

SCALE:	1:85,000	DATE:	DEC 2019
DRAWN:	JET	PROJECT:	191-10406-00
APPROVED:	KH/CW	FIGURE:	3



STRUCTURE NO.	NAME/LOCATION
30	Concession 2-3E, Lot 3
31	Concession 2-3E, Lot 28
32	Concession 8-9, Lot 5
33	Traverston Bridge, Concession 9, Lot 9
35	Concession 2-3W, Lot 100
37	Concession 2-3N, Lot 6
38	Concession 2-3N, Lot 6
39	Concession 4N, Lot 10-11
40	Burkes Bridge, Concession 4-5, Lot 13
41	Burkes Overflow Bridge, Concession 4-5, Lot 13
43	Glenelg Centre Bridge, Concession 5, Lot 17
44	Concession 2-3N, Lot 32
45	Concession 2-3N, Lot 33
46	McQuarrie Bridge, Concession 2-3N, Lot 43
47	Saugeen River Bridge, Concession 2-3N, Lot 47
48	Concession 4, Lot 10-11
126	Baptist Church Road, Concession 8, Lot 10-11
132	Baseline Road, Concession 3 EGR, Lot 55
133	Southline Road, Concession 2 EGR, Lot 63-64
148	Concession 6-7, Lot 12
154	Traverston Road, Concession 11, Lot 10-11
197	Concession 8-9, Lot 10
D-001	Garafraxa Street Bridge, Durham
D-101	Garafraxa Street Culvert, Durham
P-101	Durham Pedestrian Bridge

LEGEND

- WEST GREY MUNICIPAL BOUNDARY
- FORMER GLENELG TOWNSHIP
- RIVER/STREAM
- STRUCTURE - BRIDGE/CULVERT/DAM
- RECOMMENDED STRUCTURE CLOSURE
- RECOMMENDED STRUCTURE REHABILITATION AND/OR POTENTIAL FUTURE CLOSURE

BASE MAP DATA PROVIDED BY THE COUNTY OF GREY AND THE MINISTRY OF NATURAL RESOURCES AND FORESTRY, LAND INFORMATION ONTARIO, RETRIEVED FROM <https://www.javacoeapp.lrc.gov.on.ca>

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**STRUCTURE LOCATION MAP
RECOMMENDED CLOSURES
STRUCTURE RATING AND RATIONAL REPORT
FORMER GLENELG TOWNSHIP
MUNICIPALITY OF WEST GREY**

SCALE:	1:85,000	DATE:	OCT 2018
DRAWN:	JET	PROJECT:	171-04854-00
APPROVED:	KH/CW	FIGURE:	4

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