

File 304844-9

February 19, 2021

Andrea Woodrow, MCIP, RPP  
Director of Planning & Development  
Township of Severn  
1024 Hurlwood Lane  
Orillia, Ontario L3V 6J3  
awoodrow@townshipofsevern.com

Re: Menoke Beach Subdivision, Phase 2, Township of Severn  
Revised Functional Servicing Report (FSR) Addendum

Dear Andrea:

On behalf of Menoke Beach Developments, we are submitting the revised design concept for Phase 2 of Menoke Beach Subdivision for review and approval. Enclosed are two copies of each of the following:

- Engineering Plans;
- Stormwater Management (SWM) Report - Phase 2;
- Updated Traffic Addendum Letter;
- Water Supply Calculations;
- Storm Sewer Design Sheet;
- Sanitary Sewer Design Sheet.

Our original FSR dated November 2009 proposed 203 single family homes and 68 four plex units resulting in a total of 271 units with an approximate population of 732.

Through final design the development was divided into two phases and an area of approximately 4.4 ha was transferred to the Township for a proposed recreation centre. Phase 1 consists of 92 single family units while Phase 2 consists of 83 single family units and 14 townhouse units. This results in a combined total of 189 units and a population of approximately 510. Phase 1 is currently under construction with all underground infrastructure in place and home construction anticipated to commence soon.

With regards to the future recreation centre, our servicing and grading design has been completed in conjunction with Tatham Engineering Issued for Tender set dated June 5, 2017. We note that existing conditions may result in a shallow ponding area until the fields are built out. It is our understanding that the Township is considering future interim development of the property which may involve bulk filling of the field areas.

## **TRAFFIC**

Access to Phase 2 will be provided via two locations on Lakepoint Drive, the first being by way of Menoke Beach Road to the West and the second from Couchiching Avenue to the south. A third access is provided on Quayside Drive by way of Menoke Beach Road. The proposed road cross section including above and below grade infrastructure alignments will remain unchanged from Phase 1.

A traffic review addendum has been prepared for Phase 2 and is attached to this FSR Addendum.

## **WATER DISTRIBUTION**

Municipal water will be provided to this phase by a linear extension of the existing 200 mm watermain at the north end of Lakepoint Drive. Termination of the watermain at the northwest development limit consists of a cap for future extension considerations and a fire hydrant for flushing needs. The original FSR included water supply calculations in conformance to MECP and Township of Severn Design Guidelines. The maximum day demand and maximum day plus fire flow were calculated at 10.48 L/s and 48.28 L/s respectively. Water supply calculations have been revised to reflect the current 189 units in Phase 1 and 2. The maximum daily flow and maximum day plus fire flows are now calculated at 7.31 L/s and 73.98 L/s respectively. The maximum day plus fire flows has increased due to additional regulatory considerations requested by the Township.

## **STORMWATER MANAGEMENT (SWM)**

Due to the relatively flat topography of the property, the development has been split into two drainage areas and two separate SWM Ponds. The existing SWM pond located at the south of Phase 1 has already been constructed. It was designed to accept storms up to and including the 100-year storm event for all of Phase 1, the southern portion of the proposed recreation centre and a small portion of Phase 2 along Lake Point Drive.

The proposed SWM pond at the north end of Phase 2 has been designed to accept flows up to and including the 100-year storm event for the majority of Phase 2 and the northern portion of the proposed recreation centre. The major overland flow will be directed toward the SWM pond via the Lakepoint Drive right-of-way towards the emergency inlet spillway. Minor storm flows will be conveyed to the SWM pond via storm sewers designed with capacity for the 5-year storm event.

## **SANITARY SERVICING**

Sanitary sewage flows will be conveyed through a 200 mm diameter sanitary sewer that will connect to existing maintenance hole #18 at the current north end of Lakepoint Drive. The existing sewers were designed to MECP and Township of Severn Guidelines with consideration of the originally proposed 271 units. The original design calculated peak flows of 22.19 L/s for the entire development.



The revised design with 189 units and proposed recreation centre results in a peak flow of 17.30 L/s for the entire development, a reduction of 4.89 L/s compared with the originally accepted design.

We trust the information provided will help you to complete your review. Should you require any additional information or clarification on any detail of the proposed revisions, please contact the undersigned.

Yours truly,

**Tatham Engineering Limited**



Ted Kruska, C.E.T.

Project Manager

CU: ha

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File 304844-9

October 2, 2020

Andrea Woodrow, MCIP, RPP  
Director of Planning & Development  
Township of Severn  
1024 Hurlwood Lane  
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Re: Menoke Beach Subdivision, Phase 2, Township of Severn  
Traffic Impact Study (TIS) Addendum

Dear Andrea:

On behalf of Menoke Beach Developments, we have prepared this addendum to the *Orsi Development Traffic Impact Study*<sup>1</sup>, with a focus on Phase 2 of the proposed Menoke Beach subdivision development.

## LOCATION

As illustrated in Figure 1, the proposed development is located on Menoke Beach Road between Amigo Drive and Couchiching Avenue, on the east side of Highway 11.

## DEVELOPMENT PLAN

In the 2005 Traffic Impact Study, the Menoke Beach subdivision was proposed to include a total of 271 units, comprised of the following:

- 203 single family detached units; and
- 68 units in seventeen 4-plex units. 177 townhouse units (Phases 1 and 2);

Subsequent to this, the subdivision proposal has evolved and 4.4 ha of land was transferred to the Township for a proposed recreation centre. The remaining lands are to support 189 units, as follows:

- 92 single family detached units in Phase 1; and
- 83 single family units and 14 townhouse units in Phase 2.

Given the above, the total residential unit count has been reduced from 271 to 189 units. The corresponding development plans are illustrated in Figure 2 and Figure 3.

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<sup>1</sup> *Orsi Development Traffic Impact Study*. Consult Tatham Transportation Consultants, December 2005.

Phase 1 is currently under construction with all underground infrastructure in place and home construction anticipated to commence soon. The revised Phase 2 is in the design stage.

## SITE ACCESS

Initially, 4 new access points to Menoke Beach Road were proposed (via the new subdivision road system).

As part of the current development plan, there are 2 proposed access points to Menoke Beach Road (1 in each of Phase 1 and Phase 2) in addition to a connection to Couchiching Avenue (also in Phase 1). The following access/intersection spacings are noted (as illustrated in Figure 3):

- Quayside Drive (Phase 1 access to Menoke Beach Road) is approximately 250 metres north of Couchiching Avenue (measured centre to centre); and
- Sunbank Crescent (Phase 2 access to Menoke Beach Road) is approximately 260 metres north of Quayside Drive and 125 metres south of Amigo Drive.

Given the local road nature of Menoke Beach Road, Quayside Drive and Sunbank Crescent, the relatively minor traffic volumes on each, and their expected stop-control on the minor street configuration, the noted spacings are considered appropriate.

## SITE TRAFFIC

### Trip Generation

The change in the number of units within the Menoke Beach subdivision will result in a reduction in the number of trips being generated. Table 1 illustrates the associated trip estimates from the initial development plan and traffic study, whereas Table 2 reflects the revised plan taking into account the recent changes in the overall development size and unit count.

The revised development levels represent a reduction of 30% in the total unit yield (189 vs 271 units) and a reduction of 25% in the associated peak hour traffic volumes. As noted, the site will generate 46 fewer trips in the AM peak hour and 61 fewer trips in the PM peak hour.

**Table 1: Site Generated Traffic - Initial Development Plan**

LAND USE	SIZE	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
4-plexes (17 bldgs)	68 units	5	25	30	25	12	37
single family	203 units	38	114	152	131	74	205
<b>Total</b>	<b>271 units</b>	<b>43</b>	<b>139</b>	<b>182</b>	<b>156</b>	<b>86</b>	<b>242</b>



**Table 2: Site Generated Traffic - Current Development Plan**

LAND USE	SIZE	AM PEAK HOUR			PM PEAK HOUR		
		IN	OUT	TOTAL	IN	OUT	TOTAL
Phase 1 singles	92 units	17	51	68	57	34	91
Phase 2 singles	83 units	15	46	61	52	30	82
Phase 2 towns	14 units	1	5	6	5	3	8
<b>Total</b>	<b>189 units</b>	<b>34</b>	<b>102</b>	<b>136</b>	<b>114</b>	<b>67</b>	<b>181</b>
<b>Reduction in Trips</b>		<b>9</b>	<b>37</b>	<b>46</b>	<b>42</b>	<b>19</b>	<b>61</b>

In considering only Phase 2 traffic (in that Phase 1 is under construction), an additional 67 trips will be generated during the AM peak hour and 90 trips during the PM peak hour, which translates to approximately 1 to 1.5 trips per minute.

#### Trip Distribution & Assignment

As employed in the initial 2005 Traffic Impact Study, the following distribution of traffic has been assumed:

- 25% to/from the north; and
- 75% of traffic to/from the south.

This is considered reasonable and appropriate for this study given that the closest urban centres (major trip attractors) are the cities of Orillia and Barrie, located just south of the site.

Traffic was assigned to the site access points in consideration of the phase of development (ie. Phase 1 traffic was assigned to Quayside Drive and Lakepoint Crossing (via Couchiching Avenue); Phase 2 traffic was assigned to Sunbank Crescent). Beyond the site, traffic was assigned to the area road system in consideration of the noted distributions and means of access, recognizing that Menoke Beach Road is limited to a right-in/right-out only with Highway 11 (traffic from the north and to the south must otherwise use the Telford Line/Soules Road interchange with Highway 11). The resulting assignment of the site generated traffic to the area road system is illustrated in Figure 4 for Phase 1, Figure 5 for Phase 2 and Figure 6 for Phase 1 plus Phase 2. It is reiterated that Phase 1 servicing and roads have been constructed, with house construction to commence in the near future.



## ROAD SYSTEM TRAFFIC VOLUMES

Traffic volumes on the area roads were determined from the *2017 Road Needs Study*<sup>2</sup>, as summarized in Table 3. The *2017 Road Needs Study* provided the Average Annual Daily Traffic (AADT) volumes for the 2017 and 2027 horizons (which reflects the total 2-way volumes over an average 24-hour period). It is noted that the basis of the AADT volumes was summer traffic counts completed in 2017, thus representing the peak season.

**Table 3: Traffic Volumes**

ROAD	LIMITS	2017 AADT <sup>1</sup>	2027 AADT	2027 PEAK HOUR <sup>2</sup>	CAPACITY <sup>3</sup>	V/C
Menoke Beach Road	Couchiching Ave to Amigo Drive	310	326	33	700	0.05
	Amigo Drive to Ardrea Drive	600	631	63	700	0.09
	Ardrea Drive to Highway 11	900	946	95	700	0.14
Ardrea Road	Menoke Beach Rd to Eastside Drive	300	352	35	700	0.05
Campbell Road	Hwy 11 offramp to Eastside Drive	500	586	59	700	0.08
	Eastside Drive to Soules Road	500	586	59	700	0.08
Soules Road	Campbell Road to Eastside Drive	300	483	48	700	0.07
	Eastside Drive to Hwy 11 Overpass	300	483	48	700	0.07

<sup>1</sup> AADT - Average Annual Daily Traffic

<sup>2</sup> peak hour volume is assumed as 10% of the AADT; noted volume is total of both directions

<sup>3</sup> based on 350 vehicles per hour per lane x 2 lanes (1 per direction)

Typically, the peak hour volumes are in the order of 10% to 15% of the daily volumes; the *Road Needs Study* noted that 18% of the daily volumes occurred in the AM and PM peak hours combined, as determined from traffic counts. The resulting 2027 peak hour volumes have been determined, assuming 10% of the 2027 AADT volumes. It is noted that peak hour volumes are total of 2-way travel (ie. volumes in both directions).

<sup>2</sup> *2017 Road Needs Study*. R.J. Burnside & Associates Limited, October 2017.



## TRAFFIC OPERATIONS

### Road Section Operations

As per the *2017 Road Needs Study*, the capacity of a local Township road is 350 vehicles per hour per lane and thus a 2-lane road (ie. 1 lane per direction), has an hourly capacity of 700 vehicles per hour per lane. As all of the area roads as noted in Table 3 are considered local roads, the noted capacity has been applied to each. The resulting volume to capacity (v/c) ratio for each road section is also illustrated in Table 3. As noted, the v/c ratios range from 0.05 to 0.14, suggesting that the roads are expected to operate at 5 to 14% of their available capacities.

While it is understood that the 2027 projections account for some growth in the Township, it is unlikely that they have specifically considered the Menoke Beach subdivision. Suffice to say however, that there is significant reserve capacity in the road system to accommodate the additional volumes. As noted in Figure 6, the resulting site volumes are in the order of 50 to 180 vehicles per hour per direction (total of 2-way travel), which translates to 7 to 26% of the available capacity. Even with this increase, the road sections are expected to operate well below their planning capacities.

### Intersection Operations

Detailed intersection traffic counts were not completed due to the COVID pandemic which has significantly reduced travel demands (and thus traffic counts completed at this time are not likely to reflect typical conditions). Suffice to say, given the excess reserve capacity that is projected on the area road system, the corresponding intersections are expected to operate at acceptable levels.

In considering the site access intersections with Menoke Beach Road, acceptable operations will be provided at each, given that the site volumes will be distributed across the 3 access points. Furthermore, as previously noted, the volumes on Menoke Beach Road are not significant (33 to 95 total 2-way volumes).

## CONCLUSION

The Menoke Beach Subdivision development has undergone significant changes since the initial traffic impact study was prepared, the most significant of which is the allocation of lands for a future Township recreation centre. Overall, the number of residential units decreased by 30%, which translates to a 25% reduction in associated traffic volumes.

Considering traffic volumes reported in the Township's *2017 Road Needs Study*, background traffic volumes on the area road system are not considered significant (2-way peak hour volumes of 33 to 95 vehicles per hour). With consideration for the Menoke Beach Subdivision (both Phases 1 and 2), an additional 50 to 180 vehicles per hour will result on the area roads, with the greatest volumes on Menoke Beach Road south of Ardtrea Road. In considering a planning capacity of 700 vehicles per hour (350





vehicles per hour per lane x 1 lane per direction), the noted volumes can be readily accommodated (maximum volumes will be in the order of 275 vehicles (which translates to 40% capacity).

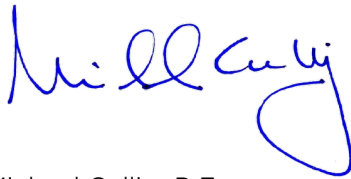
While not specifically addressed in that detailed intersection counts were not completed, traffic operations at the key intersections within the study area (including the new Menoke Beach Road intersection with Sunbank Crescent) are also expected to be acceptable given the limited volumes. The turning volumes at each site access intersection are not such that would warrant separate right and/or left turn lanes .

In consideration of the above, and the findings of the 2005 Traffic Impact Study, the site generated traffic can be readily accommodated on the road system.

Should you have any questions or comments, please do not hesitate to contact us.

Yours truly,

**Tatham Engineering Limited**



Michael Cullip, P.Eng.  
Vice President Head Office Operations  
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**MENOKE BEACH SUBDIVISION**

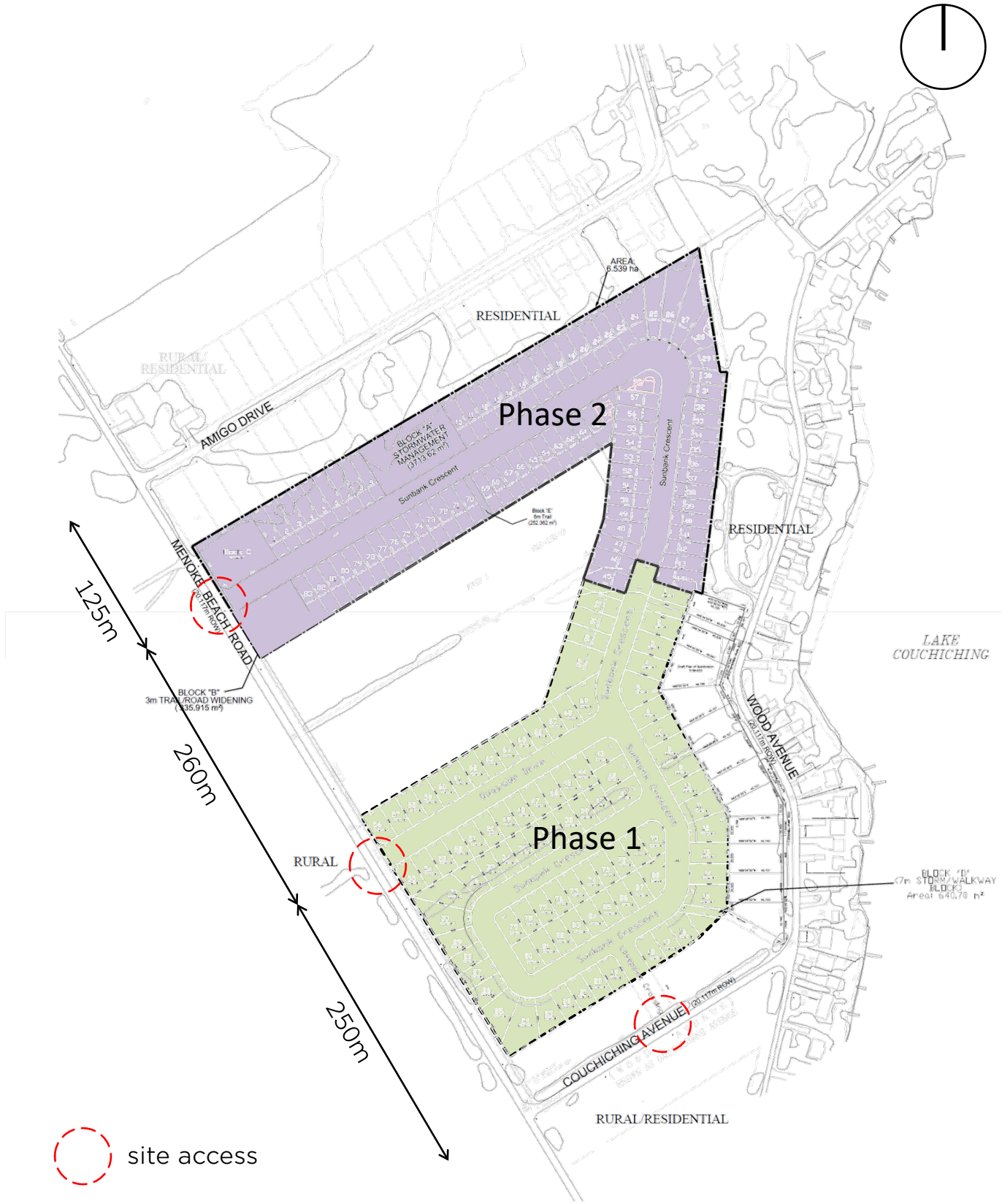
Figure 1: Site Location





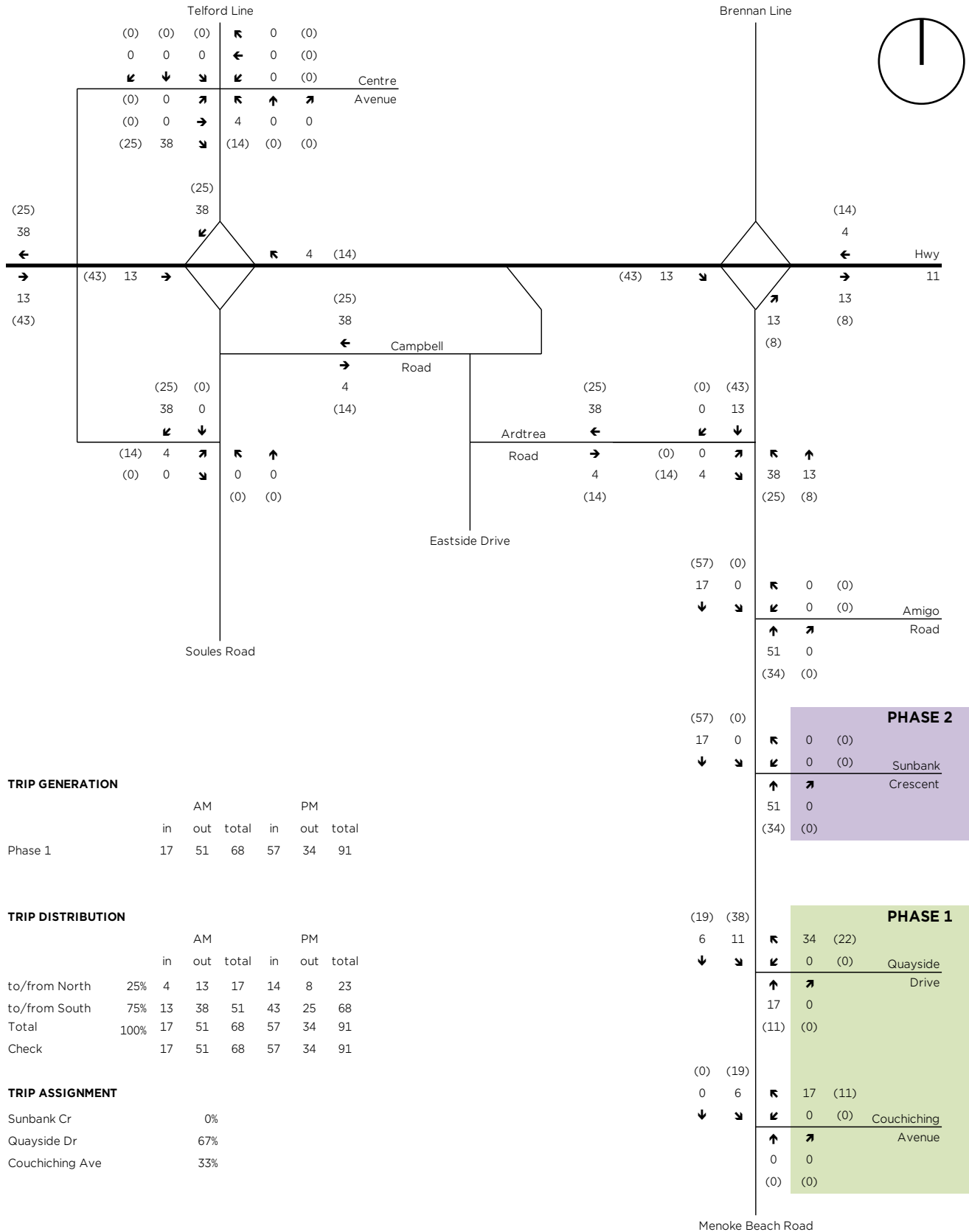
**MENOKE BEACH SUBDIVISION**  
 Figure 2: Initial Development Plan





**MENOKE BEACH SUBDIVISION**  
 Figure 3: Current Development Plan





**TRIP GENERATION**

	AM			PM		
	in	out	total	in	out	total
Phase 1	17	51	68	57	34	91

**TRIP DISTRIBUTION**

		AM			PM		
		in	out	total	in	out	total
to/from North	25%	4	13	17	14	8	23
to/from South	75%	13	38	51	43	25	68
Total	100%	17	51	68	57	34	91
Check		17	51	68	57	34	91

**TRIP ASSIGNMENT**

Sunbank Cr	0%
Quayside Dr	67%
Couchiching Ave	33%

**PHASE 2**

↖	0	(0)
↘	0	(0)
↗	0	(0)
↙	0	(0)

Sunbank Crescent

**PHASE 1**

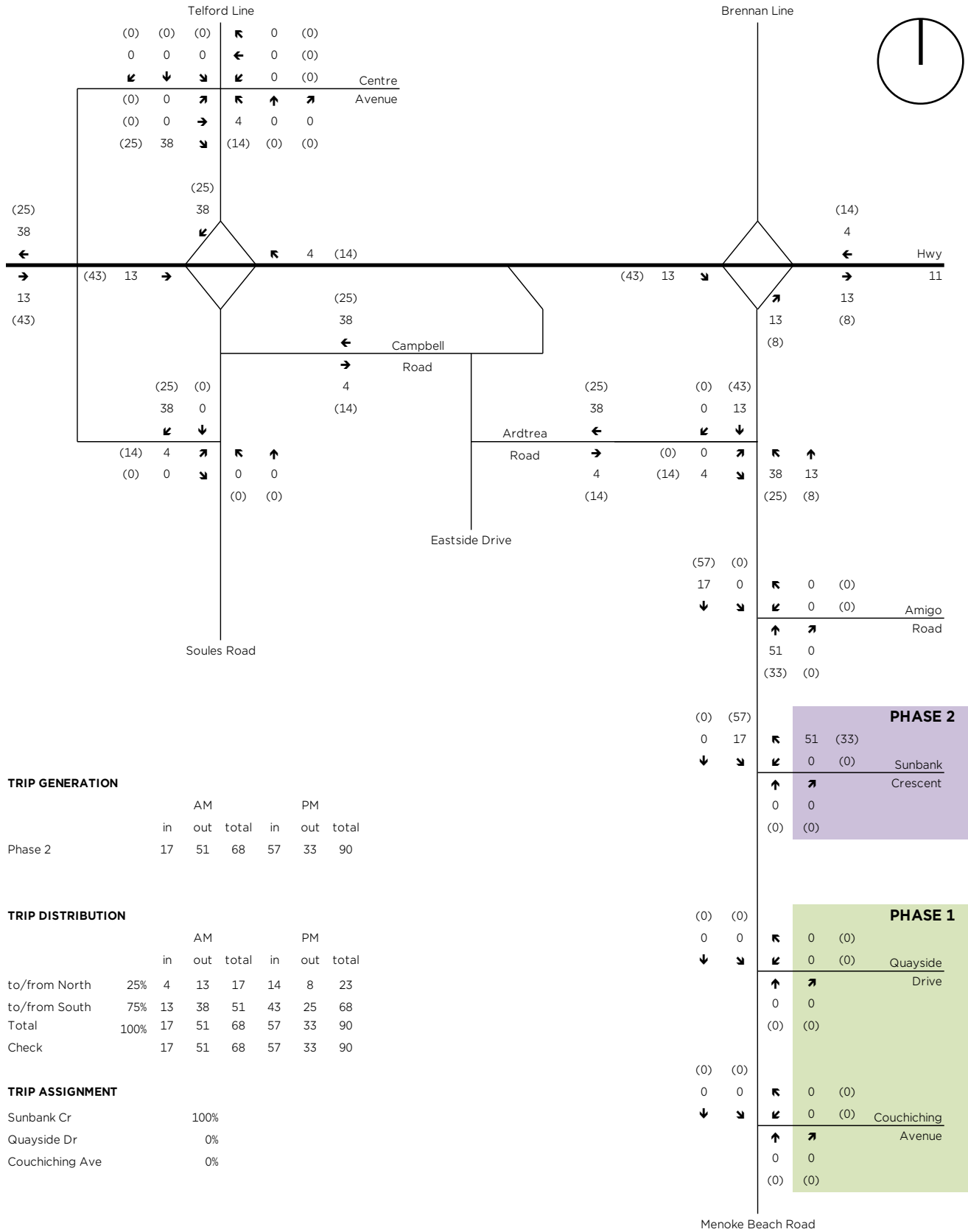
↖	34	(22)
↘	0	(0)
↗	0	(0)
↙	0	(0)

Quayside Drive  
Couchiching Avenue

**MENOKE BEACH SUBDIVISION**

Figure 4: Phase 1 Site Traffic





**TRIP GENERATION**

	AM			PM		
	in	out	total	in	out	total
Phase 2	17	51	68	57	33	90

**TRIP DISTRIBUTION**

		AM			PM		
		in	out	total	in	out	total
to/from North	25%	4	13	17	14	8	23
to/from South	75%	13	38	51	43	25	68
Total	100%	17	51	68	57	33	90
Check		17	51	68	57	33	90

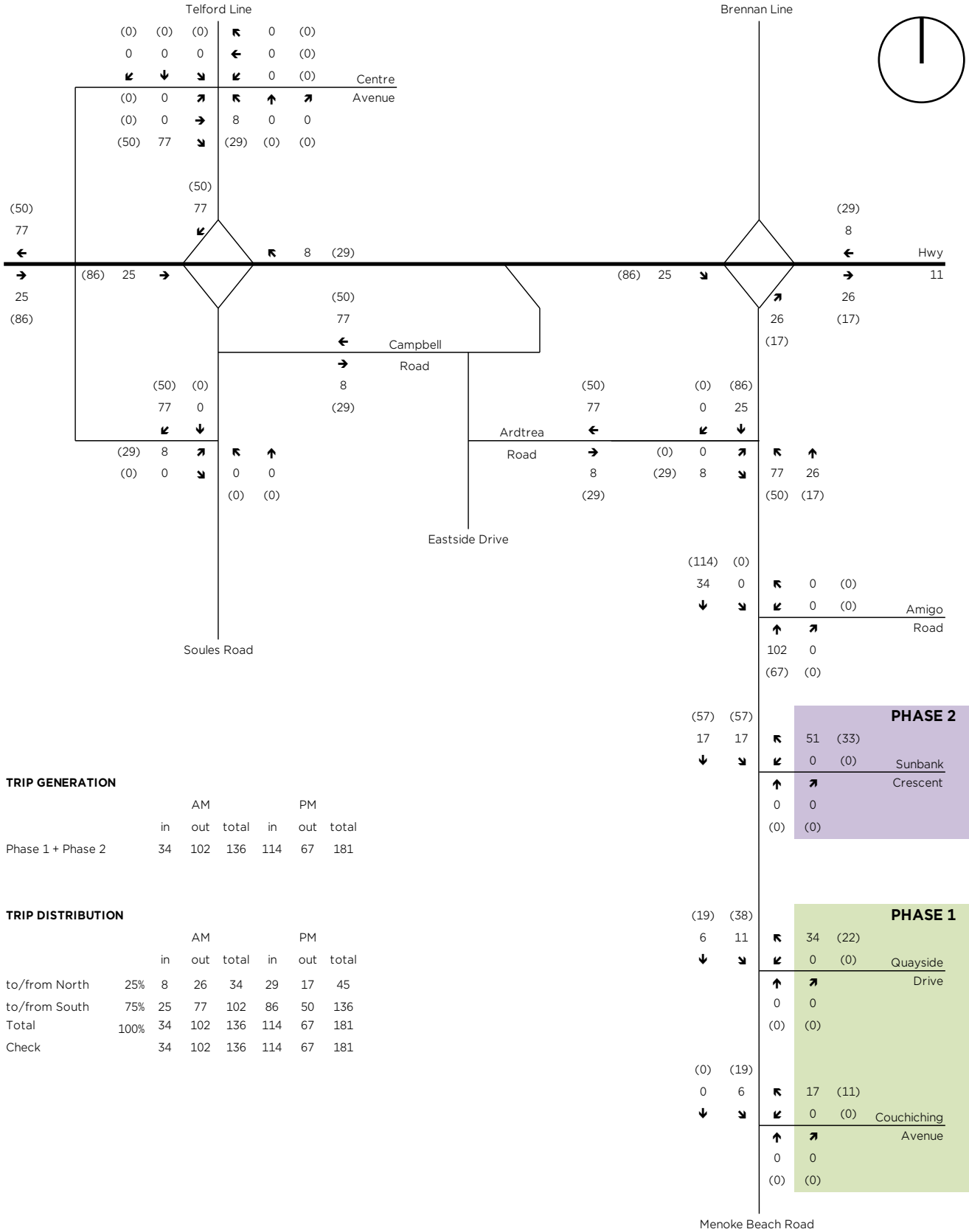
**TRIP ASSIGNMENT**

Sunbank Cr	100%
Quayside Dr	0%
Couchiching Ave	0%

**MENOKE BEACH SUBDIVISION**

Figure 5: Phase 2 Site Traffic





**TRIP GENERATION**

	AM			PM		
	in	out	total	in	out	total
Phase 1 + Phase 2	34	102	136	114	67	181

**TRIP DISTRIBUTION**

		AM			PM		
		in	out	total	in	out	total
to/from North	25%	8	26	34	29	17	45
to/from South	75%	25	77	102	86	50	136
Total	100%	34	102	136	114	67	181
Check		34	102	136	114	67	181

**PHASE 2**

↖	51	(33)
↙	0	(0)
↗	0	0
↘	0	(0)

Sunbank Crescent

**PHASE 1**

↖	34	(22)
↙	0	(0)
↗	0	0
↘	0	(0)
↖	17	(11)
↙	0	(0)
↗	0	0
↘	0	(0)

Quayside Drive  
Couchiching Avenue

**MENOKE BEACH SUBDIVISION**

Figure 6: Phase 1 + Phase 2 Site Traffic

