

July 22nd 2022

Corporation of the Town of Erin
5684 Trafalgar Rd.
Hillsburgh, ON
N0B 1Z0

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Dear Ms. Bal:

Ainley & Associates Limited and Dillon Consulting have provided comments to the Traffic Impact Study dated November 18th, 2021. Comments from Ainley & Associates Limited were provided in a letter dated March 3rd, 2022 and comments from Dillon Consulting were provided in a memorandum dated May 31st, 2022. The comments from Ainley & Associates Limited and Dillon Consulting are attached herein.

This letter provides a response to the comments provided.

Comments from Ainley & Associates Limited

Comment 1

In Section 5.1, Other Background Traffic, for trip distribution and assignment, there should be development traffic traveling to/from Orangeville (the northeast) via Trafalgar Road North, and travelling to/from Guelph or Fergus (the northwest and southwest). The 47% to/from the east via Wellington Road 22 appears too high compared to the existing background traffic and the split between northbound and southbound traffic counts on Trafalgar Road fronting the proposed subdivision.

Page 2
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Response

The trip distribution is based on the results from the 2016 Transportation Tomorrow Survey. The results from the 2016 Transportation Tomorrow Survey that are provided in Appendix F (where the origin – destination table is filtered to only show trips originating from Hillsburgh (2006 TTS Zones 8370)) indicate that trips from Hillsburgh will not be going to Orangeville, Guelph or Fergus during the Weekday A.M. Peak Period.

After reviewing the existing traffic volumes during the A.M. Peak Hour that are provided in Figure 3, at the George Street/Mill Street at Trafalgar Road North, Upper Canada Drive/Church Street at Trafalgar Road North and Howe Street at Trafalgar Road North intersections, traffic heading southbound by leaving local roads to enter Trafalgar Road North is significantly higher than traffic heading northbound, which reflects the trip distribution being used.

Comment 2

In Section 6.3, Trip Distribution and Assignment, the distribution of trips generated by the school should be a different distribution than the trips generated by the residences, and the distributions should be shown on two (2) different turning movement diagrams.

Response

The trip distribution that was applied for the proposed residential land uses is different than the trip distribution that was applied for the proposed elementary school.

The report was revised to show the trip assignment of trips generated by the proposed residential land uses and trips generated by the proposed elementary school separately.

Page 3
July 22nd 2022

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Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
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Comment 3

In Section 6.3, Trip Distribution and Assignment, the number of trips generated by the school from within the subdivision during the AM peak hour is assumed to be 22 (i.e., 10% internal capture).

Response

In the Traffic Impact Study that was prepared in November 18th, 2021, during the A.M. Peak Hour, with 148 inbound trips using the proposed Street 'A'/Howe Street at Trafalgar Road North and proposed Street 'E' at Trafalgar Road North intersections and with the proposed Residential Subdivision generating 221 inbound trips, it is apparent that 73 trips will be coming from within the Subject Subdivision to enter the elementary school. With the elementary school generating 163 inbound trips, the internal capture rate is 45%.

Comment 4

Based on the 2031 PM total traffic volumes and MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, a 25 m northbound left turn lane on Trafalgar Road North at Street 'E' is warranted.

Response

The report was revised to include a left-turn lane warrant analysis.

Page 4
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
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Comment 5

Based on the 2031 PM total traffic volumes and MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, a 25 m northbound left turn lane on Trafalgar Road North at Street 'A' is warranted. A 15 m southbound left turn lane should also be considered at that intersection to assist with sight lines for southbound left turning drivers.

Response

The report was revised accordingly.

Comment 6

Street 'A' will function as a minor collector from Street 'B'/Street 'G' westerly to Street 'D' and should have a 23 m wide right-of-way per the Engineering Standards.

Response

The Draft Plan of Subdivision was revised accordingly.

Comment 7

The Street 'A'-Street 'B'/Street 'G' Intersection should operate with a reasonable level of service under stop sign control on Street 'B' and Street 'G'. A roundabout is usually considered where a traffic signal is required. In addition, a stop sign controlled intersection is easier for pedestrians to cross, especially with the proximity to a school (proposed to be located at the northwest quadrant of the intersection).

Page 5
July 22nd 2022

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Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
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Response

The roundabout location was discussed and supported by the Town's Urban Design team, which will create an entry feature into the residential subdivision with a centre median along Street "A". From a traffic perspective, the level of service at the roundabout intersection will operate better than a traditional stop-controlled scenario. The roundabout will also be equipped with proper pedestrian crossings at each of its approaches.

Comment 8

Signalized pedestrian crossings should be considered near the school for crossing Street 'A' and for crossing Trafalgar Road North at the Street 'A/Howe Street Intersection.

Response

If and when the School Board decides to select this location, there will be safe pedestrian crossings installed for students at the intersection. We will explore more options during detailed design stage for other pedestrian crossing along Street 'A'.

Comment 9

Street 'J' and Street 'B' should be aligned directly across from each other at Street 'A'.

Response

The Draft Plan of Subdivision was revised accordingly.

Page 6
July 22nd 2022

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**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
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Comment 10

The Preliminary Development Plan, Figure 2, indicates that Block 6 and Block 7 are the only 2 accesses to “Other Lands Owned by Applicant” (Grey Area) abutting the west end of the development plan. The traffic generated by the Grey Area may significantly affect the operations of traffic through the Street ‘A’-Street ‘B’/Street ‘G’ Intersection. A sensitivity analysis should be completed to determine the quantity of traffic that could be generated by the Grey Area and if that quantity will conceivably warrant traffic signals at the Street ‘A’-Street ‘B’/Street ‘G’ Intersection.

Response

These lands lie outside of the Hillsburgh Urban Boundary and are designated under Agricultural and Greenland. The future development potential for these lands, since they lie outside the Urban Boundary, will only be recognized once the lands are brought into the Urban Boundary, which could take up to 30 years. Since it is anticipated that the potential development will be built after the 2031 horizon year, a sensitivity analysis will not be provided.

Comment 11

The TIS should discuss sight line distances at the proposed Street ‘A’-Trafalgar Road North Intersection, and at the Street ‘E’- Trafalgar Road North Intersection. The discussion should reference the required sight line distance for stop-sign controlled intersections based on TAC design standards. This can be addressed during the detail design phase.

Page 7
July 22nd 2022

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**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Response

For the proposed Street 'A'/Howe Street at Trafalgar Road North and proposed Street 'E' at Trafalgar Road North intersections, the report was revised to provide a sight distance analysis for vehicles leaving the minor roads.

Comments from Dillon Consulting

Comment 1

The development site is located on vacant lands on west side of Wellington Road 24 (Trafalgar Road) on the north side of Hillsburgh, north of Wellington Road 123. A residential subdivision featuring 284 single-detached homes, 48 townhouse units, a school block (with an assumed 450 students), and a park are proposed. Two separate storm water management (SWM) ponds are also proposed.

The subdivision is anticipated to be complete in 2026, and the traffic forecasts considered traffic volumes immediately following build-out (2026) as well as five-years following build-out (2031). It has been noted that the associated horizon years are different than what was scoped out, as build-out was previously assumed to be 2030, but has been accelerated to 2026.

The study assessed conditions during the weekday AM and weekday PM peak hour periods. Given the nature of the proposed land use and the surrounding context, this is fully appropriate. The analysis periods were confirmed during the scoping of the study in October 2021 (as noted within Appendix A of the submitted TIS).

Page 8
July 22nd 2022

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**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Operational analysis was completed at four (4) existing intersections along Wellington Road 24 at the following locations:

- *Wellington Road 24 and Wellington Road 22*
- *Wellington Road 24 and George Street/Mill Street*
- *Wellington Road 24 and Upper Canada Drive/Church Street*
- *Wellington Road 24 and Howe Street/Future Street 'A'*

Several future intersections were also assessed for the future total traffic conditions. These include:

- *Wellington Road 24 and Future Street 'E' (proposed full-movement TWSC intersection)*
- *Future Street 'A' and Future Street 'B'/Future Street 'G'. (Proposed full-movement roundabout intersection).*

These existing and future intersections as identified in the Study Area are appropriate for the nature and scale of the development, noting that the number, location and nature of future intersections to Wellington Road 24 need to be confirmed.

Response

The location and the lane configuration of the intersections that connect with Trafalgar Road North and that are proposed by the Residential Subdivision are provided in this Study. Plans for other intersections that will be constructed to connect with Trafalgar Road North were not provided by the Town of Erin or the County of Wellington.

Page 9
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Comment 2

Turning movement volumes were collected in October 2021. The October 2021 traffic volumes were factored up by a conservative 20% factor to account for traffic volume reductions associated with the ongoing COVID-19 pandemic. This 20% adjustment factor may be conservatively high; however it is acceptable.

When comparing the turning movement data to Figures 3 and 4 as well as to the Synchro files, it has been found that the traffic volumes have been entered correctly, noting that the peak hour factor, heavy vehicle percentages and the provided signal timings have been calibrated correctly in the associated Synchro models.

Within Table 1, it should be noted that there are no northbound right-turn and southbound right-turn lanes at the Wellington Road 22 and Wellington Road 24 signalized intersection, the movements are shared with the through lane and should be shown as “NB TR” and “SB TR”.

The existing conditions analysis indicates that all movements operated acceptably (at LOS A through LOS C) during both the AM and PM peak hours and that the signalized intersection operates at LOS B overall.

Response

This comment has been noted. For lanes where more than one turning movement is permitted, the tables that provide the traffic conditions for the concerned intersections will be revised accordingly.

Page 10
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Comment 3

Four background developments were identified and confirmed in the subsequent analysis. Here, the trip generation rates for each of the four background developments were estimated by using rates published of the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition. This is an acceptable approach to estimating trips, noting that ITE has recently released the 11th edition of the Trip Generation Manual.

All four of these background developments are found to the south of subject site. A new collector road is projected to connect to Wellington Road 22 corridor both east and west of Wellington Road 24. This collector road will connect with Station Street and then cross over Wellington Road 24 at a reconfigured four leg intersection. All four of these background developments appear to connect to this new collector road.

The study calculated that only 11% of trips generated by these four background developments would travel to/from the north along Wellington Road 24 past the subject development, while the rest of the traffic would be assigned to the east (along Wellington Road 22) or further south (continuing along Wellington Road 24).

The study also applied an annual growth rate of 2% to the through movements on Wellington Road 24 and to all movements at the Wellington Road 22 and Wellington Road 24 signalized intersection, which is acceptable.

Page 11
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

The future total background conditions analysis for the 2026 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 is now projected to operate over capacity and at LOS F during the AM peak hour, while the southbound left-turn movement is projected to operate at LOS E during the PM peak hour. The signalized intersection is also projected to now operate at LOS C overall during the AM peak hour and at LOS D overall during the PM peak hour.

The future total background conditions analysis for the 2031 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 will continue to operate over capacity and at LOS F during the AM peak hour, while the southbound left-turn movement is now projected to operate at LOS F during the PM peak hour. In addition, the northbound through movement is forecast to operate over capacity and at LOS E. The signalized intersection is also projected to now operate at LOS D overall during both the AM and PM peak hours.

All other movements at the remaining three unsignalized intersections are found to operate acceptably (at LOS A through LOS D) during both the AM and PM peak hours under the future total background volumes for the 2026 and 2031 horizon years.

Response

This comment has been noted.

Page 12
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Comment 4

The study noted that site trip generation was estimated were estimated by using rates published of the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition. This is an acceptable approach to estimating trips, noting that ITE has recently released the 11th edition of the Trip Generation Manual. It has been found that the proposed subdivision will generate 532 total trips during the AM peak hour and 385 total trips during the PM peak hour. This has been confirmed to be calculated in the correct manner.

It has been assumed that 44% of all trips generated by the proposed subdivision during both the AM and PM peak hours will remain within the subject subdivision. It has not been identified in the study as to where or how this internal capture rate was calculated. It would be considered reasonable to assume that a percentage of vehicles being generated by the proposed elementary school may remain internal to the development area, but it is believed that 44% of all trips generated by the proposed development may be too conservative.

The site trip distribution identified in Section 6.3 of the report matches trip distribution and assignment percentages used for the four background developments. This is acceptable given the land use, context, and location of the development. However, only 4% of all site trips are distributed to the north via Wellington Road 24, while 11% is identified within the Transportation Tomorrow Survey.

Page 13
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

It has also been assumed that 43% of trips will be distributed and assigned via Howe Street, Church Street or Mill Street. While it is understood that a portion of vehicle trips generated by the proposed elementary school may utilize these routes, it would be more appropriate if the majority of vehicle trips generated by the proposed subdivision were assigned along either Wellington Road 22 and/or Wellington Road 24.

It is also noted that the assumed trip distribution and assignment percentages add up to 200%. It is not completely clear how these percentages were calculated, and whether or not separate trip distribution and assignment calculations were made for the residential and elementary school land uses.

It has also been noted that even though the future intersection of County Road 24 and Street 'E' has been assumed to be a full-movement intersection, no vehicles were assigned to the southbound right-turn and eastbound left-turn movements.

Page 14
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Response

For the elementary school, based on the nature of the land use, for trips going to the Elementary School during the A.M. Peak Hour and trips coming from the Elementary School during the P.M. Peak Hour, the trip distribution is based on the location of residential land uses within the vicinity of the Study Area. To determine the catchment area of the elementary school, the Attendance Area for the existing Ross R. MacKay Public Elementary School was used, which is attached herein. Based on the location of the proposed Elementary School and the existing Ross R. MacKay Public Elementary School, it was assumed that the Attendance Area will be separated evenly and at the mid-point of the two locations. Based on the Attendance Area that was assumed, an internal capture rate was assumed. In addition, based on the road network within the Attendance Area, a significant amount of trips will utilize local roads such as Howe Street, Church Street and Mill Street in their trip assignment.

For trips generated by the residential land uses, the trips coming from the Elementary School during the A.M. Peak Hour and trips going to the Elementary School during the P.M. Peak Hour, the trip distribution is based on the results from the 2016 Transportation Tomorrow Survey. However, trips generated by the residential land uses will use the trip distribution for the Hillsburgh Community (2006 TTS Zone 8370) and trips generated by the Elementary School will use the trip distribution for the lands occupying the Attendance Area. (2006 TTS Zones 8370, 8371 and 8373) Therefore, 11% of trips generated by the residential land uses will be coming from/going to the north and 4% of trips leaving the Elementary School during the A.M. Peak Hour will be heading north.

Page 15
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

In addition, the report was revised to provide trips utilizing the eastbound left and southbound right turning movements at the Street 'E' at Trafalgar Road North intersection and to separate the trip distribution for inbound trips and outbound trips generated by the Elementary School so it does not appear as though the trip distribution adds up to 200%.

Comment 5

When the study was originally scoped out on behalf of the County of Wellington on October 12, 2021, several items were explicitly advised on and required within the study, noting:

- The report should include a discussion as to whether or not a local road connection to McMurchy Lane and Upper Canada Drive could be introduced rather than connecting Street 'E' to Wellington Road 24*
- Due to the vertical profile of Wellington Road 24, a safety assessment will need to be completed at both locations. On Wellington Road 24 opposite the proposed Street 'E', Barbour Drive features a cul-de-sac and no direct connection to Wellington Road 24*
- Due to the vertical profile along Wellington Road 24 fronting the proposed residential development, sightline analysis needs to be completed at the locations of the two intersections are being proposed to connect to Wellington Road 24 (future Street 'A' and future Street 'E'). Based on available speeds found along this portion of the corridor, a 70 km/h design speed (posted + 30 km/h) should be used*
- The need for both a northbound left-turn lane and a southbound right-turn lane at the Howe Street/future Street 'A' intersection and the future Street 'E' intersection need to be explicitly assessed utilizing a 70 km/h design speed.*

Page 16
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

In the case of these four noted requirements as scoped out, the study did not review or comment on these matters. As a result, it has been found that the submitted Transportation Impact Study is incomplete. In addition, some of the traffic volumes that have been generated, distributed and assigned by the proposed development may also need to be modified.

The future total conditions analysis for the 2026 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 will continue to operate over capacity and at LOS F during the AM peak hour, while the northbound through, southbound left-turn and westbound approach are all forecast to operate above capacity and at LOS F during the PM peak hour. The signalized intersection is also projected to now operate at LOS D overall during the AM peak hour and LOS E overall during the PM peak hour. Improvements are discussed in Section 1.5.1 below.

The future total conditions analysis for the 2031 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 will continue to operate over capacity and at LOS F during the AM peak hour, while the northbound through, southbound left-turn and westbound approach are all forecast to operate above capacity and at LOS F during the PM peak hour. The signalized intersection is also projected to continue operating at LOS D overall during the AM peak hour and now at LOS F overall during the PM peak hour. Improvements are discussed in Section 1.5.1 below.

Page 17
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

The majority of movements at the remaining unsignalized intersections are calculated to operate acceptably (at LOS A through LOS D) during both the AM and PM peak hours under volumes projected for the 2026 and 2031 horizon years. However, the eastbound and westbound approaches of George Street and Mill Street are projected to operate at LOS E and LOS F during the PM peak hour in both 2026 and 2031 during the PM peak hour. This is in contrast when the movements at this intersection were calculated to operate at LOS C and LOS D under the future total background traffic volumes. It was also noted in Section 7.2.1 that a movement operating at LOS F during a peak hour with a delay of 56.8 seconds is considered to be acceptable. It is noted that this delay has been projected to increase to 69.3 seconds by 2031. No remedial measures were proposed at this intersection.

The two intersections proposed to connect to Wellington Road 24 were projected to operate in a generally acceptable manner, although there were no additional turn lanes considered or assessed at either of these locations.

It was found that the proposed internal roundabout at Street 'A' and Street 'B'/Street 'G' is forecast to operate at LOS A during the AM and PM peak hours, with minimal queuing extending back towards Wellington Road 24.

Response

For the proposed Street 'A'/Howe Street at Trafalgar Road North and proposed Street 'E' at Trafalgar Road North intersections, the report was revised to provide a sight distance analysis for vehicles leaving the minor roads and a section that reviews the need for left and right turning lanes on Trafalgar Road North.

Page 18
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

In addition, a local road connection to McMurchy Lane and Upper Canada Drive is not feasible due to constraints in grading.

Comment 6

Under the future total traffic volumes for both the 2026 and 2031 horizon years, the only location where recommended improvements were made were at the Wellington Road 22 and Wellington Road 24 signalized intersection. Improvements include:

- *Signal timing adjustments*
- *A new eastbound left-turn lane*
- *A new westbound left-turn lane*
- *An extended southbound left-turn lane*
- *A new northbound right-turn lane*
- *A new westbound right-turn lane.*

Within the associated Synchro analysis and reports, it was noted that a permissive/protected left-turn phase was added to several left-turn movements but wasn't identified explicitly within the report. It has been noted that during the AM peak hour under the 2026 future total traffic conditions, the added left-turn permissive/protected phases are for the westbound and southbound left-turn movements during the AM peak hour while during the PM peak hour, the permissive/protected phases switch to the eastbound and southbound left-turn movements. Separately, when considering the 2031 future total traffic volumes, the left-turn permissive/protected phases are for the westbound and southbound left-turn movements during the AM peak hour while the left-turn permissive/protected phases are noted for the westbound, eastbound and southbound left-turn movements during the PM peak hour.

Page 19
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

Response

This comments has been noted.

Comment 7

At the Wellington Road 22 and Wellington Road 24 intersection, a number of recommendations are made. These include the introduction of additional turning lanes and modifying the signal timing (cycle length as well as adding left-turn phases for several different left-turn movements). It is also noted that the Wellington Road 24 and George Street/Mill Street intersection westbound approach is projected to operate at LOS F during the PM peak hour but the study deems this matter to be acceptable, noting that the calculated delay will be approximately 70 seconds under the 2031 total future traffic volumes.

The study identifies a number of improvements but does not indicate whether or not the recommended improvements are triggered by a background condition (i.e., one or more of the assumed background developments) or are due to the subject subdivision.

Response

For the intersection of Trafalgar Road North at Wellington Road 22, the intersection begins to operate with critical turning movements in the Future (2026) Total Background Scenario. In addition, impacts to the intersection due to the inclusion of site-generated trips from the Subject Subdivision are moderate. Therefore, improvements to the intersection are required to address the critical turning movements during the A.M. and P.M. Peak Hours due to the trips generated by the anticipated background developments and the Subject Subdivision collectively.

Page 20
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
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Comment 8

The following represents a summary of the findings of this peer review exercise:

- *The associated analysis, findings for the existing and future total background conditions have been found to be accurate and appropriate*
- *The associated analysis, findings for the trip generation and distribution of the proposed subdivision were not clear, especially in regard to:*
 - *Whether or not any internal capture rates were applied between the elementary school and the residential land uses within the subject subdivision*
 - *Whether or not trips generated by the residential land uses and elementary school were distributed and assigned separately*
- *The associated analysis, findings for the future total conditions may need to be revised once the associated trip generation and distribution calculations are confirmed*
- *The study makes several recommendations to geometric and signal timing improvements at the Wellington Road 22 and Wellington Road 26 but does not comment as to whether or not the additional improvements are triggered by the background traffic volume growth by other developments or the subject residential development. It is recommended that improvements be considered to accommodate forecast background traffic volumes*
- *Should an elementary school be proposed along Street 'A', there may be a new desire line for pedestrians crossing Wellington Road 24 at the Howe Street/Street 'A' intersection, and there may need to be a change to traffic control at the intersection (such as a pedestrian crossover, pedestrian signal and/or a full traffic signal)*

Page 21
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

- *A traffic signal warrant should be undertaken for the George Street and Mill Street intersection. However, as separate transportation impact studies will be prepared to support some of the background developments closer to this intersection, this signal warrant could likely be completed by one or more of those studies.*

However, the submitted TIS is incomplete, noting that the following four matters that were explicitly scoped out with Candevcon were not included:

- *The report should include a discussion as to whether or not a local road connection to McMurchy Lane and Upper Canada Drive could be introduced rather than connecting Street 'E' to Wellington Road 24*
- *Due to the vertical profile of Wellington Road 24, a safety assessment will need to be completed at both locations. As you can see across the corridor from where Street 'E' was constructed, Barbour Drive features a cul-de-sac and no direct connection*
- *Due to the vertical profile along Wellington Road 24 fronting the proposed residential development, sightline analysis needs to be completed at the locations of the two intersections are being proposed to connect to Wellington Road 24 (future Street 'A' and future Street 'E'). Based on available speeds found along this portion of the corridor, a 70 km/h design speed (posted + 30 km/h) should be used*
- *The need for both a northbound left-turn lane and a southbound right-turn lane at the Howe Street/future Street 'A' intersection and the future Street 'E' intersection need to be explicitly assessed utilizing a 70 km/h design speed.*

Page 22
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
Traffic Impact Study dated November 18th 2021
Hillsburgh Heights Inc.
Proposed Residential Subdivision
5916 Trafalgar Road North
Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

A discussion regarding the need for Street 'E' to connect to Wellington Road 24 should occur as it may be feasible to revise the subdivision concept where a separate local road connection to the subdivision lands via Upper Canada Drive and McMurchy Lane could be established.

Should this alternative connection be implemented, it would likely have an impact on how the site-generated traffic would be assigned and distributed through the Study Area.

Given the incomplete submission, a revised Transportation Impact Study or subsequent addendum should be ultimately prepared and submitted.

Response

This comment has been noted.

For the proposed Street 'A'/Howe Street at Trafalgar Road North and proposed Street 'E' at Trafalgar Road North intersections, the report was revised to provide a sight distance analysis for vehicles leaving the minor roads and a section that reviews the need for left and right turning lanes on Trafalgar Road North. For the intersection of George Street/Mill Street at Trafalgar Road North, the report was revised to include a signal warrant analysis.

In addition, a local road connection to McMurchy Lane and Upper Canada Drive is not feasible due to constraints in grading.

Page 23
July 22nd 2022

Attn: Ms. Tanjot Bal, Senior Planner

**Re: Response to the Peer Review Comments to the
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Town of Erin
Town File No. OP21-01 & Z21-09
Our File No. W21081**

We trust that this Letter addresses all of the comments to the Traffic Impact Study dated November 18th 2021 for the proposed Residential Subdivision. If you have any questions on the above please advise.

Yours truly,

CANDEVCON LIMITED



Brian Wong, P. Eng.
Intermediate Transportation Engineer



David Lee, P. Eng.
Project Manager

Attachments: Comments from Ainley & Associates Limited dated March 3rd, 2022,
Comments to Traffic Impact Study from Dillon Consulting dated May 31st, 2022,
The Attendance Area for Ross R. MacKay Public Elementary School.

VIA EMAIL

March 3, 2022

File No. 221085

Town of Erin
5684 Trafalgar Rd.
Hillsburgh, ON N0B 1Z0

Attn: Nick Colucci, P. Eng., BAsC, MBA, FEC
Director of Infrastructure Services

Ref: **Proposed Hillsburgh Heights Development (Briarwood Development)**
1st Draft Plan Submission Engineering Peer Review

Dear Mr. Colucci:

We have received the 1st submission of reports and documentation in support of the Draft Plan of subdivision for the Hillsburgh Heights Subdivision (Briarwood Development). The documentation we received included:

- Cover Letter – Candevcon Limited (Candevcon) (November 18, 2021).
- Cover Letter – Candevcon, supporting the Official Plan amendment and Zoning By-law amendment applications (November 18, 2021).
- Application Submission Checklist (July 2, 2021).
- Official Plan amendment application form.
- Zoning By-law amendment application form.
- Draft Plan of Subdivision application form.
- Draft Official Plan Amendment.
- Draft Zoning By-law Amendment.
- Legal Survey, Plan 61R-9590 – J.R. Finnie Surveying Ltd., registered November 27, 2003.
- Parcel Abstract (November 17, 2021).
- Transfer of Easement signed and dated October 17, 2001.
- Draft Plan of Subdivision (PL-1) – Candevcon (November 12, 2021).
- Public Consultation Strategy (November 1, 2021).
- Planning Justification Report – Candevcon (November 15, 2021).
- Urban Design Brief – NAK Design Strategies (November 2021).
- Stage 1-2 Archaeological Assessment Report and Supplemental Documentation – Archaeological Services Inc. (dated October 19, 2021).
- Heritage Impact Assessment – Golder (November 17, 2021).
- Functional Servicing Report (includes Stormwater Management, Site Servicing Plan, Grading Plans, Drainage Plans) – Candevcon (November 16, 2021).
- Traffic Impact Study – Candevcon (November 18, 2021).

- Tree Inventory, Preservation and Removal Plan – The Urban Arborist (October 25, 2021).
- Preliminary Geotechnical Investigation – Soil Engineers Ltd. (October 2020).
- Phase I Environmental Site Assessment – Soil Engineers Ltd. (September 30, 2020).
- Phase II Environmental Site Assessment – HLV2K Engineering Limited (October 26, 2021).
- Hydrogeological Investigation – HLV2K Engineering Limited (November 17, 2021).
- Preliminary Grading Plan – Candevcon (October 1, 2021).
- Erosion Sediment Control Plan and Details drawings ESC-1 and ESC-2 – Candevcon (October 1, 2021).
- Comment Response Matrix (November 8, 2021).

Subsequent to our detailed review of the above package, we compiled the following Peer Review comments to address our concerns with the proposed development.

Draft Plan of Subdivision (PL-1) – Candevcon

1. The draft plan should include dimensions for
 - 1.1. right-of-way widths
 - 1.2. sight triangles ensuring they conform with the Engineering Standards and the Zoning By-law (i.e., minimum distance of 6 metres)
 - 1.3. radii on rights-of-way between internal intersections and at cul-de-sac bulbs
 - 1.4. each lot line.
2. Block 2 appears to have a residential lot fabric overlaid on it, but the Traffic Impact Study assumes it is a School Block. If the School Board does not require a school site, then this lot block can be redeveloped as residential (if there is capacity). Separate applications will be required for these lands. The residential lot fabric overlay should be removed from on top of the school block.
3. Block 8, Walkway, should be a minimum of 6.0 m wide, and wider if the match lines for the backs of swale on each side of the walkway extend beyond 6.0 m width.
4. The lot line dimensions should include metric (meters) units.
5. Please provide further clarifications of the existing right of way limits at the end of Upper Canada Drive and McMurchy Lane and in particular if the existing cul-de-sacs are within the municipal right of way or are on private property via easements.

Preliminary Geotechnical Investigation – Soil Engineers Ltd.

6. The groundwater levels should be monitored year-round to determine the high groundwater level for detail design purposes.
7. Borehole 6 indicates that it includes a topsoil fill material. The report indicates that the topsoil fill should be excavated, examined, and sorted free of topsoil and deleterious material before being reused as fill material, or removed and not re-used.

8. As the detail engineering design evolves, the geotechnical bore holes should be advanced to be at least 1 m below the lowest servicing and excavation.
9. The preliminary servicing drawings in the Functional Servicing Report indicate that some road sections (e.g. Street 'B') will have a profile and some sewer sections above existing grades. The geotechnical investigation should be advanced during the detail engineering phase to provide recommendations for placement of fill to support infrastructure.

Hydrogeological Investigation – HLV2K Engineering Limited

10. The sanitary sewer and stormwater management facilities should be designed as per Wellhead Protection policies SWG-13 and SWG-14 to protect the groundwater quality.

Phase I Environmental Site Assessment – Soil Engineers Ltd.

Phase II Environmental Site Assessment – HLV2K Engineering Limited

11. The Phase II Environmental Site Assessment (ESA) Report describes one soil sample had exceedances for petroleum hydrocarbons. The sample was from one of the two (2) hand sample locations, and near the barn near the northeast property boundary.

The soil encountered in the area is considered to be loose soil comprising of sand and silty sand, which is conducive for the spread of contaminants in the subsurface soils.

Recommendations in the Phase II ESA Report include:

- 11.1. further investigation around the hand sample location to define the limits of the contaminated soil.
- 11.2. removal of the contaminated soil and further testing to confirm the contamination is removed.
12. The site was found to meet the MECP Table 2 Standards RPI in a Potable Ground Water Condition for soil from the boreholes.
13. The boreholes were advanced between 6.2 and 9.8 m below the ground surface and did not find any groundwater. No groundwater was sampled.
14. Based upon the results of the parameters tested across all boreholes for soil during the Phase II ESA investigation, the soil from the boreholes and hand samples met the applicable MECP Table 2 Residential Parkland Institutional (RPI) Use Site Conditions Standards except for one of the hand samples taken from the site which had an exceedance for Petroleum Hydrocarbons F4 Fraction.
15. After the contaminated soil is removed and further samples in the same area are analyzed to confirm no contamination is present by a professional qualified to perform this work, the report should be filed as a Record of Site Condition (RSC) with the Ministry of Environment, Conservation and Climate Control.

Functional Servicing Report – Candevcon

16. As the development proceeds, please ensure that the latest version of the Town of Erin Development Engineering Manual (Town Standards) is utilized.
17. The north leg of Street 'B' and the Street 'A'-Street 'B'/Street 'G' Intersection indicate significant fill depth is required. For example, on Preliminary Servicing Plan, PS-1, at the Street 'A'-Street 'B'/Street 'G' Intersection (i) the existing grade is 463.0; (ii) the proposed sanitary sewer obvert is 466.60; (iii) the proposed storm sewer obvert is 466.56; and (iv) the proposed road grade is 470.0 (i.e., the sanitary sewer and storm sewer are shown to be above the existing grade, and the proposed road grade is approximately 7 m above the existing grade). Detailed geotechnical recommendations for engineered fill should be required where proposed grades are above existing grades.

Sanitary Servicing

18. Adequate wastewater treatment capacity is available to accommodate the proposed development.
19. The sanitary sewer outlet from the development is proposed through Block 4, which contains SWM Pond 1, to McMurchy Drive (MH 70A to MH 74A). The route of this sewer through Block 4 will need a dedicated 6m access road for maintenance purposes.
20. The Town is proceeding with the engineering design for a trunk sanitary collection system in Erin and Hillsburgh. The Town's trunk sewer in Hillsburgh will be extended north on Trafalgar Road and terminate at Upper Canada Drive; therefore, the sanitary sewer from this development will have to be extended to the intersection of Trafalgar Road & Upper Canada Drive.
21. The extending of the sanitary sewer to the intersection of Trafalgar Road & Upper Canada Drive, will require a sewer to be constructed on Upper Canada Dr (from McMurchy Ln to Trafalgar Rd) and on McMurchy Ln. The sewer on Upper Canada Dr will need to be deep enough to accommodate the servicing of the existing homes, further west on Upper Canada Dr, in the future.
22. Given that the proposed Draft Plan includes the lot layout, the sanitary drainage design sheet should be based on population per dwelling unit (e.g., 3 people per single detached, semi-detached, townhouse) rather than population per hectare. This can be addressed during the detail design phase.
23. Regarding the Sanitary Drainage Design Sheet,
 - 25.1. Given the relatively small design flows, the spreadsheet calculating the design flows and sewer flow capacities should use units of "l/s" rather than "m³/s". This can be addressed during the detail design phase.

- 25.2. For each pipe section, the upstream and downstream structure numbers should match those on the Sanitary Drainage Plan (e.g., for Area 4, the downstream structure number should read MH10A).
- 25.3. All the pipe sections shown on the Sanitary Drainage Plan should be represented in the Design Sheet (e.g., sanitary pipe from structure MH15A to MH 16A should be included).
- 25.4. In structures with more than 1 inlet, the outlet pipe should include the design flow from each inlet plus the area to the next structure downstream. The accumulated population appears to omit a few sub-area populations at structures with more than 1 inlet.
- 25.5. The area for Park Block 1 should be included to account for infiltration, even if no facility building is included.
- 25.6. The accumulated area for infiltration should be accounted from MH70A through MH74A (i.e., through SWM Pond Block 4).

Water Servicing

24. The Town should confirm that adequate water treatment capacity and storage is available to accommodate the proposed development.
25. The Town is proceeding with the development of a new water model for the existing and future water system(s). Subsequent to the completion of the water model the proposed water distribution network will need to be reviewed to confirm that it can supply the necessary flows and pressures as per the Town Standards, Ministry of the Environment, Conservation and Parks (MECP), and Fire Underwriters Survey with respect to maximum day flows, peak hour flows, and maximum day plus fire flows.

Storm Drainage and Stormwater Management

26. The Existing Drainage Parameters in Table 1 should correspond to the catchment areas outlined on Drawing EX-DR-1, Existing Drainage Plan. Discrepancies that should be resolved include, but not limited to:
 - 28.1. Drawing EX-DR-1 shows Area A-1 flowing through the northwest corner of the site, but TABLE 1 indicates Area A-1 directs runoff to McMurchy Lane just south of the southeast corner of the site.
 - 28.2. TABLE 1 indicates only 2 external areas direct runoff through the subject site, but Drawing EX-DR-1 show the area on the north directing runoff from 3 sub-areas.
 - 28.3. The sum of the areas in TABLE 1 does not equal the sum of the areas on Drawing EX-DR-1.

27. The Preliminary Grading Plan PG-1 or the Preliminary Servicing Plan PS-1 should include existing and proposed grades at all property corners to confirm that the proposed lot layout is feasible.
28. Drawing EX-DR-1 should show be extended to show the upper limits of the external catchment areas, or the report should have a supplementary drawing showing the limits of the external catchment areas. In addition, the size of each external area should be provided.
29. The catchment areas for each pond used in the Visual Otthymo (VO) modelling should match the catchment areas contributing runoff to each pond summed in the storm sewer design sheets. The design sheets show a total of 18.52 ha contributing runoff through the storm sewers to Pond 1, and 29.12 ha contributing runoff through the storm sewers to Pond 2. The total area contributing runoff through storm sewers is 47.64 ha, and excludes the Pond Block areas.

The VO modelling indicates that the total area (including the pond block areas) is 21.8 ha (for Pond 1, Table III, page 10) and 24.08 ha (for Pond 2, Table VI, page 12), summing to 45.88 ha, which is less than the areas shown on the storm design sheets. This discrepancy should be resolved.
30. The information on the Storm Drainage Plan should be reflected in the Storm Drainage Design Sheets, including, for example, all pipe sections, pipe percent grades, using runoff coefficients as per the Town Standards.
31. Several pipe flow velocities in the Storm Drainage Design Sheets exceed 4.5 m/s. Pipe flow velocities for design flows and flows when the sewer is flowing full should be as per the Town Standards. This can be addressed during the detail design phase.
32. The Stormwater Management System should consider the peak flows from Hurricane Hazel to determine what event has the critical design flows (i.e., 100-year or Hurricane Hazel). The critical design flows should be used to demonstrate that overland flow conditions will not cause unacceptable flooding damage to private property and not exceed flood storage depths per the Town Standards.
33. The side slopes in both ponds should not be steeper than 5:1.
34. Stormwater Management (SWM) Pond emergency spillways should be shown on the drawings, located a minimum of 3.0 m horizontal clearance from the outlet control structures. The spillways should have a minimum of 0.30 m freeboard over the design flow depth.
35. SWM Pond maintenance access roads should be shown to confirm the block size is satisfactory. The turning radii for the maintenance access should be confirmed with a swept path analysis, and the access road extending from the public road rights-of-way to the bottom of the ponds, to the inlets and outlet controls points should not exceed 6%. These maintenance access roads should be independent from any proposed walking trails around the facilities.

36. Provide further details regarding the outlet from SWM Pond No 2, at the western limit of the development, as the flows from the pond will traverse a parcel of property which is not owned by the applicant before reaching the creek and ultimately the wetland area to the south.

Traffic Impact Study – Candevcon

37. In Section 5.1, Other Background Traffic, for trip distribution and assignment, there should be development traffic traveling to/from Orangeville (the northeast) via Trafalgar Road North, and travelling to/from Guelph or Fergus (the northwest and southwest). The 47% to/from the east via Wellington Road 22 appears too high compared to the existing background traffic and the split between northbound and southbound traffic counts on Trafalgar Road fronting the proposed subdivision.
38. In Section 6.3, Trip Distribution and Assignment, the distribution of trips generated by the school should be a different distribution than the trips generated by the residences, and the distributions should be shown on two (2) different turning movement diagrams.
39. In Section 6.3, Trip Distribution and Assignment, the number of trips generated by the school from within the subdivision during the AM peak hour is assumed to be 22 (i.e., 10% internal capture).
40. Based on the 2031 PM total traffic volumes and MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, a 25 m northbound left turn lane on Trafalgar Road North at Street 'E' is warranted.
41. Based on the 2031 PM total traffic volumes and MTO Design Supplement for TAC Geometric Design Guide for Canadian Roads, a 25 m northbound left turn lane on Trafalgar Road North at Street 'A' is warranted. A 15 m southbound left turn lane should also be considered at that intersection to assist with sight lines for southbound left turning drivers.
42. Street 'A' will function as a minor collector from Street 'B'/Street 'G' westerly to Street 'D' and should have a 23 m wide right-of-way per the Engineering Standards.
43. The Street 'A'-Street 'B'/Street 'G' Intersection should operate with a reasonable level of service under stop sign control on Street 'B' and Street 'G'. A roundabout is usually considered where a traffic signal is required. In addition, a stop sign controlled intersection is easier for pedestrians to cross, especially with the proximity to a school (proposed to be located at the northwest quadrant of the intersection).
44. Signalized pedestrian crossings should be considered near the school for crossing Street 'A' and for crossing Trafalgar Road North at the Street 'A'/Howe Street Intersection.
45. Street 'J' and Street 'B' should be aligned directly across from each other at Street 'A'.

46. The Preliminary Development Plan, Figure 2, indicates that Block 6 and Block 7 are the only 2 accesses to “Other Lands Owned by Applicant” (Grey Area) abutting the west end of the development plan. The traffic generated by the Grey Area may significantly affect the operations of traffic through the Street ‘A’-Street ‘B’/Street ‘G’ Intersection. A sensitivity analysis should be completed to determine the quantity of traffic that could be generated by the Grey Area and if that quantity will conceivably warrant traffic signals at the Street ‘A’-Street ‘B’/Street ‘G’ Intersection.
47. The TIS should discuss sight line distances at the proposed Street ‘A’-Trafalgar Road North Intersection, and at the Street ‘E’- Trafalgar Road North Intersection. The discussion should reference the required sight line distance for stop-sign controlled intersections based on TAC design standards. This can be addressed during the detail design phase.

We trust this is satisfactory, however do not hesitate to contact the undersigned if you require further clarification or input.

Yours truly,

AINLEY & ASSOCIATES LIMITED



Leonard H. Borgdorff, P. Eng., PMP
Project Engineer

cc: Jack Krubnik – Town of Erin (By Email)
Tanjot Bal – Town of Erin (By Email)
Angela Sciberras – Macaulay Shiomi Howson Ltd. (By Email)

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Memo



To: Pasquale Costanzo, C.E.T., County of Wellington
From: Tim Kooistra, C.E.T., Dillon Consulting Limited
Date: May 31, 2022
Subject: Briarwood Subdivision, Hillsburgh, Traffic Impact Study – Peer Review
Our File: 21-2592

Dillon Consulting Limited has been retained by the County of Wellington to undertake a peer review of a traffic impact study for the proposed Briarwood Subdivision found in the community of Hillsburgh, located in the Town of Erin. The traffic impact study was submitted by Candevcon Limited on November 18, 2021.

This memorandum documents the findings from the peer review of the above-noted study. This peer review and associated comments are structured to align with the same section headings as found in the Traffic Impact Study.

1.0 Candevcon's Traffic Impact Study

1.1 Introduction and Subject Development Study Area

The development site is located on vacant lands on west side of Wellington Road 24 (Trafalgar Road) on the north side of Hillsburgh, north of Wellington Road 123. A residential subdivision featuring 284 single-detached homes, 48 townhouse units, a school block (with an assumed 450 students), and a park are proposed. Two separate storm water management (SWM) ponds are also proposed.

The subdivision is anticipated to be complete in 2026, and the traffic forecasts considered traffic volumes immediately following build-out (2026) as well as five-years following build-out (2031). It has been noted that the associated horizon years are different than what was scoped out, as build-out was previously assumed to be 2030, but has been accelerated to 2026.

The study assessed conditions during the weekday AM and weekday PM peak hour periods. Given the nature of the proposed land use and the surrounding context, this is fully appropriate. The analysis periods were confirmed during the scoping of the study in October 2021 (as noted within Appendix A of the submitted TIS).

Operational analysis was completed at four (4) existing intersections along Wellington Road 24 at the following locations:

- Wellington Road 24 and Wellington Road 22
- Wellington Road 24 and George Street/Mill Street
- Wellington Road 24 and Upper Canada Drive/Church Street

- Wellington Road 24 and Howe Street/Future Street 'A'
- Several future intersections were also assessed for the future total traffic conditions. These include:
- Wellington Road 24 and Future Street 'E' (proposed full-movement TWSC intersection)
- Future Street 'A' and Future Street 'B'/Future Street 'G'. (Proposed full-movement roundabout intersection).

These existing and future intersections as identified in the Study Area are appropriate for the nature and scale of the development, noting that the number, location and nature of future intersections to Wellington Road 24 need to be confirmed.

1.2 Existing Traffic Conditions

Turning movement volumes were collected in October 2021. The October 2021 traffic volumes were factored up by a conservative 20% factor to account for traffic volume reductions associated with the ongoing COVID-19 pandemic. This 20% adjustment factor may be conservatively high; however it is acceptable.

When comparing the turning movement data to Figures 3 and 4 as well as to the Synchro files, it has been found that the traffic volumes have been entered correctly, noting that the peak hour factor, heavy vehicle percentages and the provided signal timings have been calibrated correctly in the associated Synchro models.

Within Table 1, it should be noted that there are no northbound right-turn and southbound right-turn lanes at the Wellington Road 22 and Wellington Road 24 signalized intersection, the movements are shared with the through lane and should be shown as "NB TR" and "SB TR".

The existing conditions analysis indicates that all movements operated acceptably (at LOS A through LOS C) during both the AM and PM peak hours and that the signalized intersection operates at LOS B overall.

1.3 Future Total Background Traffic Conditions

Four background developments were identified and confirmed in the subsequent analysis. Here, the trip generation rates for each of the four background developments were estimated by using rates published of the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition. This is an acceptable approach to estimating trips, noting that ITE has recently released the 11th edition of the Trip Generation Manual.

All four of these background developments are found to the south of subject site. A new collector road is projected to connect to Wellington Road 22 corridor both east and west of Wellington Road 24. This collector road will connect with Station Street and then cross over Wellington Road 24 at a reconfigured four leg intersection. All four of these background developments appear to connect to this new collector road.

The study calculated that only 11% of trips generated by these four background developments would travel to/from the north along Wellington Road 24 past the subject development, while the rest of the traffic would be assigned to the east (along Wellington Road 22) or further south (continuing along Wellington Road 24).

The study also applied an annual growth rate of 2% to the through movements on Wellington Road 24 and to all movements at the Wellington Road 22 and Wellington Road 24 signalized intersection, which is acceptable.

The future total background conditions analysis for the 2026 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 is now projected to operate over capacity and at LOS F during the AM peak hour, while the southbound left-turn movement is projected to operate at LOS E during the PM peak hour. The signalized intersection is also projected to now operate at LOS C overall during the AM peak hour and at LOS D overall during the PM peak hour.

The future total background conditions analysis for the 2031 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 will continue to operate over capacity and at LOS F during the AM peak hour, while the southbound left-turn movement is now projected to operate at LOS F during the PM peak hour. In addition, the northbound through movement is forecast to operate over capacity and at LOS E. The signalized intersection is also projected to now operate at LOS D overall during both the AM and PM peak hours.

All other movements at the remaining three unsignalized intersections are found to operate acceptably (at LOS A through LOS D) during both the AM and PM peak hours under the future total background volumes for the 2026 and 2031 horizon years.

1.4 Trip Generation and Distribution

The study noted that site trip generation was estimated were estimated by using rates published of the Institute of Transportation Engineers (ITE) Trip Generation Manual, 10th edition. This is an acceptable approach to estimating trips, noting that ITE has recently released the 11th edition of the Trip Generation Manual. It has been found that the proposed subdivision will generate 532 total trips during the AM peak hour and 385 total trips during the PM peak hour. This has been confirmed to be calculated in the correct manner.

It has been assumed that 44% of all trips generated by the proposed subdivision during both the AM and PM peak hours will remain within the subject subdivision. It has not been identified in the study as to where or how this internal capture rate was calculated. It would be considered reasonable to assume that a percentage of vehicles being generated by the proposed elementary school may remain internal to the development area, but it is believed that 44% of all trips generated by the proposed development may be too conservative.

The site trip distribution identified in Section 6.3 of the report matches trip distribution and assignment percentages used for the four background developments. This is acceptable given the land use, context,

and location of the development. However, only 4% of all site trips are distributed to the north via Wellington Road 24, while 11% is identified within the Transportation Tomorrow Survey.

It has also been assumed that 43% of trips will be distributed and assigned via Howe Street, Church Street or Mill Street. While it is understood that a portion of vehicle trips generated by the proposed elementary school may utilize these routes, it would be more appropriate if the majority of vehicle trips generated by the proposed subdivision were assigned along either Wellington Road 22 and/or Wellington Road 24.

It is also noted that the assumed trip distribution and assignment percentages add up to 200%. It is not completely clear how these percentages were calculated, and whether or not separate trip distribution and assignment calculations were made for the residential and elementary school land uses.

It has also been noted that even though the future intersection of County Road 24 and Street 'E' has been assumed to be a full-movement intersection, no vehicles were assigned to the southbound right-turn and eastbound left-turn movements.

1.5

Future Total Traffic Conditions

When the study was originally scoped out on behalf of the County of Wellington on October 12, 2021, several items were explicitly advised on and required within the study, noting:

- The report should include a discussion as to whether or not a local road connection to McMurchy Lane and Upper Canada Drive could be introduced rather than connecting Street 'E' to Wellington Road 24
- Due to the vertical profile of Wellington Road 24, a safety assessment will need to be completed at both locations. On Wellington Road 24 opposite the proposed Street 'E', Barbour Drive features a cul-de-sac and no direct connection to Wellington Road 24
- Due to the vertical profile along Wellington Road 24 fronting the proposed residential development, sightline analysis needs to be completed at the locations of the two intersections are being proposed to connect to Wellington Road 24 (future Street 'A' and future Street 'E'). Based on available speeds found along this portion of the corridor, a 70 km/h design speed (posted + 30 km/h) should be used
- The need for both a northbound left-turn lane and a southbound right-turn lane at the Howe Street/future Street 'A' intersection and the future Street 'E' intersection need to be explicitly assessed utilizing a 70 km/h design speed.

In the case of these four noted requirements as scoped out, the study did not review or comment on these matters. As a result, it has been found that the submitted Transportation Impact Study is incomplete. In addition, some of the traffic volumes that have been generated, distributed and assigned by the proposed development may also need to be modified.

The future total conditions analysis for the 2026 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 will continue to operate over capacity and at LOS F during the AM peak hour, while the northbound through, southbound left-turn and westbound approach are all forecast to operate above capacity and at LOS F during the PM peak hour. The signalized intersection is

also projected to now operate at LOS D overall during the AM peak hour and LOS E overall during the PM peak hour. Improvements are discussed in Section 1.5.1 below.

The future total conditions analysis for the 2031 horizon year indicates that the westbound approach on Wellington Road 22 at Wellington Road 24 will continue to operate over capacity and at LOS F during the AM peak hour, while the northbound through, southbound left-turn and westbound approach are all forecast to operate above capacity and at LOS F during the PM peak hour. The signalized intersection is also projected to continue operating at LOS D overall during the AM peak hour and now at LOS F overall during the PM peak hour. Improvements are discussed in Section 1.5.1 below.

The majority of movements at the remaining unsignalized intersections are calculated to operate acceptably (at LOS A through LOS D) during both the AM and PM peak hours under volumes projected for the 2026 and 2031 horizon years. However, the eastbound and westbound approaches of George Street and Mill Street are projected to operate at LOS E and LOS F during the PM peak hour in both 2026 and 2031 during the PM peak hour. This is in contrast when the movements at this intersection were calculated to operate at LOS C and LOS D under the future total background traffic volumes. It was also noted in Section 7.2.1 that a movement operating at LOS F during a peak hour with a delay of 56.8 seconds is considered to be acceptable. It is noted that this delay has been projected to increase to 69.3 seconds by 2031. No remedial measures were proposed at this intersection.

The two intersections proposed to connect to Wellington Road 24 were projected to operate in a generally acceptable manner, although there were no additional turn lanes considered or assessed at either of these locations.

It was found that the proposed internal roundabout at Street 'A' and Street 'B'/Street 'G' is forecast to operate at LOS A during the AM and PM peak hours, with minimal queuing extending back towards Wellington Road 24.

1.5.1 Remedial Measures

Under the future total traffic volumes for both the 2026 and 2031 horizon years, the only location where recommended improvements were made were at the Wellington Road 22 and Wellington Road 24 signalized intersection. Improvements include:

- Signal timing adjustments
- A new eastbound left-turn lane
- A new westbound left-turn lane
- An extended southbound left-turn lane
- A new northbound right-turn lane
- A new westbound right-turn lane.

Within the associated Synchro analysis and reports, it was noted that a permissive/protected left-turn phase was added to several left-turn movements but wasn't identified explicitly within the report. It has been noted that during the AM peak hour under the 2026 future total traffic conditions, the added left-turn permissive/protected phases are for the westbound and southbound left-turn movements during the AM peak hour while during the PM peak hour, the permissive/protected phases switch to the eastbound and southbound left-turn movements. Separately, when considering the 2031 future total traffic volumes, the left-turn permissive/protected phases are for the westbound and southbound left-turn movements during the AM peak hour while the left-turn permissive/protected phases are noted for the westbound, eastbound and southbound left-turn movements during the PM peak hour.

1.6 Candevcon's Summary

At the Wellington Road 22 and Wellington Road 24 intersection, a number of recommendations are made. These include the introduction of additional turning lanes and modifying the signal timing (cycle length as well as adding left-turn phases for several different left-turn movements). It is also noted that the Wellington Road 24 and George Street/Mill Street intersection westbound approach is projected to operate at LOS F during the PM peak hour but the study deems this matter to be acceptable, noting that the calculated delay will be approximately 70 seconds under the 2031 total future traffic volumes.

The study identifies a number of improvements but does not indicate whether or not the recommended improvements are triggered by a background condition (i.e., one or more of the assumed background developments) or are due to the subject subdivision.

2.0 Peer Review Summary

The following represents a summary of the findings of this peer review exercise:

- The associated analysis, findings for the existing and future total background conditions have been found to be accurate and appropriate
- The associated analysis, findings for the trip generation and distribution of the proposed subdivision were not clear, especially in regard to:
 - Whether or not any internal capture rates were applied between the elementary school and the residential land uses within the subject subdivision
 - Whether or not trips generated by the residential land uses and elementary school were distributed and assigned separately
- The associated analysis, findings for the future total conditions may need to be revised once the associated trip generation and distribution calculations are confirmed
- The study makes several recommendations to geometric and signal timing improvements at the Wellington Road 22 and Wellington Road 26 but does not comment as to whether or not the additional improvements are triggered by the background traffic volume growth by other developments or the subject residential development. It is recommended that improvements be considered to accommodate forecast background traffic volumes

- Should an elementary school be proposed along Street 'A', there may be a new desire line for pedestrians crossing Wellington Road 24 at the Howe Street/Street 'A' intersection, and there may need to be a change to traffic control at the intersection (such as a pedestrian crossover, pedestrian signal and/or a full traffic signal)
- A traffic signal warrant should be undertaken for the George Street and Mill Street intersection. However, as separate transportation impact studies will be prepared to support some of the background developments closer to this intersection, this signal warrant could likely be completed by one or more of those studies.

However, the submitted TIS is incomplete, noting that the following four matters that were explicitly scoped out with Candevcon were not included:

- The report should include a discussion as to whether or not a local road connection to McMurchy Lane and Upper Canada Drive could be introduced rather than connecting Street 'E' to Wellington Road 24
- Due to the vertical profile of Wellington Road 24, a safety assessment will need to be completed at both locations. As you can see across the corridor from where Street 'E' was constructed, Barbour Drive features a cul-de-sac and no direct connection
- Due to the vertical profile along Wellington Road 24 fronting the proposed residential development, sightline analysis needs to be completed at the locations of the two intersections are being proposed to connect to Wellington Road 24 (future Street 'A' and future Street 'E'). Based on available speeds found along this portion of the corridor, a 70 km/h design speed (posted + 30 km/h) should be used
- The need for both a northbound left-turn lane and a southbound right-turn lane at the Howe Street/future Street 'A' intersection and the future Street 'E' intersection need to be explicitly assessed utilizing a 70 km/h design speed.

A discussion regarding the need for Street 'E' to connect to Wellington Road 24 should occur as it may be feasible to revise the subdivision concept where a separate local road connection to the subdivision lands via Upper Canada Drive and McMurchy Lane could be established.

Should this alternative connection be implemented, it would likely have an impact on how the site-generated traffic would be assigned and distributed through the Study Area.

Given the incomplete submission, a revised Transportation Impact Study or subsequent addendum should be ultimately prepared and submitted.

Yours sincerely,

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