



**GILMORE & ASSOCIATES, INC.**  
ENGINEERING & CONSULTING SERVICES

**MEMORANDUM**

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**Date:** August 28, 2013

**To:** Steve Norcini, P.E.  
Radnor Township Public Works Director

**From:** Amy Kaminski, P.E., PTOE  
G&A Transportation/Traffic Services Manager

**cc:** Roger Phillips, P.E.  
Gannett Fleming, Inc., Senior Project Engineer

**Reference:** 811 Newtown Road  
Ardrossan Farm East Conditional Use Application –  
Transportation Impact Study and Land Development Review

G&A : 13-07018.01

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Pursuant to your request, Gilmore & Associates, Inc. has completed a transportation review of the referenced Conditional Use application for Ardrossan Farm for the applicant, ESIII LP. The applicant intends to develop a 311.54 acre parcel into eighty (87) residential lots which includes eleven (11) existing residential lots. Gilmore offers the following for Radnor Township consideration:

**I. REVIEWED MATERIALS**

- A. Application of Conditional Use Approval of a Density Modification Development for 311.54 Acres of Ardrossan Farm, dated July 31, 2013, prepared for ESIII LP, prepared by Saul Ewing, LLP
- B. Ardrossan Farm-East Parcel Transportation Impact Study, dated July 26, 2013, prepared for ESIII LP, prepared by Traffic Planning and Design, Inc.
- C. Conditional Use Plan (35 Sheets), dated July 31, 2013, prepared for ESIII LP, prepared by Momenee & Associates, Inc.

**II. REVIEW COMMENTS**

**A. APPLICATION**

- 1. The conditional use application cover letter identifies a total of eighty-seven (87) parcels will be developed; eleven (11) of which are existing residential lots

2. The application does not include the existing Main House and associated 10.022 Acres; total development for the site is 301.4 Acres
3. The application does not generate any transportation comments

## B. TRANSPORTATION IMPACT STUDY

1. During the scoping discussion with the Township Traffic Engineer, it was unclear that the project involved two separate projects and two transportation impact studies would be prepared. It would be more efficient to provide one transportation impact study and include all information for both land development sites. Much of the below comments are generated because a significant number of trips were not analyzed in the East study area. We recommend the applicant revise the East Ardrossan TIS to include all information for the West Ardrossan (Wheeler Field) in a single submission addressing all comments as indicated in this review letter and the West Wheeler Field review letter. This would provide a comprehensive analysis for both development parcels and provide the quantitative impact to the analyzed intersections.
2. The TIS provides the following roadway improvements:
  - a. The TIS was based on traffic counts obtained in mid-July, 2013 outside of the typical school year for public, private and post-secondary schools. The report indicates the traffic counts will be verified with spot counts post-Labor Day.
  - b. The report indicates that the applicant should discuss with the Township, potential safety improvements along the roadways in the vicinity of the site.
  - c. Elimination of vegetation to provide adequate sight distance at the new/modified accesses.
  - d. Construct new/modified accesses to Newtown Road and Darby-Paoli Road, in accordance with applicable PennDOT standards.
3. Scope of Study:

Although the report discusses the studied roadways, information regarding the studied intersections, lane widths and traffic control measures were not included in the discussion. The report should be revised to include this useful information.
4. Crash Data Investigation:

PennDOT Publication 46 *Traffic Engineering Manual*, requires both reportable and non-reportable incidents in a crash analysis. In addition, the minimum criterion for mitigation is for a **continuous 12-month**

*period*, the TIS crash analysis excludes non-reportable crashes and quantifies the number of crashes by calendar month as opposed to a 12-month period. The report must be modified to include the required non-reportable records and analyzed for a continuous 12-month period. In addition, all crash reports must be provided electronically to the Radnor Township engineering staff for verification of the crash analysis.

5. Sight Distance:

- a. PennDOT Publication 46 *Traffic Engineering Manual*, Chapter 11 *Traffic Studies* indicates that if an engineering study has determined that the 85<sup>th</sup> percentile speed of the roadway is higher than the posted speed limit, the 85<sup>th</sup> percentile speed may be used at the discretion of the Engineering District. The 85<sup>th</sup> percentile speed of both Newtown Road and Darby Paoli Road are unknown; therefore is uncertain if the posted speed limit should be utilized for the sight distance calculations. We recommend the applicant obtain the 85<sup>th</sup> percentile speed of both roadways and verify the existing sight distance is adequate. The presented calculations were based on the posted speed limit.
- b. The TIS indicates the sight distance at all driveways/accesses meet or exceed PennDOT required sight distance with removal of on-site vegetation and wall. The record plan must include a note identifying the required and available sight distance for each existing and new access driveway, based on the 85<sup>th</sup> percentile speed. In addition, we recommend verification of the sight distance following the removal of the on-site vegetation and wall.

6. Trip Distribution Discrepancies:

- a. Although the report indicates 20% of the generated trips will enter and exit at Conestoga Road and Newtown Road, no trips were distributed to this location.
- b. The TIS indicates **15% of the generated traffic was distributed to Sawmill Road at Darby-Paoli Road**; however, this intersection was not included in the traffic counts, graphics or in the Synchro analysis. Please revise the report to include the traffic counts for this intersection and the associated Synchro Analysis.
- c. The TIS indicates **2% of the generated traffic was distributed to Godfrey Road at Darby-Paoli Road**; however, this intersection was not included in the traffic counts, graphics or in the Synchro analysis. Please revise the report to include the traffic counts for this intersection and the associated Synchro Analysis.
- d. Effectively, 37% of the traffic generated by this proposed development was not analyzed in this analysis due to the identified discrepancies.

- e. The Trip Distribution must be revised and developed by TOD and movement to provide a distribution that closely reflects the typical AM and PM fluctuations in vehicular movements at intersections.
7. Conestoga Road and Newtown Road: Although the report indicates 20% of the trips will be assigned to this external link, no trips were assigned for the AM and PM Peak Hours.
8. Table 12: *Level of Service (Delay) Summary* does not provide the delay by movement as required by PennDOT Strike-Off Letter (SOL) 470-09-4 *Transportation Impact Study Guidelines*.
9. Table 12 include a footnote regarding the deficient Level of Service (LOS) D for the projected 2020 conditions on the westbound approach at Darby Paoli Road and Newtown Road as "LOS C under the base site plan with lesser units). The explanation provides no guidance as to potential mitigation measures for the full build-out of the site.
10. Conestoga Road and Radnor-Chester Road: During a field visit on Thursday afternoon, August 15, 2013 during the PM Peak Hour, the intersection was observed to have substantial southbound Radnor-Chester Road queues and delays. However, the TIS analysis indicates an acceptable Level of Service C for this approach, which leads us to conclude the traffic counts may have been based on the number of vehicles served as opposed to vehicular demand. The applicant should visit the intersection again, and conduct a field delay study on each approach to verify base conditions in the study.
11. As required by PennDOT Strike-Off Letter (SOL) 470-09-4 *Transportation Impact Study Guidelines*, a queue analysis should be provided in tabular format for all studied intersections.
12. The report identifies two intersections that do not follow conventional traffic control; namely, Darby-Paoli Road & Newtown Road and Darby-Paoli Road & Brooke Road.

The current operation includes a "T" intersection and requires motorists to observe STOP signs posted on two of the three approaches, with the stem of the "T" always stopped. Such a configuration stops one of the conventionally through movements on Darby-Paoli Road, but allows the opposing approach to continue as a free-flow movement. Motorists on the stem of the "T" have difficulty ascertaining the intersection right-of-way when a motorist on Darby-Paoli Road is stopped, and a motorist is approaching from the opposing free-flowing approach. Such a configuration is not easily conveyed, much less comprehended, by motorists, and even less so by motorists new to the area.

As vehicular volumes continue to increase in this area of the Township, this unconventional traffic control operation may benefit from an all-way stop control at the two intersections on Darby-Paoli Road, based on PennDOT and MUTCD standards.

13. The provided Synchro and SimTraffic reports did not furnish the necessary LOS and delay information for the following intersections; therefore the data could not be verified:
  - a. Newtown Road and Radnor Chester Road
  - b. Darby-Paoli Road & Newtown Road
  - c. Darby-Paoli Road & Brooke Road

#### C. CONDITIONAL USE PLAN SET (35 Sheets)

1. PennDOT will require a Highway Occupancy Permit (HOP) application for all new and revised accesses to both Darby-Paoli Road (S.R. 1015) and Newtown Road (S.R. 1021). The Township requests the opportunity to review all HOP plan submissions to PennDOT; as well as be given the opportunity to attend all meetings with PennDOT and carbon copied on all correspondence regarding the same. We encourage the applicant begin early discussions (sketch plan phase) with PennDOT to alleviate future costly design revisions.
2. Phase 4 parcel 4-11 does not appear to have any driveway access.
3. §255-27.I: The plan includes as many as ten accesses (both existing and proposed) for this land development project with each access representing an additional conflict point for motorists traveling along both Newtown Road and Darby Paoli Road without benefit of any internal circulation. We recommend the applicant consider an interconnected roadway that would eliminate several of the existing and proposed accesses to Newtown Road and Darby Paoli Road, while maintaining the desired view shed.
4. Many of the parcels are located a significant distance from public roads for emergency service access. As such, we recommend a minimum of two accesses or one access along with an emergency access for each developed parcel. In the event of an emergency with one access blocked, an alternative access must be available.

#### D. FINDINGS

§280.145.C-E, G, I: The reviewed documents were incomplete as presented, and do not provide sufficient information to conclude the proposed development will not be detrimental to the safety, health, and general welfare of Radnor Township.

If you have any questions regarding the above, please contact this office.

