



December 4, 2018

Mr. Troy Brestel  
Project Engineer  
Development Coordination  
DelDOT Division of Planning  
P O Box 778  
Dover, DE 19903

RE: Agreement No. 1774  
Project Number T201769002  
Traffic Impact Study Services  
**Task 18A-Tower Hill f.k.a. Groome Property**

Dear Mr. Brestel:

Johnson, Mirmiran and Thompson (JMT) has completed the review of the Traffic Impact Study (TIS) for Tower Hill (formerly known as Groome Property), prepared by The Traffic Group. dated April 23, 2018. This task was assigned Task Number 18A. The Traffic Group prepared the report in a manner generally consistent with DelDOT's *Development Coordination Manual*.

The TIS evaluates the impacts of a proposed residential development in Sussex County, Delaware. The development would be comprised of 295 single family homes and the site is located on the northeast and northwest corners of the Lynn Road (Sussex Road 266A) and New Road (Sussex Road 266) intersection. One full access point, which would create a four-legged intersection along Lynn Road, is proposed. Although the latest Concept Plan depicts two full access points along Lynn Road, to maintain consistency with the DelDOT Scoping Meeting memorandum dated November 20, 2017 and the TIS report only one full access point is considered in this review. The subject property is on an approximately 134.69-acre assemblage of parcels that are zoned as AR-1 (Agricultural Residential) and no rezoning is needed to permit the proposed use. Construction is expected to be complete in 2025.

DelDOT currently has two relevant and ongoing improvement projects within the study area, which are the *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601) and the *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T201612501). None of the study area intersections were selected for the Hazard Elimination Program (HEP) within the last five years.

The *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601) involves removing the existing unsignalized intersection of Old Orchard Road and Savannah Road, and realigning Orchard Road to intersect with Savannah Road opposite Wescoats Road. Per the latest concept plan, both approaches of Savannah Road as well as the southbound Orchard Road approach would provide one left turn lane, one through lane, and one right turn lane at the realigned intersection. The northbound Wescoats Road approach would provide one left turn lane, one shared through/left turn lane, and one right turn lane. Pedestrian crosswalks and bike lanes would



be provided at the realigned intersection. A public workshop was held in February 2018 to discuss the conceptual layouts and construction is anticipated to be complete in 2022. Additional information can be found on the DelDOT project website at <https://www.deldot.gov/information/projects/OldOrchardRoad/index.shtml>.

The *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T201612501) project involves reconfiguring the Nassau Road intersections with Delaware Route 1 and constructing service roads on both sides of Delaware Route 1. Per the latest concept plan, one of the service roads would be an extension of Nassau Road using the current northbound lanes of Delaware Route 1 and the other service road would connect to the Minos Conaway intersection and transition to Janice Road. The existing T-intersection of New Road with Nassau Road would be reconfigured to a one-lane roundabout and New Road would be extended under the Nassau Bridge to connect the two service roads. A public workshop was held in February 2018 to discuss the conceptual layouts and construction is anticipated to be complete in 2024. Additional information can be found on the DelDOT project website at <https://www.deldot.gov/information/projects/SR1MinosConaway/index.shtml>.

New Road, Pilottown Road, and Savannah Road are all part of the Lewes Scenic and Historic Byway. A collaborative effort by DelDOT, DNREC (Delaware Department of Natural Resources and Environmental Control), Sussex County, the City of Lewes, and other groups developed the *Corridor Management Plan* in October 2015 for this byway. The *Delaware Byways Program* includes the identification, promotion, preservation, and enhancement of Delaware roadways that have scenic, historic, natural, cultural, recreational, or archaeological significance. The Lewes Scenic and Historic Byway is approximately 12.35 miles in length, traverses through the City of Lewes, and extends into Sussex County via New Road, Pilottown Road, Savannah Road, Cape Henlopen Drive, Gills Neck Road, and Kings Highway. Based on the *Corridor Management Plan*, new pedestrian facilities should be constructed as shared use pathways. Funding has been requested for the development of a New Road Master Plan that would provide more specific guidance for road improvements in that corridor than the *Corridor Management Plan* provides. When the Master Plan is adopted, any subsequent improvements to New Road should take into consideration the recommendations from the plan. Additional information regarding the Lewes Scenic and Historic Byway can be found at the DelDOT website: <https://www.deldot.gov/Programs/byways/index.shtml?dc=lewes>

In addition, the proposed development would be within the limits of a proposed Lewes TID. DelDOT is coordinating with the City of Lewes and Sussex County regarding the details of the potential TID.

Based on our review of the traffic impact study, we have the following comments and recommendations:

The following intersections exhibit level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements.



<b><i>Intersection</i></b>	<b><i>Situations for which LOS deficiencies occur</i></b>
Delaware Route 1/Nassau Road (north intersection)	2017 AM, PM, and Saturday Existing (Case 1)
Delaware Route 1/Nassau Road (south intersection)	2017 AM, PM and Saturday Existing (Case 1)
Old Orchard Road/Savannah Road (Sussex Road 18)	2017 AM, PM, and Saturday Existing (Case 1)

The unsignalized intersections of Delaware Route 1/Nassau Road (north and south of New Road) and Old Orchard Road/Savannah Road all exhibit LOS deficiencies during the AM, PM, and Saturday existing conditions. However, with the improvements associated with the *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T201612501) and *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601) projects described above, all the LOS deficiencies would be eliminated.

Although the Lynn Road and New Road (Sussex Road 266) intersection operates at acceptable LOS with or without the proposed development, it is recommended that the developer be responsible for modifying the intersection to be a roundabout to accommodate the additional traffic to and from the site. Furthermore, DelDOT has received speeding concerns along New Road and the installation of a roundabout would provide traffic calming effects with reducing speeds as vehicles traverse along this intersection.

Should Sussex County approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan. All applicable agreements (i.e. letter agreements for off-site improvements and traffic signal agreements) should be executed prior to entrance plan approval for the proposed development.

1. The developer should widen Lynn Road from the New Road intersection to the northerly site frontage limits to provide two eleven-foot travel lanes and two five-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT’s discretion. DelDOT should analyze the existing lane’s pavement section and recommend an overlay thickness to the developer’s engineer if necessary.
2. The developer should widen the New Road site frontage to provide two eleven-foot travel lanes and two six-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DelDOT’s discretion. DelDOT should analyze the existing lane’s pavement section and recommend an overlay thickness to the developer’s engineer if necessary. The developer should complete the frontage improvements to New Road prior to the issuance of the 140<sup>th</sup> certificate of occupancy.
3. The developer should construct two four-legged full access entrances along Lynn Road. The southern entrance should provide the lane configurations as shown in the table below:



<b>Approach</b>	<b>Current Configuration</b>	<b>Proposed Configuration</b>
Eastbound Site Entrance	Approach does not exist	One shared through/left turn/right turn lane
Westbound Site Entrance	Approach does not exist	One shared through/left turn/right turn lane
Northbound Lynn Road	One through lane	One shared through/left turn lane and one right turn lane
Southbound Lynn Road	One through lane	One shared through/left turn/right turn lane

The northern entrance should provide the lane configurations as shown in the table below:

<b>Approach</b>	<b>Current Configuration</b>	<b>Proposed Configuration</b>
Eastbound Site Entrance	Approach does not exist	One shared through/left turn/right turn lane
Westbound Site Entrance	Approach does not exist	One shared through/left turn/right turn lane
Northbound Lynn Road	One through lane	One shared through/left turn/right turn lane
Southbound Lynn Road	One through lane	One shared through/left turn/right turn lane

The developer should coordinate with DelDOT’s Coordination Development section during the plan review process to determine the exact location of the entrances.

- The developer should modify the existing Lynn Road/New Road intersection to be a one-lane roundabout and provide the lane configurations as shown in the table below:

<b>Approach</b>	<b>Current Configuration</b>	<b>Proposed Configuration</b>
Eastbound New Road	One shared through/left turn lane	One shared through/left turn lane
Westbound New Road	One shared through/right turn lane	One shared through/right turn lane
Southbound Lynn Road	One shared left turn/right turn lane	One shared left turn/right turn lane

The roundabout design should follow *NCHRP: Report 672 2<sup>nd</sup> Edition – Roundabouts: An Information Guide*, DelDOT’s *Road Design Manual*, and DelDOT’s *Design Guidance Memorandum Number 1-26* for roundabouts. The roundabout should also be designed to



accommodate pedestrians and bicyclists, be in compliance with the *Corridor Management Plan*, and take recommendations from the New Road Master Plan into consideration. Should the developer choose to landscape the center of the roundabout, the developer should enter into a maintenance agreement with DeLDOT. Additionally, lighting at the roundabout should be evaluated per DeLDOT's lighting guidelines. The developer should submit a plan to DeLDOT's Development Coordination and other pertinent sections depicting the roundabout design. The final design of the roundabout should be determined during the Entrance Plan review process.

5. The developer should enter into an agreement with DeLDOT to fund an equitable portion of the improvements planned as part of the *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601) project or the developer may choose to design and construct off-site improvements to New Road as discussed in Item #7. The developer should coordinate with DeLDOT on the implementation and equitable cost sharing of the improvements during the plan review process.
6. The developer should enter into an agreement with DeLDOT to fund an equitable portion of the improvements planned as part of the *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T201612501) project or the developer may choose to design and construct off-site improvements to New Road as discussed in Item #7. The developer should coordinate with DeLDOT on the implementation and equitable cost sharing of the improvements during the plan review process.
7. As an option to equitable contributions to the DeLDOT projects discussed in Items #5 and #6 above, the developer should widen New Road from Asburn Lane to tie in with the frontage improvements for Tower Hill on New Road and from Schaffer Lane to tie in with the frontage improvements for Tower Hill on New Road. These off-site improvements to New Road should be administered under a separate agreement and should be subject to the following conditions.
  - a. Consistent with the requirements for the New Road improvements along the site frontage in Item #2, the developer should widen New Road to two eleven-foot travel lanes and two six-foot shoulders. The developer should provide a bituminous concrete overlay to the existing travel lanes, at DeLDOT's discretion. DeLDOT should analyze the existing lane's pavement section and recommend an overlay thickness to the developer's engineer if necessary.



- b. Consistent with the requirements for the New Road improvements along the site frontage in Item #2, the developer should complete the off-site improvements to New Road prior to the issuance of the 140th certificate of occupancy for Tower Hill.
  - c. Additional right-of-way and easements required will be obtained through condemnation powers granted to the developer by DelDOT.
  - d. The off-site improvements to New Road may be modified to assure no disturbance of existing hardscape or landscape features along Ashburn Estates.
  - e. The costs of these off-site frontage improvements will not exceed the equitable contributions identified for Items #5 and #6 above (\$750,000). DelDOT will be responsible for any additional costs for the off-site improvements to New Road. However, if those off-site improvements are less than \$750,000 (including engineering) the difference should be contributed by the developer to DelDOT projects to reconstruct the New Road Canary Creek Bridge or the DelDOT project *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601).
8. As New Road is within Delaware’s Lewes Scenic and Historic Byway, all off-site and frontage improvements should be designed for consistency with the *Corridor Management Plan* and should take recommendations from the New Road Master Plan into consideration.
  9. The following bicycle, pedestrian, and transit improvements should be included:
    - a. A minimum fifteen-foot wide permanent easement from the edge of the right-of-way should be dedicated to DelDOT along the Lynn Road and New Road site frontages. Within this easement, the developer should construct a ten-foot wide shared-use path that meets current AASHTO and ADA standards. A minimum five-foot setback should be maintained from the edge of the pavement to the shared-use path. If feasible, the shared-use path should be placed behind utility poles and street trees should be provided within the buffer area. The developer should coordinate with DelDOT’s Development Coordination section during the plan review process to identify the exact locations of the shared-use paths.
    - b. All internal roads should be provided with sidewalks on both sides.



- c. ADA compliant curb ramps and marked crosswalks should be provided at the Lynn Road full access site entrance as well as along the northerly leg of the Lynn Road/New Road intersection. The use of diagonal curb ramps is discouraged.
- d. Five-foot wide bicycle lanes should be incorporated in the shoulder along both directions of Lynn Road and New Road within the site frontage limits.
- e. When a right turn lane is added along New Road, a five-foot wide bicycle lane should be maintained through the right turn lane to facilitate safe and unimpeded bicycle travel. A RIGHT TURN YIELD TO BIKES sign (MUTCD R4-4) should be added before the start of each right turn lane.
- f. Utility covers should be moved outside of any designated bicycle lanes and any proposed sidewalks/shared-use paths or should be flush with the pavement.

Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DeIDOT's Plan Review process. Improvements in this TIS may be considered "significant" under DeIDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DeIDOT's website at [https://www.deldot.gov/Publications/manuals/de\\_mutcd/index.shtml](https://www.deldot.gov/Publications/manuals/de_mutcd/index.shtml). For any additional information regarding the work zone impact and mitigation procedures during construction please contact Mr. Mark Buckalew of DeIDOT's Traffic Section. Mr. Buckalew can be reached at (302) 894-6353 or by email at [Mark.Buckalew@state.de.us](mailto:Mark.Buckalew@state.de.us).

Additional details on our review of the TIS are attached. Please contact me at (302) 266-9600 if you have any questions concerning this review.

Sincerely,  
Johnson, Mirmiran, and Thompson, Inc.

*Mir Wahed*  
Mir Wahed, P.E., PTOE

cc: Joanne Arellano, P.E., PTOE

Enclosure

## **General Information**

**Report date:** April 23, 2018

**Prepared by:** The Traffic Group, Inc.

**Prepared for:** New Road Ventures DE, LLC

**Tax Parcel:** 335-8.00-2.00 and 335-8.00-2.02

**Generally consistent with DelDOT's *Development Coordination Manual*:** Yes.

## **Project Description and Background**

**Description:** The developer seeks to develop 295 single family houses.

**Location:** The subject site is located on the northeast and northwest corners of the intersection of Lynn Road (Sussex Road 266A) and New Road (Sussex Road 266), in Sussex County.

**Amount of Land to be developed:** The subject property is on an approximately 134.69-acre assemblage of parcels.

**Land Use approval(s) needed:** Entrance Plan approval.

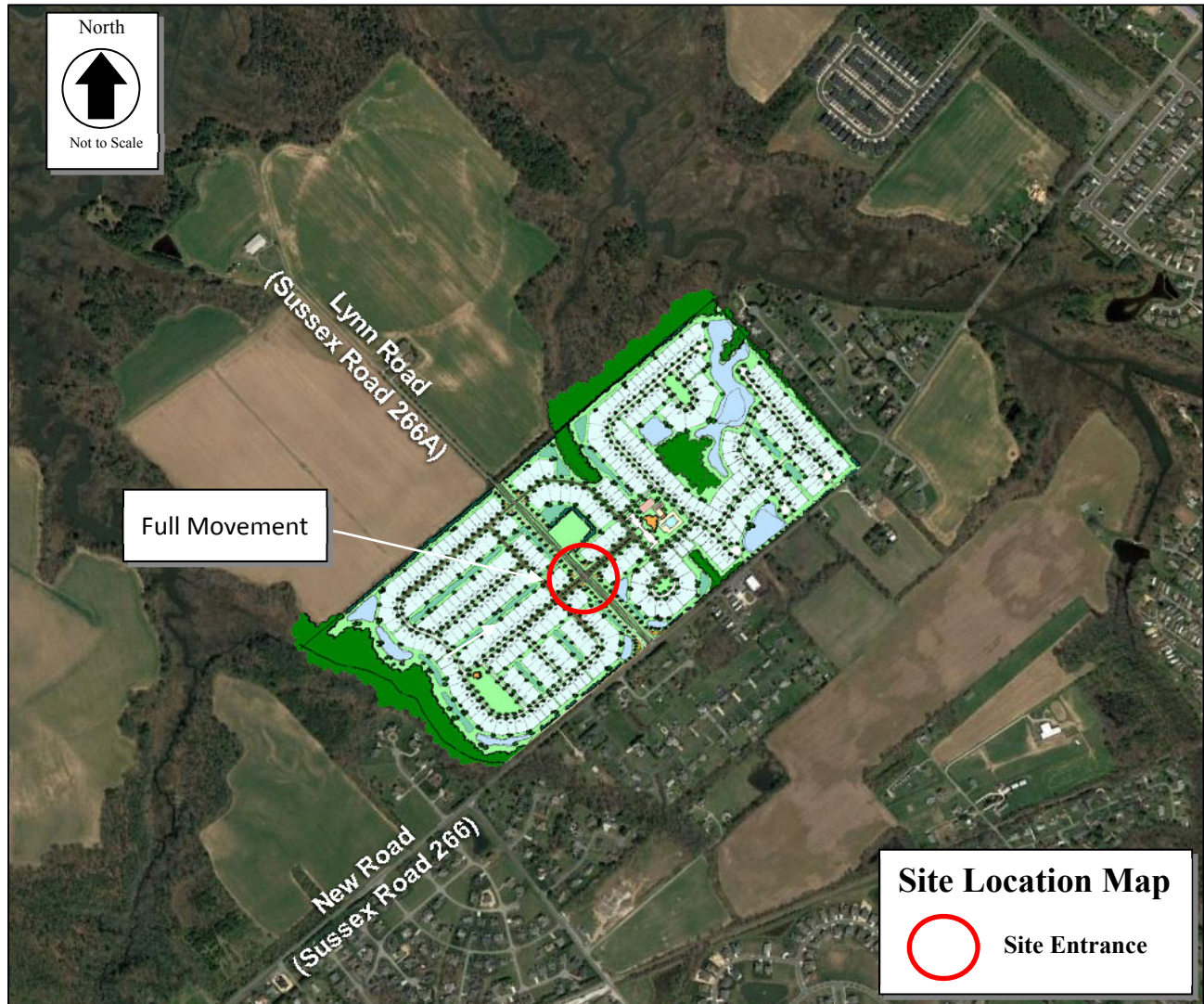
**Proposed completion date:** 2025

**Proposed access locations:** One full access point, which would create a four-legged intersection along Lynn Road (Sussex Road 266A), is proposed. Although the latest Concept Plan depicts two full access points along Lynn Road (Sussex Road 266A), to maintain consistency with the DelDOT Scoping Meeting memorandum dated November 20, 2017 and the TIS report only one full access point is considered in this review.

- 2017 Average Annual Daily Traffic on Lynn Road (Sussex Road 266A): 38 vehicles per day.
- 2017 Average Annual Daily Traffic on New Road (Sussex Road 266): 4,820 vehicles per day.



## Site Map



\*Graphic is an approximation based on the Concept Plan prepared by Solutions Integrated Planning Engineering & Management, LLC, date unknown.

## Relevant and On-going Projects

DelDOT currently has two relevant and ongoing improvement projects within the study area, which are the *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601) and the *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T201612501). None of the study area intersections were selected for the Hazard Elimination Program (HEP) within the last five years.

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intersection. The northbound Wescoats Road approach would provide one left turn lane, one shared through/left turn lane, and one right turn lane. Pedestrian crosswalks and bike lanes would be provided at the realigned intersection. A public workshop was held in February 2018 to discuss the conceptual layouts and construction is anticipated to be complete in 2022. Additional information can be found on the DelDOT project website at <https://www.deldot.gov/information/projects/OldOrchardRoad/index.shtml>.

The *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T201612501) project involves reconfiguring the Nassau Road intersections with Delaware Route 1 and constructing service roads on both sides of Delaware Route 1. Per the latest concept plan, one of the service roads would be an extension of Nassau Road using the current northbound lanes of Delaware Route 1 and the other service road would connect to the Minos Conaway intersection and transition to Janice Road. The existing T-intersection of New Road with Nassau Road would be reconfigured to a one-lane roundabout and New Road would be extended under the Nassau Bridge to connect the two service roads. A public workshop was held in February 2018 to discuss the conceptual layouts and construction is anticipated to be complete in 2024. Additional information can be found on the DelDOT project website at <https://www.deldot.gov/information/projects/SR1MinosConaway/index.shtml>.

New Road, Pilottown Road, and Savannah Road are all part of the Lewes Scenic and Historic Byway. A collaborative effort by DelDOT, DNREC (Delaware Department of Natural Resources and Environmental Control), Sussex County, the City of Lewes, and other groups developed the *Corridor Management Plan* in October 2015 for this byway. The *Delaware Byways Program* includes the identification, promotion, preservation, and enhancement of Delaware roadways that have scenic, historic, natural, cultural, recreational, or archaeological significance. The Lewes Scenic and Historic Byway is approximately 12.35 miles in length, traverses through the City of Lewes, and extends into Sussex County via New Road, Pilottown Road, Savannah Road, Cape Henlopen Drive, Gills Neck Road, and Kings Highway. Based on the *Corridor Management Plan*, new pedestrian facilities should be constructed as shared use pathways. Funding has been requested for the development of a New Road Master Plan that would provide more specific guidance for road improvements in that corridor than the *Corridor Management Plan* provides. When the Master Plan is adopted, any subsequent improvements to New Road should take into consideration the recommendations from the plan. Additional information regarding the Lewes Scenic and Historic Byway can be found at the DelDOT website: <https://www.deldot.gov/Programs/byways/index.shtml?dc=lewes>

In addition, the proposed development would be within the limits of a proposed Lewes TID. DelDOT is coordinating with the City of Lewes and Sussex County regarding the details of the potential TID.

### **Livable Delaware**

*(Source: Delaware Strategies for State Policies and Spending, 2015)*

### **Location with respect to the Strategies for State Policies and Spending Map of Delaware:**

The proposed development is located within the Investment Level 3 area.

### **Investment Level 3**

Investment Level 3 Areas generally fall into two categories. The first category covers lands that are in the long-term growth plans of counties or municipalities where development is not necessary to accommodate expected population growth during a five-year planning period (or longer). The second category includes lands that are adjacent to or intermingled with fast-growing areas within counties or municipalities that are otherwise categorized as Investment Levels 1 or 2. Investment Level 3 is further characterized by areas with new development separated from existing development by a substantial amount of vacant land that is not contiguous with existing infrastructure, areas that are experiencing some development pressure, areas with existing but disconnected development, and possible lack of adequate infrastructure.

The state will consider investing in infrastructure within Investment Level 3 Areas once the Investment Level 1 and 2 Areas are substantially built out, or when the infrastructure or facilities are logical extensions of existing systems and deemed appropriate to serve a particular area. The priorities in the Level 3 Areas are for DelDOT to focus on regional movements between towns and other population centers. Local roadway improvements will be made by developers and property owners as development occurs. Lower priority is given to transportation system–capacity improvements and transit-system enhancements.

#### **Proposed Development’s Compatibility with Livable Delaware:**

According to Livable Delaware, Level 3 areas may be desirable for housing in conjunction with local government comprehensive plans. Per the *Sussex County Comprehensive Plan*, single family detached homes are permitted in these areas. Therefore, this development appears to be generally consistent with the 2015 update of the Livable Delaware “Strategies for State Policies and Spending”.

#### **Comprehensive Plans**

*(Source: Sussex County, June 2008 Comprehensive Plan Update)*

#### **Sussex County Comprehensive Plan:**

The subject property is zoned as AR-1 (Agricultural Residential). Rezoning is not necessary to permit the proposed land use.

#### **Proposed Development’s Compatibility with the Sussex County Comprehensive Plan:**

Per the *Sussex County Comprehensive Plan*, the future land use plan depicts this area as Low Density and single family detached homes are permitted in Low Density Areas. As such, the proposed use appears to be generally compatible with the *Sussex County Comprehensive Plan*.

#### **Trip Generation**

The trip generation for the proposed development was determined by using the comparable land use and rates/equations contained in the *Trip Generation, 9<sup>th</sup> Edition: An ITE Informational Report*, published by the Institute of Transportation Engineers (ITE) for ITE Land Use Code 210 (single family detached housing).

The peak period trip generation utilized in the TIS for the proposed development is included in Table 1.

**Table 1**  
Tower Hill (f.k.a. Groome Property) Trip Generation

Land Use	ADT	AM Peak Hour			PM Peak Hour			SAT Peak Hour		
		In	Out	Total	In	Out	Total	In	Out	Total
295 Units Single-Family Detached Housing	2,841	54	162	216	175	103	278	146	125	271

**Intersections examined:**

1. Site Entrance / Lynn Road (Sussex Road 266A)
2. Lynn Road / New Road (Sussex Road 266)
3. New Road / Old Orchard Road (Sussex Road 269A)
4. New Road / Nassau Road (Sussex Road 266B)
5. Delaware Route 1 / Nassau Road (north intersection)
6. Delaware Route 1 / Nassau Road (south intersection)
7. Old Orchard Road / Parker Run
8. Old Orchard Road / Savannah Road (Sussex Road 18)
9. New Road and / Road
10. New Road / Captains Circle
11. New Road / West 4<sup>th</sup> Street
12. New Road / Pilottown Road / Front Street (Sussex Road 267)

**Conditions examined:**

1. Case 1 – 2017 Existing
2. Case 2 – 2025 without development
3. Case 3 – 2025 with development

**Peak hours evaluated:** Weekday morning, Weekday evening, and Saturday midday peak hours.

**Committed Developments considered:**

1. Point Farm (69 single-family detached houses)
2. Reserves at Nassau II (147 age-restricted dwelling units, which include 43 single-family detached houses, 46 duplexes, and 56 condominiums/townhouses)
3. Vineyards at Nassau Valley (170 condominiums/townhouses, 23,500 square feet of general office, 150,000 square feet of shopping center, and 20,000 square feet high turnover sit-down restaurant)
4. Lewes Crossing (f.k.a. Deep Valley Farm) (161 unbuilt single-family detached houses)

5. Gills Neck Village Center (75,000 square foot shopping center, 287 single-family detached houses, and 136 townhouses/condominiums)

*Note: Gills Neck Village Center was not considered in the TIS as there is no current application for this development.*

### **Intersection Descriptions**

#### **1. Site Access/Lynn Road (Sussex Road 266A)**

**Type of Control:** Proposed two-way stop controlled intersection (four-leg intersection)

**Eastbound Approach:** (Site Entrance) Proposed one shared through/left turn/right turn lane, stop controlled

**Westbound Approach:** (Site Entrance) Proposed one shared through/left turn/right turn lane, stop controlled

**Northbound Approach:** (Lynn Road) Proposed one shared through/left turn/right turn lane

**Southbound Approach:** (Lynn Road) Proposed one shared through/left turn/right turn lane

#### **2. Lynn Road/New Road (Sussex Road 266)**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection)

**Eastbound Approach:** (New Road) Existing one shared through/left turn lane

**Westbound Approach:** (New Road) Existing one shared through/right turn lane

**Southbound Approach:** (Lynn Road) Existing one shared left turn/right turn lane, stop controlled

#### **3. New Road/Old Orchard Road (Sussex Road 266A)**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection)

**Eastbound Approach:** (New Road) Existing one shared through/right turn lane

**Westbound Approach:** (New Road) Existing one shared through/left turn lane

**Northbound Approach:** (Old Orchard Road) Existing one shared left turn/right turn lane, stop controlled

#### **4. New Road/Nassau Road (Sussex Road 266B)**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection), proposed four-leg roundabout

**Westbound Approach:** (New Road) Existing one shared left turn/right turn lane, stop controlled; proposed one shared through/left turn/right turn lane

**Northbound Approach:** (Nassau Road) Existing one shared through/right turn lane; proposed one shared through/left turn/right turn lane

**Southbound Approach:** (Nassau Road) Existing one shared through/left turn lane; proposed one shared through/left turn/right turn lane

**Eastbound Approach:** (Janice Road/New Road) proposed one shared through/left turn/right turn lane

*Note: This intersection will be reconfigured to a roundabout per the DelDOT SRI, Minos Conaway Grade Separated Intersection (Contract No. T201612501) project.*

5. **Delaware Route 1/Nassau Road (north intersection)**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection); Proposed for removal as part of the DelDOT SRI, Minos Conaway Grade Separated Intersection (Contract No. T201612501) project

**Westbound Approach:** (Nassau Road): Existing one left turn lane and one channelized right turn lane, stop controlled

**Northbound Approach:** (Delaware Route 1) Existing one left turn lane, two through lanes and one right turn lane

**Southbound Approach:** (Delaware Route 1) Existing one left turn lane and two through lanes

*Note: Under existing conditions, Delaware Route 1 northbound and southbound are divided by a grass median which provides storage for vehicles to execute two-stage crossings.*

6. **Delaware Route 1/Nassau Road (south intersection)**

**Type of Control:** Existing two-way stop controlled intersection (four leg intersection); Proposed for removal as part of the DelDOT SRI, Minos Conaway Grade Separated Intersection (Contract No. T201612501) project

**Eastbound Approach:** (Nassau Road) Existing one shared through/left turn/right turn lane, stop controlled

**Westbound Approach:** (Nassau Road) Existing one shared through/left turn/right turn lane, stop controlled

**Northbound Approach:** (Delaware Route 1) Existing one left turn lane, two through lanes and one channelized right turn lane

**Southbound Approach:** (Delaware Route 1) Existing one left turn lane, two through lanes and one right turn lane

7. **Old Orchard Road/Parker Run**

**Type of Control:** Existing two-way stop controlled intersection (four leg intersection)

**Eastbound Approach:** (Parker Run) Existing one shared through/left turn/right turn lane, stop controlled

**Westbound Approach:** (Parker Run) Existing one shared through/left turn/right turn lane, stop controlled

**Northbound Approach:** (Old Orchard Road) Existing one shared through/left turn/right turn lane

**Southbound Approach:** (Old Orchard Road) Existing one shared through/left turn/right turn lane

8. **Old Orchard Road/Savannah Road (Sussex Road 18)**

**Type of Control:** Existing two-way stop controlled intersection (four leg intersection), Proposed signalized and realigned intersection

**Eastbound Approach:** (Savannah Road) Existing one left turn lane, one through lane and one channelized right turn lane; Proposed one left turn lane, one shared through/left turn lane and one channelized right turn lane

**Westbound Approach:** (Savannah Road) Existing one left turn lane, one through lane and one right turn lane

**Northbound Approach:** (Old Orchard Road) Existing one shared through/left turn lane and one right turn lane, stop controlled

**Southbound Approach:** (Old Orchard Road) Existing one shared through/left turn lane and one channelized right turn lane, stop controlled

*Note: As part of the DelDOT Realignment of Old Orchard Road at Wescoats Corner (Contract No: T201609601) project, Old Orchard Road will be realigned to intersect Savannah Road directly across Wescoats Road. The intersection will be four-legged and signalized, with separate left turn, through, and right turn lanes provided along the eastbound, westbound, and southbound approaches. One left turn lane, one shared through/left turn lane and one right turn lane will be provided along the northbound approach.*

9. **New Road/Park Road**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection)

**Eastbound Approach:** (New Road) Existing one shared through/left turn lane

**Westbound Approach:** (New Road) Existing one through lane and one right turn lane

**Southbound Approach:** (Park Road) Existing one left turn lane and one right turn lane, stop controlled

10. **New Road/Captains Circle**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection)

**Eastbound Approach:** (New Road) Existing one shared through/right turn lane

**Westbound Approach:** (New Road) Existing one shared through/left turn lane

**Northbound Approach:** (Captains Circle) Existing one shared left turn/right turn lane, stop controlled

11. **New Road/West 4<sup>th</sup> Street**

**Type of Control:** Existing two-way stop controlled intersection (T-intersection)

**Eastbound Approach:** (New Road) Existing one shared through/right turn lane

**Westbound Approach:** (New Road) Existing one shared through/left turn lane

**Northbound Approach:** (4<sup>th</sup> Street) Existing one shared left turn/right turn lane, stop controlled

**12. New Road/Pilottown Road/Front Street (Sussex Road 267)**

**Type of Control:** Existing stop-controlled intersection (T-intersection)

**Eastbound Approach:** (New Road) Existing one shared left turn/right turn lane, stop controlled

**Northbound Approach:** (Pilottown Road) Existing one shared through/left turn lane

**Southbound Approach:** (Pilottown Road) Existing one shared through/right turn lane

**Transit, Pedestrian, and Bicycle Facilities**

**Existing transit service:** Delaware Transit Corporation (DTC) currently does not provide any service in the study area.

**Planned transit service:** JMT contacted Mr. David Dooley, Transit Planner at the DTC. Per email correspondence on May 16, 2018 from Mr. Dooley, the DTC does not have any future plans to extend bus service to the area but recommends five-foot wide sidewalks along the Lynn Road and New Road site frontages.

**Existing bicycle and pedestrian facilities:** According to DelDOT's *Sussex County Bicycle Map*, a Regional Bicycle Route as well as trail and pathway routes exist within the study area. The Regional Bicycle Route exists along Savannah Road and traverses through one of the project's study intersection (the Savannah Road intersection with Old Orchard Road), The American Discovery Trail Route exists along Nassau Road, New Road, Old Orchard Road and Savannah Road and traverses through five of the project's study intersections (Nassau Road with Delaware Route 1, Nassau Road with New Road, New Road with Old Orchard Road, Old Orchard Road with Parker Run, and Old Orchard Road with Savannah Road). The New Road Pathway exists along Park Road and traverses through the New Road and Park Road study intersection. Pedestrian facilities exist at the New Road intersections with Captains Circle and Park Road, and at the Old Orchard Road intersections with Parker Run and Savannah Road.

**Planned bicycle and pedestrian facilities:** Per email correspondence on May 15, 2018 from Mr. John Fiori, DelDOT's Bicycle Coordinator, the following improvements were recommended:

- A 10 feet-wide shared use path along the New Road (Sussex Road 266) site frontage and along both sides of Lynn Road (Sussex Road 266A) within the property frontage should a pedestrian facility be required by the Subdivision Engineer.
- A 15 feet-wide permanent easement should be provided along the Lynn Road and New Road property frontages.
- All entrance, roadway, and intersection improvements should incorporate bicycle and pedestrian facilities.



JMT also contacted Mr. Mike Hahn, DelDOT's Planning and Byways Coordinator. Per email correspondence on May 22, 2018, Mr. Hahn stated that New Road is part of the *Delaware Byways Program* and a master plan for New Road is being developed. Mr. Hahn also mentioned that a shared use path is warranted along the New Road and Lynn Road site frontages. Internal site connections to the shared use paths should also be provided.

**Bicycle Level of Service and Bicycle Compatibility Index:** According to the League of Illinois Bicyclists (LIB), Bicycle Level of Service (BLOS) is an emerging national standard for quantifying the bike-friendliness of a roadway by measuring on-road bicyclist comfort levels for specific roadway geometries and traffic conditions. Utilizing the 10-year projected AADT along the Lynn Road and New Road site frontages with 30 miles per hour and 40 miles per hour speed limits, respectively, and the provision of a 5-foot bike lane, the BLOS with the full build out construction of the proposed development are summarized below. The BLOS was determined utilizing the calculators published on the LIB website:

<http://rideillinois.org/blos/blosform.htm>

- Lynn Road – BLOS: B (1.51-2.50)
- New Road – BLOS: C (2.51-3.50)

### **Previous Comments**

The comments from the Preliminary TIS have been addressed in the TIS.

**General HCS Analysis Comments**

*(See table footnotes on the following pages for specific comments)*

1. For the intersection analyses, the TIS and JMT used HCS7 version 7.5.
2. Per DelDOT's *Development Coordination Manual*, JMT used a heavy vehicle percentage of 3% for each movement in the Case 2 and Case 3 future scenario analyses, unless the existing heavy vehicle percentage was greater than 3% and there was no significant increase of vehicles along that movement, in which case the existing heavy vehicle percentage was used for analysis of future scenarios.
3. Per DelDOT's *Development Coordination Manual*, JMT utilized the existing PHF for Case 1 and a future PHF for Cases 2 and 3 of 0.80 for roadways with less than 500 vph, 0.88 for roadways between 500 and 1,000 vph, and 0.92 for roadways with more than 1,000 vph or the existing PHF, whichever was higher. The TIS assumed 0.92 for all existing and future scenarios.

Table 2  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Site Entrance/Lynn Road (Sussex Road 266A)</b>						
2025 With development (Case 3)						
Eastbound Site Entrance Approach	A (8.7)	A (8.6)	A (8.6)	A (8.7)	A (8.6)	A (8.6)
Westbound Site Entrance Approach	B (10.6)	B (12.1)	B (11.9)	B (10.6)	B (12.2)	B (11.9)
Northbound Lynn Road Left Turn	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)
Southbound Lynn Road Left Turn	A (7.3)	A (7.4)	A (7.4)	A (7.3)	A (7.4)	A (7.4)

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<sup>1</sup> For signalized and unsignalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds.

Table 3  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Lynn Road/New Road (Sussex Road 266)</b>						
2017 Existing (Case 1)						
Eastbound New Road Left Turn	A (7.5)	A (7.7)	A (7.6)	A (7.5)	A (7.7)	A (7.6)
Southbound Lynn Road Approach	B (11.7)	A (9.5)	A (9.2)	B (11.3)	A (9.5)	A (9.2)
2025 Without development (Case 2)						
Eastbound New Road Left Turn	A (7.6)	A (7.8)	A (7.7)	A (7.6)	A (7.8)	A (7.7)
Southbound Lynn Road Approach	B (12.3)	A (9.7)	A (9.4)	B (11.9)	A (9.8)	A (9.4)
2025 With development (Case 3)						
Eastbound New Road Left Turn	A (7.7)	A (8.3)	A (8.0)	A (7.7)	A (8.3)	A (8.1)
Southbound Lynn Road Approach	B (12.6)	B (13.2)	B (13.3)	B (12.0)	B (13.3)	B (13.5)
2025 With development (Case 3) <i>with Improvement Option 1</i> <sup>2</sup>						
Eastbound New Road Left Turn	-	-	-	A (7.7)	A (8.3)	A (8.1)
Southbound Lynn Road Approach	-	-	-	B (11.9)	B (13.0)	B (13.2)

<sup>2</sup> Improvement Option 1 scenario includes the provision of one through lane and one left turn lane for the eastbound New Road approach and one through lane and one right turn lane for the westbound New Road approach.

Table 3 (continued)  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Roundabout <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Lynn Road/New Road (Sussex Road 266)</b>						
<i>2025 With Development (Case 3) with Improvement Option 2 <sup>3</sup></i>						
Eastbound New Road Approach	-	-	-	A (5.4)	A (5.3)	A (6.3)
Westbound New Road Approach	-	-	-	A (4.1)	A (5.7)	A (5.0)
Southbound Lynn Road Approach	-	-	-	A (4.7)	A (4.6)	A (4.6)
Overall Intersection	-	-	-	A (4.9)	A (5.4)	A (5.7)

<sup>3</sup> Improvement Option 2 scenario includes the provision of a single-lane roundabout for the Lynn Road/New Road intersection.

Table 4  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>New Road/Old Orchard Road (Sussex Road 269A)</b>						
2017 Existing (Case 1) <sup>4</sup>						
Westbound New Road Left Turn	A (8.1)	A (7.8)	A (8.0)	A (8.1)	A (7.8)	A (8.0)
Northbound Old Orchard Road Approach	B (11.7)	B (11.5)	B (11.9)	B (12.0)	B (11.9)	B (11.9)
2025 Without development (Case 2)						
Westbound New Road Left Turn	A (8.1)	A (7.9)	A (8.1)	A (8.1)	A (7.9)	A (8.1)
Northbound Old Orchard Road Approach	B (12.2)	B (12.2)	B (12.7)	B (12.6)	B (12.8)	B (13.2)
2025 With development (Case 3)						
Westbound New Road Left Turn	A (8.4)	A (8.2)	A (8.4)	A (8.4)	A (8.2)	A (8.5)
Northbound Old Orchard Road Approach	B (14.0)	B (15.0)	C (15.4)	B (14.7)	C (16.2)	C (16.5)

<sup>4</sup> JMT utilized an existing heavy vehicle percentage of 1% for the northbound left-turn movement consistent with the existing traffic counts whereas the TIS utilized a heavy vehicle percentage of 3% for the Saturday midday peak hour.

Table 5  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>New Road/Nassau Road (Sussex Road 266B)</b>						
2017 Existing (Case 1)						
Westbound New Road Approach	B (10.1)	A (10.0)	B (10.2)	B (10.1)	B (10.0)	B (10.2)
Southbound Nassau Road Left Turn	A (7.8)	A (7.5)	A (7.7)	A (7.8)	A (7.5)	A (7.7)

Table 5 (continued)  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Roundabout <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday MIDDAY	Weekday AM	Weekday PM	Saturday MIDDAY
<b>New Road/Nassau Road (Sussex Road 266B)</b>						
2025 Without Development (Case 2) with DelDOT Improvement <sup>5</sup>						
Eastbound New Road Approach	-	-	-	A (5.5)	A (4.6)	A (5.0)
Westbound New Road Approach	-	-	-	A (4.6)	A (6.2)	A (4.6)
Northbound Nassau Road Approach	-	-	-	A (5.1)	A (5.3)	A (5.4)
Southbound Nassau Road Approach	-	-	-	A (3.1)	A (3.4)	A (3.1)
Overall Intersection	-	-	-	A (5.1)	A (5.3)	A (4.9)
2025 With Development (Case 3) with DelDOT Improvement <sup>5</sup>						
Eastbound New Road Approach	-	-	-	A (5.6)	A (4.9)	A (5.3)
Westbound New Road Approach	-	-	-	A (5.3)	A (6.8)	A (5.1)
Northbound Nassau Road Approach	-	-	-	A (5.3)	A (6.1)	A (6.1)
Southbound Nassau Road Approach	-	-	-	A (3.2)	A (3.5)	A (3.2)
Overall Intersection	-	-	-	A (5.4)	A (5.9)	A (5.4)

<sup>5</sup>DelDOT Improvement scenario includes the *SRI, Minos Conaway Grade Separated Intersection* (Contract No. T20161250) project. This project will modify the existing New Road/Nassau Road T-intersection to a four-leg roundabout. JMT incorporated this improvement in the analysis as it is projected to be constructed prior to the completion of the proposed development whereas the TIS did not.



Table 6  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (north intersection) <sup>6</sup></b>						
2017 Existing (Case 1)						
Westbound Nassau Road Left Turn	F (133.1)	F (279.7)	F (5136.9)	-	-	-
Westbound Nassau Road Right Turn	B (13.0)	E (36.5)	E (38.5)	-	-	-
Westbound Nassau Road Approach	B (14.1)	E (36.5)	E (38.5)	-	-	-
Southbound Delaware Route 1 Left Turn	B (12.4)	C (18.6)	F (58.1)	-	-	-

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<sup>6</sup> Due to the provision of a median along Delaware Route 1 that allows for two-stage crossings, JMT analyzed the intersection as three separate intersections, whereas the TIS analyzed it as one intersection.

Table 6.1  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (north intersection)<sup>6, 7, 8</sup></b>						
2017 Existing (Case 1)						
Westbound Nassau Road Approach	-	-	-	C (17.8)	E (38.5)	F (73.7)
Eastbound Nassau Road Approach	-	-	-	F (82.5)	F (300.5)	F (1550.4)
Northbound Delaware Route 1 Left turn	-	-	-	A (7.2)	A (7.2)	A (7.2)

Table 6.2  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (north intersection)<sup>6, 7, 9</sup></b>						
2017 Existing (Case 1)						
Westbound Nassau Road Approach	-	-	-	C (24.5)	C (19.0)	E (45.7)
Southbound Delaware Route 1 Left turn	-	-	-	A (7.7)	A (7.4)	A (7.5)

<sup>7</sup> JMT conducted the analysis only for 2017 Existing (Case 1) due to the proposed improvements as part of the *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T20162501) project. This intersection is proposed to be removed as part of the DelDOT project.

<sup>8</sup> This analysis incorporates the volumes from northbound Delaware Route 1, the westbound left from Nassau Road, and the southbound left from Delaware Route 1.

<sup>9</sup>This analysis incorporates the volume from southbound Delaware Route 1 and the westbound left from Nassau Road.

Table 6.3  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (north intersection)</b> <sup>6, 7, 10</sup>						
2017 Existing (Case 1)						
Westbound Nassau Road Right Turn	-	-	-	B (13.0)	E (36.5)	E (38.5)

<sup>10</sup> This analysis incorporates the volumes from the westbound right from Nassau Road and the northbound through from Delaware Route 1.

Table 7  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (south intersection) <sup>11</sup></b>						
2017 Existing (Case 1)						
Eastbound Nassau Park Road Approach	E (38.5)	F (82.1)	F (100.3)	-	-	-
Westbound Nassau Road Approach	F (56.8)	F (259.7)	F (915.2)	-	-	-
Northbound Delaware Route 1 Left Turn	C (15.2)	C (17.9)	D (32.3)	-	-	-
Southbound Delaware Route 1 Left Turn	A (9.7)	B (13.3)	C (18.5)	-	-	-

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<sup>11</sup> Due to the provision of a median along Delaware Route 1 that allows for two-stage crossings, JMT analyzed the intersection as two separate intersections, whereas the TIS analyzed it as one intersection.

Table 7.1  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (south intersection)<sup>11, 12, 13</sup></b>						
2017 Existing (Case 1)						
Eastbound Nassau Park Road Approach	-	-	-	C (18.1)	D (34.0)	F (44.4)
Westbound Nassau Road Approach	-	-	-	C (21.4)	F (80.3)	F (135.5)
Northbound Delaware Route 1 Left Turn	-	-	-	A (7.3)	A (7.4)	A (7.3)

<sup>12</sup> JMT conducted the analysis only for 2017 Existing (Case 1) due to the proposed improvements as part of the *SR 1, Minos Conaway Grade Separated Intersection* (Contract No. T20162501) project. This intersection will be removed as part of the DelDOT project.

<sup>13</sup> This analysis incorporates volumes from northbound Delaware Route 1, the southbound left from Delaware Route 1, the eastbound left and through from Nassau Park Road/Janice Road, and westbound Nassau Road.

Table 7.2  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Delaware Route 1/Nassau Road (south intersection)</b> <sup>11, 12, 14</sup>						
2017 Existing (Case 1)						
Eastbound Nassau Park Road Approach	-	-	-	F (61.6)	F (84.9)	F (166.5)
Westbound Nassau Road Approach	-	-	-	D (27.8)	E (40.8)	F (90.5)
Southbound Delaware Route 1 Left Turn	-	-	-	A (7.2)	A (7.2)	A (7.2)

<sup>14</sup> This analysis incorporates the volumes from southbound Delaware Route 1, the northbound left from Delaware Route 1, eastbound Nassau Park Road/Janice Road, and the through and left from eastbound Nassau Road.

Table 8  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Old Orchard Road/Parker Run</b>						
2017 Existing (Case 1)						
Eastbound East Chesapeake Street Approach	B (10.5)	B (10.5)	B (10.9)	B (10.7)	B (10.6)	B (11.1)
Westbound Parker Run Approach	B (10.3)	B (10.3)	B (10.5)	B (10.4)	B (10.4)	B (10.5)
Northbound Old Orchard Road Left Turn	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.6)	A (7.5)
Southbound Old Orchard Road Left Turn	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)	A (7.5)
2025 Without development (Case 2)						
Eastbound East Chesapeake Street Approach	B (10.7)	B (10.6)	B (11.1)	B (10.9)	B (10.9)	B (11.3)
Westbound Parker Run Approach	B (10.4)	B (10.5)	B (10.7)	B (10.5)	B (10.6)	B (10.7)
Northbound Old Orchard Road Left Turn	A (7.6)	A (7.5)	A (7.5)	A (7.7)	A (7.6)	A (7.6)
Southbound Old Orchard Road Left Turn	A (7.5)	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.6)
2025 With development (Case 3)						
Eastbound East Chesapeake Street Approach	B (11.3)	B (11.8)	B (12.0)	B (11.6)	B (12.0)	B (12.3)
Westbound Parker Run Approach	B (10.8)	B (11.1)	B (11.2)	B (10.9)	B (11.3)	B (11.3)
Northbound Old Orchard Road Left Turn	A (7.7)	A (7.6)	A (7.6)	A (7.8)	A (7.7)	A (7.7)
Southbound Old Orchard Road Left Turn	A (7.6)	A (7.7)	A (7.6)	A (7.5)	A (7.7)	A (7.7)

Table 9  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Old Orchard Road/Savannah Road (Sussex Road 18)</b>						
2017 Existing (Case 1)						
Eastbound Savannah Road Left Turn	A (8.6)	B (10.2)	A (9.1)	A (8.6)	B (10.2)	A (9.1)
Westbound Savannah Road Left Turn	A (9.4)	A (9.0)	A (9.8)	A (9.3)	A (8.8)	A (9.6)
Northbound Old Orchard Road Through/ Left Turn	E (43.7)	F (107.5)	F (70.5)	E (42.8)	F (98.2)	F (71.0)
Northbound Old Orchard Road Left Right Turn	B (14.5)	B (12.6)	C (15.8)	B (14.5)	B (12.6)	C (16.2)
Northbound Old Orchard Road Approach	D (27.7)	F (50.8)	D (34.3)	D (27.3)	E (47.3)	D (34.7)
Southbound Old Orchard Road Through/ Left Turn	F (91.6)	F (133.7)	F (167.9)	F (91.9)	F (131.3)	F (171.9)
Southbound Old Orchard Road Left Right Turn	B (11.1)	C (15.8)	B (11.5)	B (11.1)	C (15.8)	B (11.6)
Southbound Old Orchard Road Approach	F (62.0)	F (70.6)	F (111.7)	F (62.2)	F (69.5)	F (114.3)



Table 9 (Continued)  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Signalized Intersection <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>Old Orchard/Savannah Road (Sussex Road)</b>						
2025 Without Development (Case 2) with DelDOT Improvement <sup>15, 16, 17</sup>	B (17.1)	C (21.7)	B (18.4)	C (20.4)	D (37.4)	C (24.6)
2025 With Development (Case 3) with DelDOT Improvement <sup>15, 16, 17</sup>	B (18.4)	C (23.2)	B (19.3)	C (21.5)	D (37.8)	C (24.7)

<sup>15</sup> JMT and the TIS analyzed the intersection for future conditions as signalized and realigned based on the DelDOT *Realignment of Old Orchard Road at Wescoats Corner* (Contract No. T201609601) project. Based on the February 2018 concept plan, Old Orchard Road will be realigned to form the northerly leg at the Savannah Road/Wescoats Road intersection. Separate left turn, through and right turn lanes will be provided along the eastbound, westbound and southbound approaches. The northbound Wescoats Road approach will provide one left turn lane, one shared through/left turn lane, and one right turn lane. JMT incorporated these improvements into the analysis whereas the TIS modeled the future intersection with separate left turn, through, and right turn lanes along each approach.

<sup>16</sup> JMT and the TIS utilized 90 seconds cycle length during the AM peak period and 75 seconds cycle length during the PM and Saturday peak periods consistent with the existing signal timings at the Savannah Road/Wescoats Road intersection. The TIS used protected and permissive left turn phasing along each approach. JMT used protected and permissive left turn phasing along Savannah Road and split phase along Old Orchard Road and Wescoats Road.

<sup>17</sup> JMT included the eastbound right turn lane in the analysis whereas the TIS did not.

**Table 10**  
**Peak Hour Levels Of Service (LOS)**  
 Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
 Report Dated: April 23, 2018  
 Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
2017 Existing (Case 1)						
Eastbound New Road Left Turn	A (7.5)	A (7.6)	A (7.5)	A (7.5)	A (7.6)	A (7.5)
Southbound Park Road Approach	A (9.2)	A (9.7)	A (9.7)	A (9.3)	A (9.8)	A (9.9)
2025 Without development (Case 2)						
Eastbound New Road Left Turn	A (7.5)	A (7.7)	A (7.6)	A (7.5)	A (7.8)	A (7.7)
Southbound Park Road Approach	A (9.9)	B (10.1)	B (10.2)	B (10.1)	B (10.3)	B (10.5)
2025 With development (Case 3)						
Eastbound New Road Left Turn	A (7.6)	A (7.8)	A (7.7)	A (7.6)	A (7.9)	A (7.8)
Southbound Park Road Approach	B (10.1)	B (10.4)	B (10.6)	B (10.4)	B (10.7)	B (11.0)

Table 11  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>New Road/Captains Circle</b>						
2017 Existing (Case 1)						
Westbound New Road Left Turn	A (7.7)	A (7.5)	A (7.8)	A (7.7)	A (7.5)	A (7.8)
Northbound Captains Circle Approach	B (10.7)	B (10.1)	B (11.3)	B (11.1)	B (10.4)	B (11.8)
2025 Without development (Case 2)						
Westbound New Road Left Turn	A (7.8)	A (7.5)	A (7.9)	A (7.8)	A (7.5)	A (7.9)
Northbound Captains Circle Approach	B (11.0)	B (10.3)	B (11.7)	B (11.4)	B (10.8)	B (12.4)
2025 With development (Case 3)						
Westbound New Road Left Turn	A (7.9)	A (7.5)	A (8.0)	A (7.9)	A (7.6)	A (8.0)
Northbound Captains Circle Approach	B (11.6)	B (10.8)	B (12.3)	B (12.1)	B (11.3)	B (13.2)

Table 12  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>New Road/West 4<sup>th</sup> Street</b>						
2017 Existing (Case 1)						
Westbound New Road Left Turn	A (7.8)	A (7.4)	A (7.8)	A (7.8)	A (7.4)	A (7.8)
Northbound West 4 <sup>th</sup> Street Approach	B (10.2)	B (10.0)	B (10.9)	B (10.8)	B (10.2)	B (11.3)
2025 Without development (Case 2) <sup>18</sup>						
Westbound New Road Left Turn	A (7.8)	A (7.5)	A (7.9)	A (7.8)	A (7.5)	A (7.9)
Northbound West 4 <sup>th</sup> Street Approach	B (10.5)	B (10.3)	B (11.3)	B (10.9)	B (10.6)	A (11.8)
2025 With development (Case 3)						
Westbound New Road Left Turn	A (7.9)	A (7.5)	A (7.9)	A (7.9)	A (7.5)	A (8.0)
Northbound West 4 <sup>th</sup> Street Approach	B (10.9)	B (10.8)	B (11.9)	B (11.5)	B (11.3)	B (12.7)

<sup>18</sup> JMT utilized 25% heavy vehicles for the northbound left and 0% for the northbound right movements consistent with the existing traffic counts, whereas the TIS utilized 0% heavy vehicles for the northbound left and 25% for the northbound right.

Table 13  
Peak Hour Levels Of Service (LOS)  
Based on Traffic Impact Study for Tower Hill (f.k.a. Groome Property)  
Report Dated: April 23, 2018  
Prepared by The Traffic Group, Inc.

Unsignalized Intersection Two-Way Stop Control <sup>1</sup>	LOS per TIS			LOS per JMT		
	Weekday AM	Weekday PM	Saturday Midday	Weekday AM	Weekday PM	Saturday Midday
<b>New Road/Pilottown Road/Front Street (Sussex Road 267)</b>						
2017 Existing (Case 1)						
Eastbound New Road Approach	A (8.9)	A (9.4)	A (10.0)	A (8.9)	A (9.4)	B (10.0)
Northbound Pilottown Road Left Turn	A (7.3)	A (7.5)	A (7.5)	A (7.3)	A (7.5)	A (7.5)
2025 Without development (Case 2)						
Eastbound New Road Approach	A (8.9)	A (9.4)	A (10.0)	A (9.0)	A (9.6)	B (10.2)
Northbound Pilottown Road Left Turn	A (7.3)	A (7.5)	A (7.5)	A (7.4)	A (7.5)	A (7.6)
2025 With development (Case 3)						
Eastbound New Road Approach	A (9.1)	A (9.7)	B (10.4)	A (9.1)	A (9.7)	B (10.5)
Northbound Pilottown Road Left Turn	A (7.4)	A (7.6)	A (7.6)	A (7.4)	A (7.6)	A (7.6)