



STATE OF DELAWARE
DEPARTMENT OF TRANSPORTATION
800 BAY ROAD
P.O. BOX 778
DOVER, DELAWARE 19903

JENNIFER COHAN
SECRETARY

April 2, 2019

Mr. D.J. Hughes
Davis, Bowen & Friedel, Inc.
1 Park Avenue
Milford, DE 19963

Dear Mr. Hughes:

The enclosed Traffic Impact Study (TIS) review letter for the proposed **Windward on the River** (Tax Parcels 330-7.00-33.00, 330-11.00-42.00, 42.01, 43.00 & 264.00) development has been completed under the responsible charge of a registered professional engineer whose firm is authorized to work in the State of Delaware. They have found the TIS to conform to DelDOT's Development Coordination Manual and other accepted practices and procedures for such studies. DelDOT accepts this review letter and concurs with the recommendations. If you have any questions concerning this letter or the enclosed review letter, please contact me at (302) 760-2167.

Sincerely,

Troy Brestel
Project Engineer

TEB:km

Enclosures

cc with enclosures: Mr. Ring Lardner, Davis, Bowen & Friedel, Inc.
Ms. Constance C. Holland, Office of State Planning Coordination
Mr. Rob Pierce, City of Milford
Mr. Andrew Parker, McCormick Taylor, Inc.
DelDOT Distribution

DelDOT Distribution

Brad Eaby, Deputy Attorney General
Drew Boyce, Director, Planning
Mark Luszc, Chief Traffic Engineer, Traffic, DOTS
Michael Simmons, Assistant Director, Project Development South, DOTS
J. Marc Coté, Assistant Director, Development Coordination
T. William Brockenbrough, Jr., County Coordinator, Development Coordination
Peter Haag, Traffic Studies Manager, Traffic, DOTS
Alastair Probert, South District Engineer, South District
Gemez Norwood, South District Public Works Manager, South District
Susanne Laws, Sussex Subdivision Review Coordinator, Development Coordination
David Dooley, Service Development Planner, Delaware Transit Corporation
Mark Galipo, Traffic Engineer, Traffic, DOTS
Sarah Coakley, Principal Planner, Statewide & Regional Planning
Anthony Aglio, Planning Supervisor, Statewide & Regional Planning
Derek Sapp, Sussex County Subdivision Reviewer, Development Coordination
Claudy Joinville, Project Engineer, Development Coordination



April 1, 2019

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

RE: Agreement No. 1773
Traffic Impact Study Services
Task No. 1A Subtask 14A – Windward on the River

Dear Mr. Brestel:

McCormick Taylor has completed its review of the Traffic Impact Study (TIS) for the Windward on the River mixed-use development prepared by Davis, Bowen & Friedel, Inc. (DBF) dated November 2018. DBF prepared the report in a manner generally consistent with DelDOT's Development Coordination Manual.

The TIS evaluates the impacts of the Windward on the River mixed-use development, proposed to be located on the southwest side of Beaver Dam Road (Sussex Road 209) and on the northeast side of S. Rehoboth Boulevard (Sussex Road 14) within the City of Milford in Sussex County, Delaware. The proposed development would consist of 264 multi-family dwelling units, 8,400 square feet of general office space, 17,600 square feet of shopping center, and two high-turnover sit-down restaurants totaling 13,300 square feet. Two access points are proposed: one full-movement access on Beaver Dam Road and one full-movement access on S. Rehoboth Boulevard. Construction is anticipated to be complete by 2026.

The subject land consists of five parcels totaling 37.4 acres and having three different zoning designations. The land is currently zoned R3 (Garden Apartments / Townhouses), C1 (Community Neighborhood Commercial), and C3 (Highway Commercial) within the City of Milford. No rezoning is needed or sought to permit the proposed development.

Currently, there are no DelDOT capital projects within the area of study.

Based on our review, we have the following comments and recommendations:

The following intersection exhibits level of service (LOS) deficiencies without the implementation of physical roadway and/or traffic control improvements:

<i>Intersection</i>	<i>Existing Traffic Control</i>	<i>Situations for which deficiencies occur</i>
S. Rehoboth Boulevard and 2 nd Street	One-way stop control (T-intersection)	2018 AM existing (case 1); 2026 AM and PM without and with Windward on the River (cases 2-4)

The unsignalized intersection of S. Rehoboth Boulevard and 2nd Street experiences LOS deficiencies during existing conditions that would become worse under future conditions. With the added traffic from Windward on the River at this intersection, the eastbound 2nd Street approach, which has one shared left/right-turn lane, is expected to operate at LOS F with a 95th percentile queue of approximately 13 vehicles (325 feet). There is also an existing pattern of crashes at this intersection involving rear-end collisions along the northbound 2nd Street approach, which is attributed to the lack of a northbound left-turn lane.

To mitigate both the operational and safety concerns, the complete remedy would be to widen both the eastbound approach and the northbound approach to create separate turn lanes. However, for a number of reasons including right-of-way and utility constraints, DelDOT has determined that there is no reasonable improvement the developer can make at this intersection to sufficiently address the issues.

Should the City of Milford choose to approve the proposed development, the following items should be incorporated into the site design and reflected on the record plan by note or illustration. 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 improve Beaver Dam Road along the site frontage to provide eleven-foot travel lanes. 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 construct the full site access on S. Rehoboth Boulevard. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound S. Rehoboth Boulevard	One through lane	One through lane and one right-turn lane
Southbound S. Rehoboth Boulevard	One through lane	One left-turn lane and one through lane
Westbound Site Access	Does not exist	One left-turn lane and one right-turn lane

Initial recommended minimum turn-lane lengths (excluding tapers) of the separate turn lanes are listed below. The developer should coordinate with DelDOT's Development Coordination Section to determine final turn-lane lengths during the site plan review process.

Approach	Left-Turn Lane	Right-Turn Lane
Northbound S. Rehoboth Boulevard	N/A	240 feet *
Southbound S. Rehoboth Boulevard	120 feet *	N/A
Westbound Site Access	N/A	50 feet **

* turn-lane length based on DelDOT's *Auxiliary Lane Worksheet*

** turn-lane length based on storage length per queuing analysis, with 50-foot minimum

3. The developer should construct the full site access on Beaver Dam Road. The proposed configuration is shown in the table below.

Approach	Current Configuration	Proposed Configuration
Northbound Beaver Dam Road	One through lane	One shared through/left-turn lane
Southbound Beaver Dam Road	One through lane	One through lane and one right-turn lane
Eastbound Site Access	Does not exist	One shared left/right-turn lane

While the recommended minimum length (excluding taper) of the southbound Beaver Dam Road right-turn lane is 110 feet per DelDOT's *Auxiliary Lane Worksheet*, DelDOT has determined that a shorter turn lane would be acceptable due to the nearby existing residential driveway. The developer must submit a Design Deviation Form to DelDOT and coordinate with DelDOT's Development Coordination Section to determine the final turn lane length and other design details during the site plan review process.

4. The following bicycle, pedestrian, and transit improvements should be included:
- a. Adjacent to the proposed right-turn lanes on northbound S. Rehoboth Boulevard and southbound Beaver Dam Road at the proposed site entrances, a minimum of a five-foot bicycle lane should be dedicated and striped with appropriate markings for bicyclists through the turn lane in order to facilitate safe and unimpeded bicycle travel.
 - b. Appropriate bicycle symbols, directional arrows, pavement markings, and signing should be included along bicycle facilities and turn lanes within the project limits.
 - c. Utility covers should be made flush with the pavement.
 - d. Bicycle parking should be provided near the building entrances. Where the building architecture provides for an awning or other overhang, the bicycle parking should be covered.
 - e. A minimum 15-foot wide easement from the edge of the right-of-way should be dedicated to DelDOT within the site frontages along S. Rehoboth Boulevard and Beaver Dam Road.
 - f. Within the easements along S. Rehoboth Boulevard and Beaver Dam Road, a minimum of a five-foot wide sidewalk that meets current AASHTO and ADA standards should be constructed along the site frontages. Each sidewalk should have a minimum of a five-foot buffer from the roadway. Along S. Rehoboth Boulevard, at both ends of the site frontage, the sidewalk should connect to the shoulder in accordance with DelDOT's *Shared Use Path and/or Sidewalk Termination Policy* dated June 19, 2014. Along Beaver Dam Road, the sidewalk should connect to the adjacent property to the north, but is not required to connect to the adjacent property to the south. The developer should coordinate with DelDOT's Development Coordination Section to determine exact location and details of the sidewalk connections at the property boundaries.
 - g. ADA compliant curb ramps and crosswalks should be provided at all pedestrian crossings within the development. Type 3 curb ramps are discouraged.
 - h. Internal sidewalks for pedestrian safety and to promote walking as a viable transportation alternative should be constructed within the development. These sidewalks should each be a minimum of five feet wide (with a minimum of a five-foot buffer from the roadway) and should meet current AASHTO and ADA standards. These internal sidewalks should connect to the proposed sidewalks along S. Rehoboth Boulevard and Beaver Dam Road.
 - i. Where internal sidewalks are located alongside of parking spaces, a buffer should be added to prevent vehicular overhang onto the sidewalk.
 - j. The developer should coordinate with the Delaware Transit Corporation (DTC) regarding the possibility of including bus stops to be located near the proposed site entrance on S. Rehoboth Boulevard.

Improvements in this TIS may be considered "significant" under DelDOT's *Work Zone Safety and Mobility Procedures and Guidelines*. These guidelines are available on DelDOT's website at http://deldot.gov/Publications/manuals/de_mutcd/index.shtml.



Please note that this review generally focuses on capacity and level of service issues; additional safety and operational issues will be further addressed through DelDOT's subdivision review process.

Additional details on our review of this TIS are attached. Please contact me at (610) 640-3500 or through e-mail at ajparker@mccormicktaylor.com if you have any questions concerning this review.

Sincerely,

McCormick Taylor, Inc.

A handwritten signature in black ink, appearing to read "Andrew J. Parker", is written over a horizontal line.

Andrew J. Parker, P.E., PTOE
Project Manager

Enclosure

General Information

Report date: November 2018

Prepared by: Davis, Bowen & Friedel, Inc. (DBF)

Prepared for: Jack Lingo Asset Management, LLC

Tax parcel: 330-7.00-33.00 and 330-11.00-42.00, 42.01, 43.00, and 264.00

Generally consistent with DelDOT's Development Coordination Manual: Yes

Project Description and Background

Description: The proposed mixed-use development would consist of 264 multi-family dwelling units, 8,400 square feet of general office space, 17,600 square feet of shopping center, and two high-turnover sit-down restaurants totaling 13,300 square feet.

Location: The Windward on the River development is proposed to be located on the southwest side of Beaver Dam Road (Sussex Road 209) and on the northeast side of S. Rehoboth Boulevard (Sussex Road 14) within the City of Milford in Sussex County, Delaware. A site location map is included on page 7.

Amount of land to be developed: approximately 37.4 acres of land

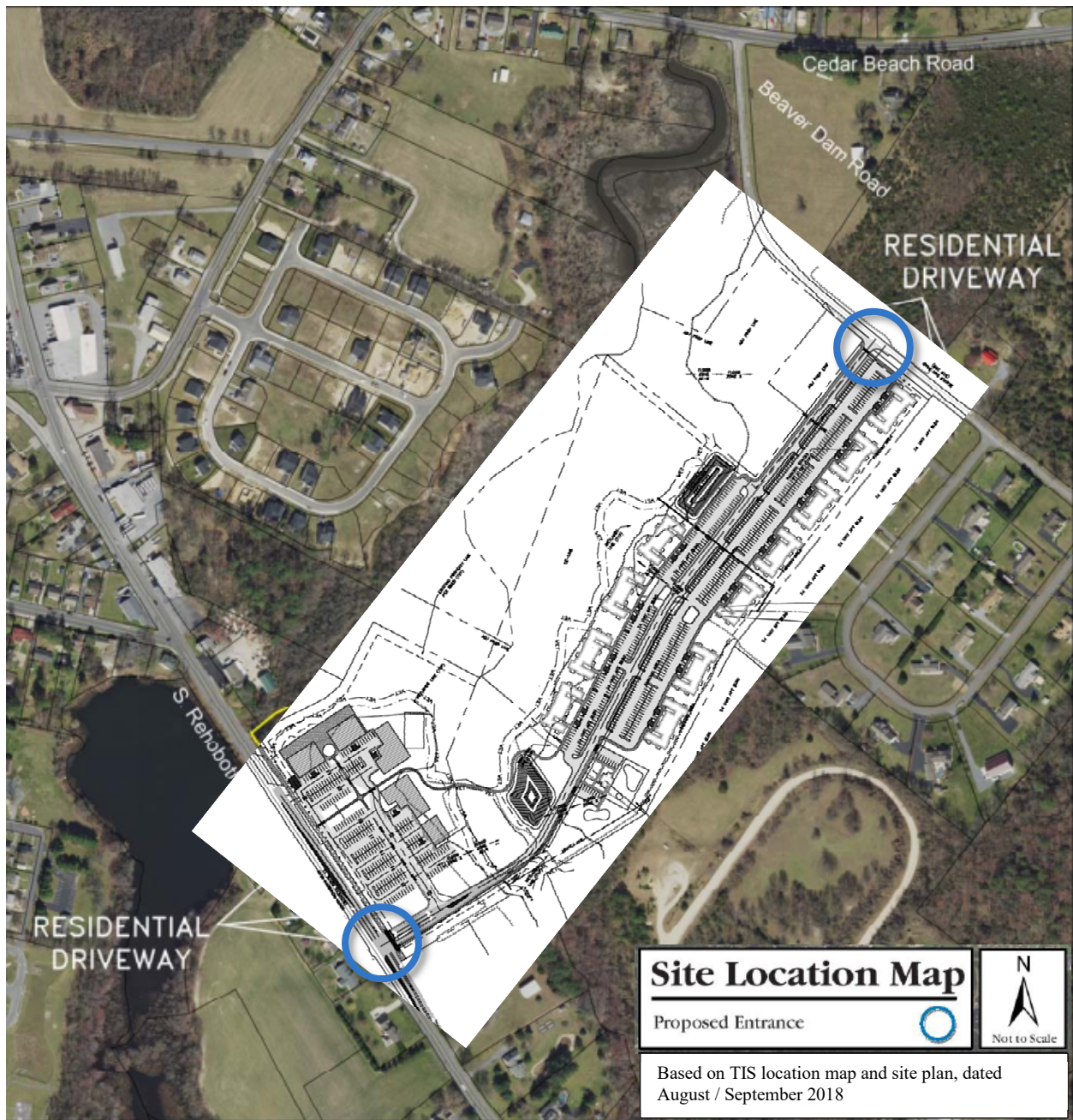
Land use approval(s) needed: Subdivision approval. The land is currently zoned R3 (Garden Apartments / Townhouses), C1 (Community Neighborhood Commercial), and C3 (Highway Commercial) within the City of Milford. No rezoning is needed or sought to permit the proposed development.

Proposed completion date: 2026

Proposed access locations: Two access points are proposed: one full-movement access on Beaver Dam Road and one full-movement access on S. Rehoboth Boulevard.

Daily Traffic Volumes (per DelDOT Traffic Summary 2017):

- 2017 Average Annual Daily Traffic on Beaver Dam Road: 632 vpd
- 2017 Average Annual Daily Traffic on S. Rehoboth Boulevard: 10,666 vpd



2015 Delaware Strategies for State Policies and Spending

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

The proposed Windward on the River development is located within Investment Levels 1, 2, and 3. A portion of the property is also designated as an Out of Play area.

Investment Level 1

Areas of the state designated as Investment Level 1 are most prepared for growth and are where the state can make cost-effective infrastructure investments in schools, roads, and public safety. In these areas, state investments and policies should support and encourage a wide range of uses and densities, promote a variety of transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity. Investment Level 1 areas are often municipalities, towns, or urban/urbanizing places. Density is generally higher than in the surrounding areas. Overall, it is the state's intent to use its spending and management tools to maintain and enhance community character, to promote well-designed and efficient new growth, and to facilitate redevelopment in Investment Level 1 Areas.

Investment Level 2

Investment Level 2 has many diverse characteristics. These areas can be composed of less developed areas within municipalities, rapidly growing areas in the counties that have or will have public water and wastewater services and utilities, areas that are generally adjacent to or near Investment Level 1 Areas, smaller towns and rural villages that should grow consistently with their historic character, and suburban areas with public water, wastewater, and utility services. These areas have been shown to be the most active portion of Delaware's developed landscape. They serve as transition areas between Level 1 and the state's more open, less populated areas. They generally contain a limited variety of housing types, predominantly detached single-family dwellings.

In Investment Level 2 Areas, like Investment Level 1 Areas, state investments and policies should support and encourage a wide range of uses and densities, promote other transportation options, foster efficient use of existing public and private investments, and enhance community identity and integrity.

Investments should encourage departure from the typical single-family-dwelling developments and promote a broader mix of housing types and commercial sites encouraging compact, mixed-use development where applicable. Overall, the State's intent is to use its spending and management tools to promote well-designed development in these areas. Such development provides for a variety of housing types, user-friendly transportation systems, and provides essential open spaces and recreational facilities, other public facilities, and services to promote a sense of community. Level 2 Areas would be a prime location for designating "pre-permitted areas."

Investment Level 3

Investment Level 3 areas fall into two categories. The first category covers land that is in the long-term growth plans of counties or municipalities, but where development is not necessary to accommodate expected short-term population growth. The second category includes lands that are adjacent to fast growing Investment Level 1 and 2 areas but are often impacted by environmentally sensitive features, agricultural-preservation issues, or other infrastructure issues. From a housing perspective, Investment Level 3 areas are characterized by low density and rural homes.

Out of Play

The 2015 Delaware Strategies for State Policies and Spending map indicates an Out of Play area on a portion of the property near Deep Branch. This area is not expected to be used for private development due to environmental constraints. The development of sites containing Out of Play areas should consider natural resources and the environment, emphasizing the protection of critical natural habitat, wildlife, and stormwater management/drainage areas.

Proposed Development's Compatibility with Strategies for State Policies and Spending:

The proposed mixed-use Windward on the River development is located on property designated as Investment Levels 1, 2 and 3 and an Out of Play area. The proposed development would include multi-family dwelling units, relatively small amounts of office space and retail space, and two restaurants. Nearby land uses primarily include residential, open space, agricultural, and commercial/service businesses. The proposed development is generally compatible with neighboring land uses, and consistent with the character of Investment Level 1 areas. The *Strategies for State Policies and Spending* document encourages making use of existing infrastructure through infill development and redevelopment of underutilized tracts in Investment Level 1 areas, which describes this development. Similarly, the development is generally consistent with Investment Level 2 areas. Investment Level 2 reflects areas where growth is anticipated by local, county, and State plans in the near term future. The Investment Level 3 portion of the site is very small and contains a branch of a wetland area. It is completely surrounded by Investment Level 1 and 2 areas. The proposed site layout indicates that no buildings will be placed in the Investment Level 3 area.

Provided that design of the site properly takes into account the Out of Play areas, the proposed development generally appears to comply with the guidelines for Investment Levels as described in the 2015 "Strategies for State Policies and Spending."

Comprehensive Plan

Sussex County Comprehensive Plan:

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

The Sussex County Comprehensive Plan Future Land Use Map indicates that the proposed Windward on the River is in the City of Milford, a municipality. Sussex County strongly favors directing development to municipalities that desire it. The specific permitted uses and densities

governing new construction within an incorporated municipality will continue to be governed by that municipality's zoning ordinance, its public water and sewer capacities, and its comprehensive planning policies.

City of Milford Comprehensive Plan:

(Source: City of Milford Comprehensive Plan, January 2018 Update)

The City of Milford's Comprehensive Plan Future Land Use Map indicates that the location of the proposed Windward on the River site is planned as primarily Moderate Density Residential and Commercial areas, and a small portion of Low Density Residential. Based on the proposed site layout, it would appear that the proposed residential area and commercial/office area fits within the intended future land uses for this location.

The City of Milford zoning map shows that the proposed development will be located on lands currently zoned R3 (Garden Apartments / Townhouses), C1 (Community Neighborhood Commercial), and C3 (Highway Commercial). Based on the City of Milford Code of Ordinances §230-11, 230-12, and 230-14, the purposes of these districts are as follows:

- R3: to provide for the orderly development of existing and proposed medium- to high-density residential areas where adequate public facilities exist. The district will permit development of garden-type apartments as well as townhouses that will yield high densities in selected areas, multifamily dwellings and a variety of housing types.
- C1: to provide for limited commercial and professional services activities that can be compatible in a neighborhood setting to provide goods and services to local residents.
- C3: to provide for larger-scale commercial uses that may require large amounts of parking space or have a high traffic impact. These uses generally require locations on major arterial routes and serve both local and regional customers.

Based on the above, the proposed uses associated with the Windward on the River development appear to be permitted, although it is noted that the different components of the site must meet the specific criteria for the zoning district in which they are located.

Proposed Development's Compatibility with Comprehensive Plan:

The proposed Windward on the River development appears to comply with the City of Milford's Comprehensive Plan. The development is proposed on land that is planned for residential and commercial use, and the land is currently zoned R3 (Garden Apartments / Townhouses), C1 (Community Neighborhood Commercial), and C3 (Highway Commercial). The proposed mixed-use development generally aligns with both the Future Land Use Map and the existing zoning.

Relevant Projects in the DelDOT Capital Transportation Program

Currently, there are no DelDOT capital projects within the area of study.

Trip Generation

Trip generation for the proposed development was computed using comparable land uses and equations contained in Trip Generation, Tenth Edition, published by the Institute of Transportation Engineers (ITE). The following land uses were utilized to estimate the amount of new traffic generated for this development:

- 264 units of Multifamily Housing (Mid-Rise) Homes (ITE Land Use Code 221)
- 8,400 SF of General Office (ITE Land Use Code 710)
- 17,600 SF of Shopping Center (ITE Land Use Code 820)
- 13,300 SF of High-Turnover Sit-Down Restaurants (ITE Land Use Code 932)

Table 1
WINDWARD ON THE RIVER PEAK HOUR TRIP GENERATION

Land Use	Weekday AM Peak Hour			Weekday PM Peak Hour		
	In	Out	Total	In	Out	Total
264 units multifamily housing	23	66	89	68	44	112
8,400 sf general office	29	5	34	2	9	11
17,600 sf shopping center	11	6	17	32	35	78
13,300 sf HTSD restaurants	73	59	132	81	49	130
<i>Internal Capture</i>	-27	-27	-54	-58	-58	-116
Pass-By Trips	0	0	0	-23	-23	-46
TOTAL EXTERNAL TRIPS	109	109	218	102	56	158

Table 2
WINDWARD ON THE RIVER DAILY TRIP GENERATION

Land Use	Weekday Daily		
	In	Out	Total
264 units multifamily housing	719	719	1438
8,400 sf general office	48	48	96
17,600 sf shopping center	332	332	664
13,300 sf HTSD restaurants	746	746	1492
TOTAL TRIPS	1845	1845	3690

Overview of TIS

Intersections examined:

- 1) S. Rehoboth Boulevard & Proposed Site Entrance A
- 2) Beaver Dam Road & Proposed Site Entrance B
- 3) S. Rehoboth Boulevard & Kirby Road (Sussex Road 209)
- 4) S. Rehoboth Boulevard & 2nd Street (Sussex Road 95)
- 5) S. Rehoboth Boulevard & SE Front Street (Sussex Road 36) / Cedar Beach Road (Sussex Road 36)
- 6) Cedar Beach Road & Beaver Dam Road

Conditions examined:

- 1) 2018 existing conditions (case 1)
- 2) 2026 without Windward on the River (case 2)
- 3) 2026 with Windward on the River (case 3)
- 4) 2026 with Windward on the River and Mispillion Landing development (case 4)

Peak hours evaluated: Weekday morning and evening peak hours

Committed developments considered:

- 1) Bayhealth Milford Campus (350,000 sf hospital and ambulatory care facility)
- 2) Nemours – Bayhealth (85,000 sf medical/dental office)
- 3) Hearthstone Manor I (*total*: 178 single-family detached houses and 952 condominiums; *unbuilt*: 94 single-family detached houses and 536 condominiums)
- 4) Hearthstone Manor II (1,105 condominiums and 118 single-family detached houses)
- 5) West Shores at New Milford (112 single-family detached houses)
- 6) Wickersham (200 townhouses)
- 7) Mispillion Landing (102 apartments) – INCLUDED IN CASE 4 ONLY

Intersection Descriptions

1) S. Rehoboth Boulevard & Proposed Site Entrance A

Type of Control: no existing intersection; proposed one-way stop (T-intersection)

Northbound approach: (S. Rehoboth Boulevard) existing one through lane; proposed one through lane and one right-turn lane

Southbound approach: (S. Rehoboth Boulevard) existing one through lane; proposed one left-turn lane and one through lane

Westbound approach: (Proposed Site Entrance A) proposed one left-turn lane and one right-turn lane, stop-controlled

- 2) **Beaver Dam Road & Proposed Site Entrance B**
Type of Control: no existing intersection; proposed one-way stop (T-intersection)
Northbound approach: (Beaver Dam Road) existing one through lane; proposed one shared through/left-turn lane
Southbound approach: (Beaver Dam Road) existing one through lane; proposed one through lane and one right-turn lane
Eastbound approach: (Proposed Site Entrance B) proposed one shared left/right-turn lane, stop-controlled
- 3) **S. Rehoboth Boulevard & Kirby Road**
Type of Control: one-way stop (T-intersection)
Northbound approach: (S. Rehoboth Boulevard) one shared through/right-turn lane
Southbound approach: (S. Rehoboth Boulevard) one shared through/left-turn lane
Westbound approach: (Kirby Road) one shared left/right-turn lane, stop-controlled
- 4) **S. Rehoboth Boulevard & 2nd Street**
Type of Control: one-way stop (T-intersection)
Northbound approach: (S. Rehoboth Boulevard) one shared through/left-turn lane
Southbound approach: (S. Rehoboth Boulevard) one shared through/right-turn lane
Eastbound approach: (2nd Street) one shared left/right-turn lane, stop-controlled
- 5) **S. Rehoboth Boulevard & SE Front Street / Cedar Beach Road**
Type of Control: signalized four-leg intersection
Northbound approach: (S. Rehoboth Boulevard) one shared through/left-turn lane and one right-turn lane
Southbound approach: (S. Rehoboth Boulevard) one shared through/left-turn lane and one right-turn lane
Eastbound approach: (SE Front Street) one shared through/left-turn lane and one channelized yield-controlled right-turn lane
Westbound approach: (Cedar Beach Road) one shared left/through/right-turn lane
- 6) **Cedar Beach Road & Beaver Dam Road**
Type of Control: one-way stop (T-intersection)
Northbound approach: (Beaver Dam Road) one shared left/right-turn lane, stop-controlled
Eastbound approach: (Cedar Beach Road) one shared through/right-turn lane
Westbound approach: (Cedar Beach Road) one shared through/left-turn lane

Safety Evaluation

Crash Data: McCormick Taylor reviewed the Delaware Crash Analysis Reporting System (CARS) data that was provided in Appendix A of the TIS. The data includes reportable crashes that occurred at or near study area intersections over the five-year period from April 27, 2013 through April 27, 2018. Of particular concern for safety evaluations are fatal crashes and crashes involving pedestrians or pedalcyclists. During the study period, no fatal crashes were reported

and no crashes involved pedestrians, pedacyclists, or motorcycles. A breakdown of all crashes by intersection is provided below.

1. S. Rehoboth Boulevard & Proposed Site Entrance A

Since this intersection does not currently exist, it was not included in the crash data analysis.

2. Beaver Dam Road & Proposed Site Entrance B

Since this intersection does not currently exist, it was not included in the crash data analysis.

3. S. Rehoboth Boulevard & Kirby Road

At this intersection there was a total of one (1) crash over the five-year period. This crash did not result in personal injury, and was not alcohol related. The crash type was sideswipe same-direction. It occurred during daylight hours with dry surface conditions. The primary contributing circumstance was driver inattention/distraction/fatigue.

4. S. Rehoboth Boulevard & 2nd Street

At this intersection there was a total of thirteen (13) crashes. Of those, five (38%) resulted in personal injury. There were no alcohol-related crashes. The types of crashes were rear-end (77%), head-on (8%), angle (8%), and sideswipe same direction (8%). The rear-end crash percentage equates to 10 crashes, 8 of which were in the northbound direction of S. Rehoboth Boulevard presumably involving vehicles that stopped or slowed to make a left-turn from the shared lane. The crashes occurred during daylight (69%) hours and non-daylight (31%) hours with dry (69%), wet (8%), icy (15%), and “other” (8%) surface conditions. The most common primary contributing circumstances included driver inattention/distraction/fatigue (54%) and following too close (15%).

5. S. Rehoboth Boulevard & SE Front Street / Cedar Beach Road

At this intersection there was a total of eleven (11) crashes. Of those, one (9%) resulted in personal injury and it was an alcohol-related crash. There were no other personal injury or alcohol-related crashes. The types of crashes were angle (55%) and rear-end (45%). The crashes occurred during daylight (82%) hours and non-daylight (18%) hours with dry (82%) and wet (18%) surface conditions. The most common primary contributing circumstances included failed to yield right of way (36%) and driver inattention/distraction/fatigue (36%).

6. Cedar Beach Road & Beaver Dam Road

At this intersection there was a total of five crashes. Of those, one (20%) resulted in personal injury. There was one alcohol-related crash. All five crashes had an indicated crash type of not a collision between two vehicles (100%). The crashes occurred during daylight (80%) hours and dark-not lighted (20%) hours with dry (80%) or wet (20%) surface conditions. The primary contributing circumstances included driver inattention/distraction/fatigue (40%), driving in a

careless/reckless manner (20%), mechanical defects (20%), and “other” (20%). While we are unable to determine the exact number, it appears that several of these crashes involved a vehicle hitting the guardrail on Cedar Beach Road just west of Beaver Dam Road.

Sight Distance: Vegetation and fencing on the northwest corner of S. Rehoboth Boulevard & Kirby Road may obstruct sight distance for drivers looking right when stopped on Kirby Road, although it appears there is room for drivers to move up closer to S. Rehoboth Boulevard to improve their sight distance. Also, at the other two existing intersections on S. Rehoboth Boulevard, there are buildings and parking areas on the corners of both intersections that may limit sight distance. None of these conditions are severe or especially concerning.

The study area generally consists of straight and flat roadways in the vicinity of the existing study intersections and proposed site entrances, and there are few potential visual obstructions (other than the ones mentioned above). Sight distance appears adequate throughout the study area. No problematic sight distance issues have been reported or indicated by crash data, and no major problems were noted during field observations.

Transit, Pedestrian, and Bicycle Facilities

Existing transit service: Delaware Transit Corporation (DTC) currently serves the Milford area with three DART bus routes, and the only one that goes along either site frontage is DART route 307 (Intercounty: Lewes – Dover), which is a new route that began service in December 2018 and runs along S. Rehoboth Boulevard. The nearest existing stops on this route are at the Milford Super Walmart and the Bayhealth Sussex Campus, both of which are more than 1.5 miles from the proposed Windward on the River site. Two other routes nearby are DART routes 303 (Intercounty: Dover – Georgetown) and 210 (Milford Circulator), both of which have stops along Walnut Street about one mile away (as the crow flies) as the closest ones to the proposed site. Routes 303 and 210 don’t run along either site frontage of Windward on the River.

Planned transit service: There are currently no known plans to provide additional transit service along either S. Rehoboth Boulevard or Beaver Dam Road near the proposed development.

Existing bicycle and pedestrian facilities: According to the Sussex County bicycle map, S. Rehoboth Boulevard is classified as a Connector Bicycle Route. It is noted as a high-traffic road with a bikeway. Beaver Dam Road is an undesignated road, in terms of bicycling routes. There are no existing marked bicycle lanes within the study area. There are however, 10-12’ wide shoulders on both sides of S. Rehoboth Boulevard throughout the study area. There are no shoulders on Beaver Dam Road

Existing pedestrian facilities in the study area include sidewalks along both sides of 2nd Street and SE Front Street, west of S. Rehoboth Boulevard only, as well as a stretch of Cedar Beach Road east of S. Rehoboth Boulevard. There are no crosswalks or pedestrian signals/push buttons at any of the study area intersections.

Planned bicycle and pedestrian facilities: DBF contacted a representative of DelDOT's Local Systems Planning Section to determine pedestrian and bicycle accommodations for the proposed development. John Fiori originally requested a 10' shared-use path along the site frontage of both S. Rehoboth Boulevard and Beaver Dam Road, but upon further coordination these requirements were reduced to a 5' sidewalk along S. Rehoboth Boulevard only. He indicated that easements would be required along the frontages. He requested that entrance improvements incorporate bicycle and pedestrian facilities, and that an internal sidewalk/path connection be provided. He requested separate bike parking in the retail areas, and recommended an internal trail system within the development for recreational use.

Previous Comments

All comments from DelDOT's scoping letter, traffic count review, preliminary TIS (PTIS) review and other correspondence appear to be addressed in the final TIS submission.

General HCS Analysis Comments

(see table footnotes on the following pages for specific comments)

- 1) For signalized intersections, the TIS and McCormick Taylor applied heavy vehicle factors (HV) by lane group using existing data. The TIS and McCormick Taylor generally assumed future HV to be the same as existing HV at all intersections. Both the TIS and McCormick Taylor assumed 3% HV for future movements to and from the proposed site access points (as per DelDOT's Development Coordination Manual).
- 2) For existing conditions, the TIS and McCormick Taylor determined and utilized overall intersection peak hour factors (PHF). For future conditions, the TIS and McCormick Taylor assumed existing PHF or 0.92, whichever was greater. At the site entrances, future PHF were based on the DelDOT Development Coordination Manual.
- 3) For analyses of all intersections, the TIS and McCormick Taylor used a base saturation flow rate of 1,750 pc/hr/ln per DelDOT's Development Coordination Manual for the weekday peak hours.
- 4) The TIS and McCormick Taylor used different signal timings when analyzing the signalized intersections in some cases.
- 5) The TIS and McCormick Taylor generally input Right-Turn-on-Red (RTOR) volumes for signalized intersection analyses, using existing RTOR volumes for existing and future analyses.

Table 3
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Windward on the River
Report dated November 2018
Prepared by DBF, Inc.

Proposed Unsignalized Intersection ¹ One-Way Stop Control (T-Intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
S. Rehoboth Boulevard & Proposed Site Entrance A				
2026 with Windward on the River (case 4)				
Southbound S. Rehoboth Boulevard – Left	A (9.7)	A (9.5)	A (9.6)	A (9.5)
Westbound Site Driveway	C (21.6)	D (26.6)	C (21.6)	D (26.3)

¹ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 4
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Windward on the River
Report dated November 2018
Prepared by DBF, Inc.

Proposed Unsignalized Intersection ² One-Way Stop Control (T-Intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Beaver Dam Road & Proposed Site Entrance B				
2026 with Windward on the River (case 4)				
Northbound Beaver Dam Road – Left	A (7.3)	A (7.4)	A (7.3)	A (7.4)
Eastbound Site Driveway	A (8.9)	A (9.0)	A (8.9)	A (9.0)

² For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 5
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Windward on the River
Report dated November 2018
Prepared by DBF, Inc.

Unsignalized Intersection ³ One-Way Stop Control (T-Intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
S. Rehoboth Boulevard & Kirby Road				
2018 existing (case 1)				
Southbound S. Rehoboth Boulevard – Left	A (9.1)	A (8.6)	A (9.1)	A (8.6)
Westbound Kirby Road	C (16.7)	C (16.3)	C (16.7)	C (16.3)
2026 without Windward on the River (case 2)				
Southbound S. Rehoboth Boulevard – Left	A (9.6)	A (9.1)	A (9.6)	A (9.1)
Westbound Kirby Road	C (20.2)	C (21.2)	C (20.2)	C (21.1)
2026 with Windward on the River (case 3)				
Southbound S. Rehoboth Boulevard – Left	A (9.7)	A (9.2)	A (9.7)	A (9.2)
Westbound Kirby Road	C (23.0)	C (23.4)	C (22.9)	C (23.3)
2026 with Windward on the River & ML (case 4)				
Southbound S. Rehoboth Boulevard – Left	A (9.7)	A (9.2)	A (9.7)	A (9.2)
Westbound Kirby Road	C (23.1)	C (23.6)	C (23.0)	C (23.5)

³ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 6
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Windward on the River
Report dated November 2018
Prepared by DBF, Inc.

Unsignalized Intersection ⁴ One-Way Stop Control (T-Intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
S. Rehoboth Boulevard & 2nd Street				
2018 existing (case 1)				
Northbound S. Rehoboth Boulevard – Left	A (8.6)	A (8.9)	A (8.6)	A (8.9)
Eastbound 2 nd Street	E (37.3)	C (20.7)	E (37.3)	C (20.7)
2026 without Windward on the River (case 2)				
Northbound S. Rehoboth Boulevard – Left	A (8.9)	A (9.7)	A (8.9)	A (9.7)
Eastbound 2 nd Street	F (72.0)	E (38.0)	F (70.4)	E (38.0)
2026 without Windward on the River (case 2) with Improvement Option 1 ⁵				
Northbound S. Rehoboth Boulevard – Left	A (8.9)	A (9.7)	A (8.9)	A (9.7)
Eastbound 2 nd Street	D (26.5)	C (21.7)	D (26.5)	C (21.7)
2026 with Windward on the River (case 3)				
Northbound S. Rehoboth Boulevard – Left	A (9.2)	A (9.9)	A (9.2)	A (9.9)
Eastbound 2 nd Street	F (134.1)	F (50.8)	F (134.1)	F (50.8)
2026 with Windward on the River (case 3) with Improvement Option 1 ⁵				
Northbound S. Rehoboth Boulevard – Left	A (9.2)	A (9.9)	A (9.2)	A (9.9)
Eastbound 2 nd Street	D (33.9)	C (24.0)	D (33.9)	C (24.0)
2026 with Windward on the River & ML (case 4)				
Northbound S. Rehoboth Boulevard – Left	A (9.2)	A (9.9)	A (9.2)	A (9.9)
Eastbound 2 nd Street	F (138.9)	F (56.0)	F (138.9) ⁶	F (56.0) ⁶
2026 with Windward on the River & ML (case 4) with Improvement Option 1 ⁵				
Northbound S. Rehoboth Boulevard – Left	A (9.2)	A (9.9)	A (9.2)	A (9.9)
Eastbound 2 nd Street	D (34.5)	C (24.9)	D (34.4) ⁷	C (24.9) ⁷

⁴ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

⁵ Improvement Option 1 consists of adding a left-turn lane along northbound S. Rehoboth Boulevard and modifying the eastbound 2nd Street approach to provide separate dedicated left and right-turn lanes.

⁶ The 95th percentile queue length on the eastbound approach during the Case 4 AM peak hour is expected to be approximately 13 vehicles (325 feet) long. For the Case 4 PM peak hour, it is expected to be approx. 6 vehicles long.

⁷ The 95th percentile queue length on the eastbound approach during the Case 4 AM peak hour (with Improvement Option 1) is expected to be approximately 4 vehicles (100 feet) long. For the Case 4 PM peak hour (with Improvement Option 1), it is expected to be approx. 2 vehicles long.

Table 7
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Windward on the River
Report dated November 2018
Prepared by DBF, Inc.

Signalized Intersection ⁸	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
S. Rehoboth Boulevard & SE Front Street / Cedar Beach Road				
2018 existing (case 1)	B (16.5)	B (16.3)	B (11.0)	A (8.0)
2026 without Windward on the River (case 2)	B (17.6)	B (19.5)	B (11.2)	A (8.8)
2026 with Windward on the River (case 3)	B (19.7)	C (22.8)	B (12.0)	A (9.2)
2026 with Windward on the River & ML (case 4)	B (19.9)	C (23.6)	B (12.0)	A (9.2)

⁸ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.

Table 8
PEAK HOUR LEVELS OF SERVICE (LOS)
based on Traffic Impact Study for Windward on the River
Report dated November 2018
Prepared by DBF, Inc.

Unsignalized Intersection ⁹ One-Way Stop Control (T-Intersection)	LOS per TIS		LOS per McCormick Taylor	
	Weekday AM	Weekday PM	Weekday AM	Weekday PM
Cedar Beach Road & Beaver Dam Road				
2018 existing (case 1)				
Northbound Beaver Dam Road	A (10.0-)	B (10.4)	A (10.0-)	B (10.4)
Westbound Cedar Beach Road – Left	A (7.7)	A (7.7)	A (7.7)	A (7.7)
2026 without Windward on the River (case 2)				
Northbound Beaver Dam Road	B (10.1)	B (10.6)	B (10.1)	B (10.5)
Westbound Cedar Beach Road – Left	A (7.8)	A (7.7)	A (7.8)	A (7.7)
2026 with Windward on the River (case 3)				
Northbound Beaver Dam Road	B (10.3)	B (10.6)	B (10.3)	B (10.6)
Westbound Cedar Beach Road – Left	A (7.8)	A (7.7)	A (7.8)	A (7.7)
2026 with Windward on the River & ML (case 4)				
Northbound Beaver Dam Road	B (10.3)	B (10.6)	B (10.3)	B (10.6)
Westbound Cedar Beach Road – Left	A (7.8)	A (7.7)	A (7.8)	A (7.7)

⁹ For both unsignalized and signalized analyses, the numbers in parentheses following levels of service are average delay per vehicle, measured in seconds. For signalized analyses, LOS analysis results are given for only the overall intersection delay.