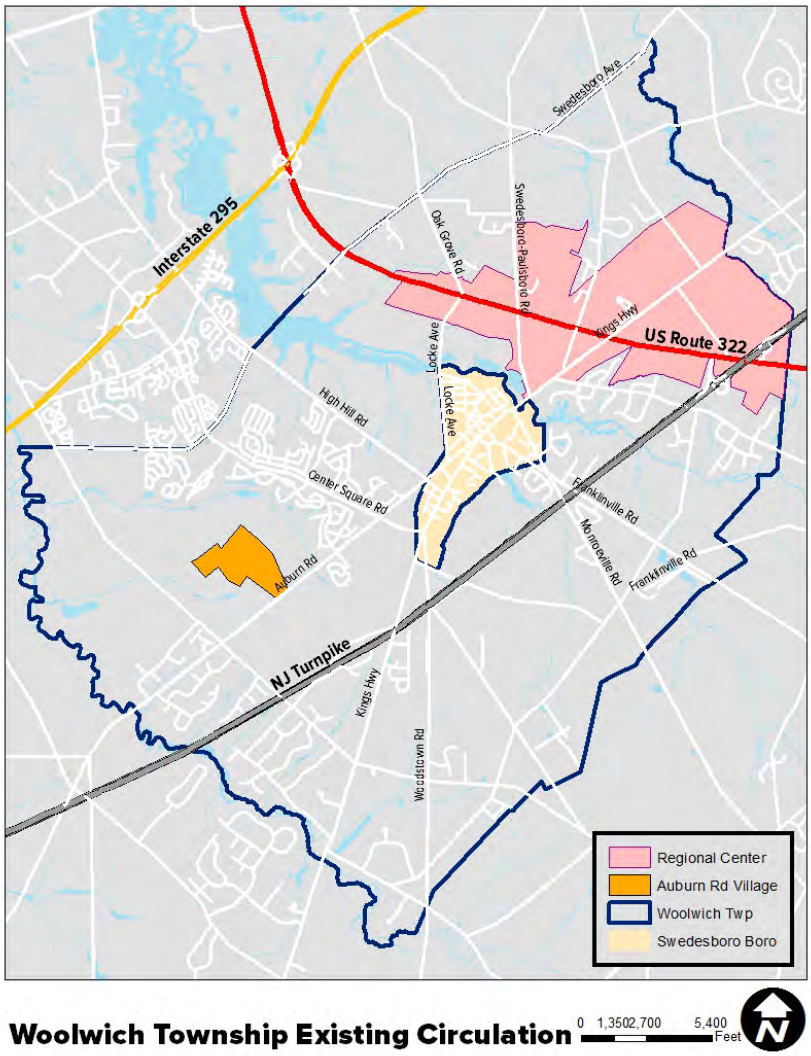
CIRCULATION PLAN

Contents



Woolwich Township Existing Circulation

INTRODUCTION

Woolwich Township has experienced extensive growth in recent decades, with the population increasing by over 20 percent between 2009 and 2013 alone. Much of the resulting development in the Township has come in the form of low-density, single-family homes, with new subdivisions expanding out into formerly agricultural, rural, and natural landscapes. The Township is seeking to harness this growth by implementing a Transfer of Development Rights (TDR) program, encouraging dense development, and improving multi-modal transportation options. By implementing these measures, the Township hopes to maximize economic development potential, mitigate traffic congestion, improve livability, and preserve the rural and natural landscapes from which the Township derives its character. In the face of rapid growth and changing conditions, Woolwich Township is updating the Circulation Element of the Township Master Plan. The Circulation Element will provide guidance to the Township towards achieving a pedestrian-friendly, traffic-calmed, uncongested and multi-modal transportation network. The Circulation Element will also support the development of the US Route 322 Regional Center as a dense and walkable area with a mix of residential and commercial uses.

EXISTING CONDITIONS

Image courtesy of Matt Blake

Contents

LAND USE

An analysis of existing conditions within Woolwich Township helps to shape the goals and recommendations of the Circulation Element. Included are analyses of existing conditions related to transportation, land use, the environment, and socioeconomics. This analysis will be useful in identifying challenges and opportunities to be addressed in the Circulation Element and will present important information related to the development of visions, goals, and objectives to guide the Circulation Element recommendations.

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Assessed farmland (Class 3B) accounts for 60.8 percent of all taxable property in Woolwich Township, comprising 6,985.4 acres. Residential (Class 2) properties account for 26.4 percent of all taxable property, comprising 3,034.4 acres. Vacant (Class 1) parcels account for 7.0 percent of all taxable property, comprising 806.3 acres. There are 845.7 acres of publicly-owned (Class 15C) properties in the Township. Table 1 provides a breakdown of taxable and exempt property.

TAXABLE PROPERTY	PROPERTY CLASS	PARCELS	ACREAGE
	Class 1 - Vacant	485	806.3
	Class 2 - Residential	3205	3034.4
	Class 3A - Farm (House)	90	140.3
	Class 3B - Farm (Qualified)	233	6985.4
	Class 4A - Commercial	77	293.6
	Class 4B - Industrial	10	175.5
	Class 4C - Apartment	2	63
EXEMPT PROPERTY	Property Class	Parcels	Acreage
	Class 15A - Public School Property	4	184.1
	Class 15B - Other School Property	0	0
	Class 15C - Public Property	53	854.7
	Class 15D - Church & Charitable Property	7	5.5
	Class 15E - Cemeteries & Graveyards	5	45.1
	Class 15F - Other Exempt	15	38.6

Table 1: Woolwich Township parcels and acres by property tax class

Woolwich Township owns 543.3 acres of property within the Township. Another 171.5 acres are owned by the New Jersey Department of Environmental Protection (NJDEP). Table 2 provides a breakdown of all publicly owned (Class 15C) property in Woolwich Township.

OWNER	BLOCK/LOT	ACREAGE	USES
Borough of Swedesboro	45/6	36.29	Swedesboro Lake Park
Gloucester County	34/1	0.5	Drainage structure
Gloucester County Improvement Authority	44/5	11.5	Vacant land
New Jersey Department of Environmental Protection	5/6.07, 6/1, 6/4.01, 6/4.02	171.5	Vacant land
New Jersey Natural Lands Trust	54/9.19, 54/9.20, 54/13, 54/14	54.6	Raccoon Creek Preserve
New Jersey Turnpike Authority	46/5, 55/2, 29/1, 45/8	10.8	New Jersey Turnpike right-of-way
New Jersey Department of Transportation	7/1	2.5	CR-671/Locke Avenue bridge right-of-way
Woolwich Township	1/14.07, 2/19, 2/20, 2/21, 2/22, 2.01/30, 2.01/56, 2.05/2, 2.06/14, 2.11/86, 3/4.01, 3.01/13.01, 3.07/15.01, 3.12/16, 3.16/11.01, 3.16/31.01, 3.17/21, 3.22/29, 3.32/1, 5/4, 5/5, 5/6.02, 5/7, 5/11, 5/11.01, 8/14, 11/28, 11/29, 14/2, 28.01/1, 28.02/10.01, 34/2, 35/4, 46/2	543.3	Farm (5/4), Municipal Building (28.01/1), Park/Open Space (1/14.07, 3/4.01, 3.21/1, 3.22/29, 2.01/30, 2.01/56, 2.05/2, 2.06/14, 2.11/86, 3.16/31.01, 5/7, 5/11, 5/11.01), Parking (3.18/12, 3.22/29), Police Station (34/2), Pumping Station (3.07/15.01), Shed (3.01/13.01), Storage Building (14/2), Vacant Land (2/19, 2/20, 2/21, 2/22, 3.12/16, 3.16/31.01, 3.17/21, 5/5, 5/6.02, 8/14, 11/28, 11/29, 28.02/10.01, 35/4, 46/2)
Woolwich Township & Borough of Swedesboro	5/10	23.8	Park

Table 2: Woolwich Township publicly owned (Class 15C) properties

LAND USE REGULATIONS

WOOLWICH TOWNSHIP ZONING CODE

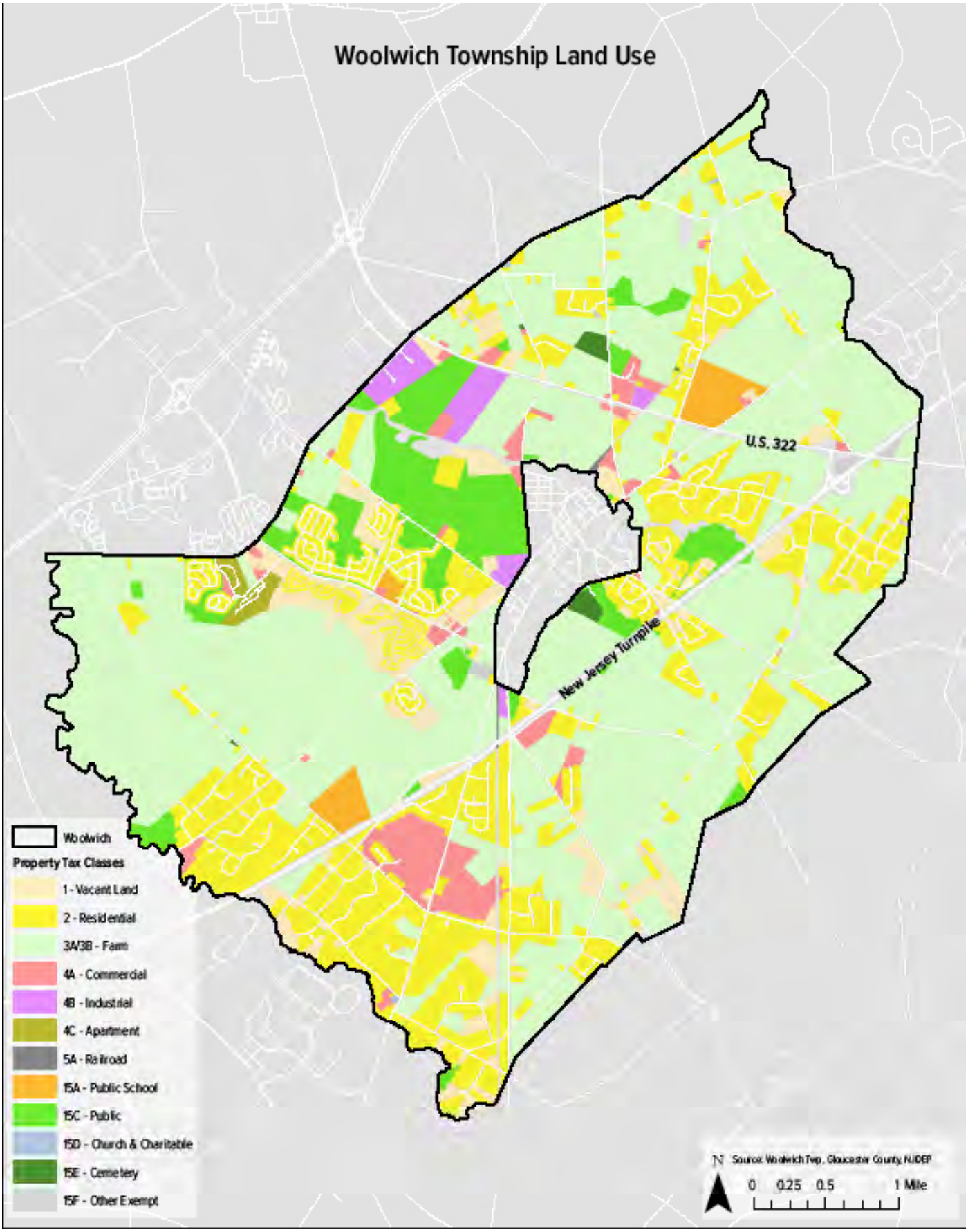
The vast majority of Woolwich Township is zoned for residential development. Residential development is a permitted use in twelve of the Township's fifteen zoning districts. These twelve districts cover 12,730.1 acres within the Township, comprising 93.7 percent of the Township's total land area. Despite the fact that farm-assessed properties account for over 60 percent of all taxable property in the Township, the Woolwich Township Zoning Code does not have any districts solely dedicated to agriculture. Much of the farmland in the Township lies in residential zones and can be subject to development, with the exception of preserved farmland. Table 3 provides a breakdown by acres of all zoning districts within the Township.

In 2008, Woolwich adopted a voluntary transfer of development rights (TDR) program, with the goal of directing development away from areas with limited infrastructure into designated receiving areas more appropriate for development. Landowners who own parcels in designated sending areas have the option to send their development rights to designated receiving areas within the regional center. These parcels are then preserved in perpetuity via a deed restriction. Over 4,000 acres of land are including in the Township's sending areas. In order to be eligible, parcels must be designated as part of the sending area in the Township TDR Plan, be greater than ten acres in size, and cannot be subject to any current deed restriction. Parcels in the sending area have a base zoning of one single-family detached dwelling unit per 15 acres in order to preserve rural landscapes in areas where landowners have opted not to participate.

The Township has two receiving areas, the 127-acre Auburn Road Village, and a 683-acre receiving area within the 1760-acre Woolwich Regional Center. The Auburn Road Village permits residential, commercial and mixed-use development. The Woolwich Regional Center contains four Regional Center (RC) zoning districts. The

DISTRICT	ACRES
5A - Five Acre Residential District	649.3
AR-1 - Auburn Road Village	126.6
FOC - Flexible Office Commercial District	624.1
I-C – Cemetery	99.8
LIO - Light Industrial/Office District	148.4
PAC - Planned Adult Community	30.6
PUD - Planned Unit Development District	1607.8
R-1 – Residential	3978.2
R-2 - Residential District	3741.5
R-3 – Residential	760.2
RC-1 - Regional Center	618.5
RC-2 - Regional Center	85.3
RC-3 - Regional Center	935.4
RC-4 - Regional Center	120.6
RLM - Residential Low/Moderate	76.2
TDR Sending Area	3073.9

Table 3. Woolwich Township Zoning District Acres


Woolwich Township Land Use
U.S. 322
New Jersey Turnpike
Woolwich
Property Tax Classes
1 - Vacant Land
2 - Residential
3A/3B - Farm
4A - Commercial
4B - Industrial
4C - Apartment
5A - Railroad
15A - Public School
15C - Public
15D - Church & Charitable
15E - Cemetery
15F - Other Exempt
N
Source: Woolwich Twp., Gloucester County, NJDEP
0 0.25 0.5 1 Mile

RC-1 and RC-3 districts permit residential, commercial and mixed-use development, with RC-1 permitting some lower-density residential uses, such as single-family detached dwelling. RC-2 and Neighborhood Commercial (NC) permit commercial and non-nuisance, light industrial uses. Landowners within Woolwich Regional Center who opt not to participate in the TDR program are subject to mandatory cluster zoning, with a maximum lot size of two acres.

Development credits for landowners participating in the TDR program are calculated based on the permitted uses in the target area of the receiving zone, the acreage of various soil types on the sending zone property, and an infrastructure factor based on the compatibility of the land with sewer and septic service.

WOOLWICH TOWNSHIP PRESERVED FARMLAND

Preserved farmland comprises over 11 percent of all land area in Woolwich Township. Over 1,200 acres have been preserved since 2008, and over 1,500 acres have been preserved overall. Preserved farmland is not available for development, and thus limits where growth can occur in the Township. Most of the preserved farmland in Woolwich is located in the east-central portion of the Township

STATE OF NEW JERSEY

State Development and Redevelopment Plan

Much of Woolwich Township falls within the Rural Planning Area (PA4) of the State Plan Policy Map. Rural Planning Areas are intended to maintain contiguous areas of farmland and other rural landscapes, direct development to existing towns and designated centers, and discourage capital investments in infrastructure, such as water or sewer. The Township's TDR program addresses the restrictions of PA4 by encouraging development in designated centers, and attempting to curb growth in rural and agricultural areas with limited infrastructure. Tracts of land around Raccoon Creek in the Township have been designated as Environmentally Sensitive Planning Areas (PA5). Environmentally Sensitive Planning Areas are intended to preserve valuable ecosystems, wildlife habitats, and geologic features by directing development and infrastructure investments into designated centers. Small tracts of lands along various stream tributaries in the Township have been designated as Critical Environmental Sites (CES). CES designate small areas with important habitat, water resources or geologic features, and are recommended for preservation or other investments in resource protection.

New Jersey Freshwater Wetlands Protection Act

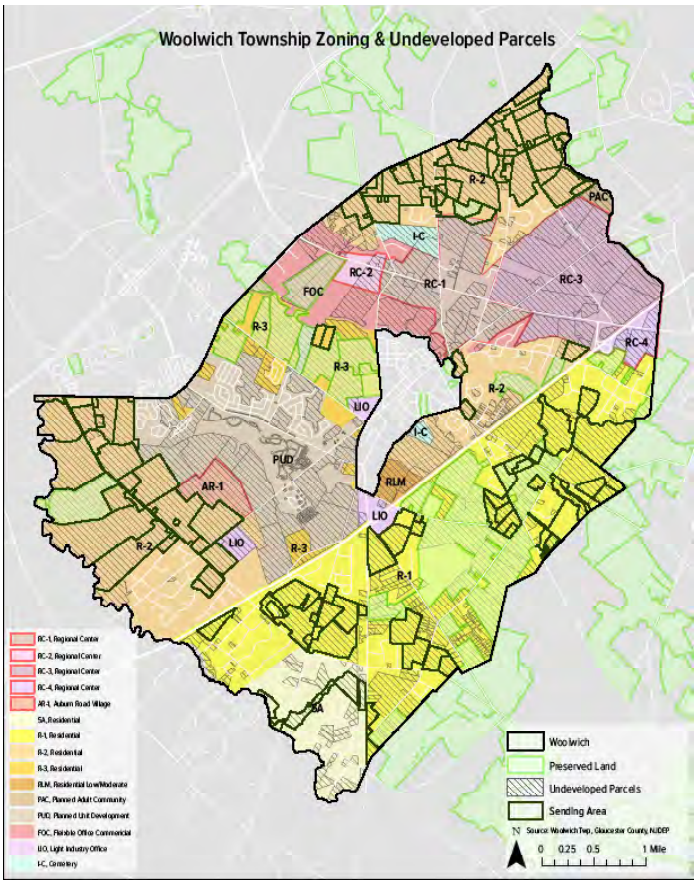
Under the Freshwater Wetlands Protection Act, NJDEP has permitting authority regarding development activity in freshwater wetlands. Residential and commercial development is broadly restricted in delineated wetlands; however, infrastructure improvements for new developments, such as utility lines and road widening, may be permitted by New Jersey Department of Environmental Protection (NJDEP).

New Jersey Flood Hazard Area Control Act

Under the New Jersey Flood Hazard Area Control Act, NJDEP has permitting authority regarding activity in flood hazard areas. Flood hazard areas are calculated using the 100-year floodplain as a baseline and adding an additional factor of safety based on local conditions. Activities subject to permitting by NJDEP in flood hazard areas include the alteration of topography, the removal of vegetation in riparian zones, the creation of impervious surfaces, the storage of unsecured materials, the construction or enlargement structures, and the conversion of non-residential buildings into a residential buildings or public housing.

UNDEVELOPED LANDS

Woolwich contains 8,635.5 acres of undeveloped lands spread throughout the Township. The majority of undeveloped parcels in the Township are preserved or located within TDR sending and receiving zones. Of the undeveloped lands within the Township, 1,769.5 acres are preserved, 2,734.4 acres are located within TDR sending areas, and 1,380.7 acres are located within TDR receiving areas. An additional 2,750.9 acres of undeveloped lands are either unpreserved or fall outside of TDR sending and receiving zones, with 891.9 of these acres are contained within the Planned Unit Development (PUD) District. The remaining 1,859 acres of undeveloped lands are scattered throughout the Township, with large tracts lying within the R-1 Residential, R-2 Residential, and Residential Low/Moderate districts.



NATURAL CONSTRAINTS

WETLANDS

Woolwich Township contains 1,165 acres of wetlands, including 653 acres of forested wetlands, 316 acres of low-growing riparian wetlands, and 196 acres of tidal marsh. These wetlands are primarily located along stream corridors in the Township, and account for 8.6 percent of all land area in the Township.

VERNAL POOLS

The 2001 NJDEP Vernal Pool Survey identified 12 potential vernal habitat areas within Woolwich Township. Vernal pools are defined as wetland-like depressions that hold water for at least two months per year, and do not contain breeding fish populations. These areas provide important breeding habitat for frogs, salamanders and other amphibian species. In Woolwich, potential vernal habitats are mostly located along stream corridors in the central portion of the Township.

Certified vernal pools are required by NJDEP to have a 75-foot buffer from development. As of June 2015, no vernal pools within Woolwich Township have been certified by NJDEP.

FLOOD HAZARD ZONES

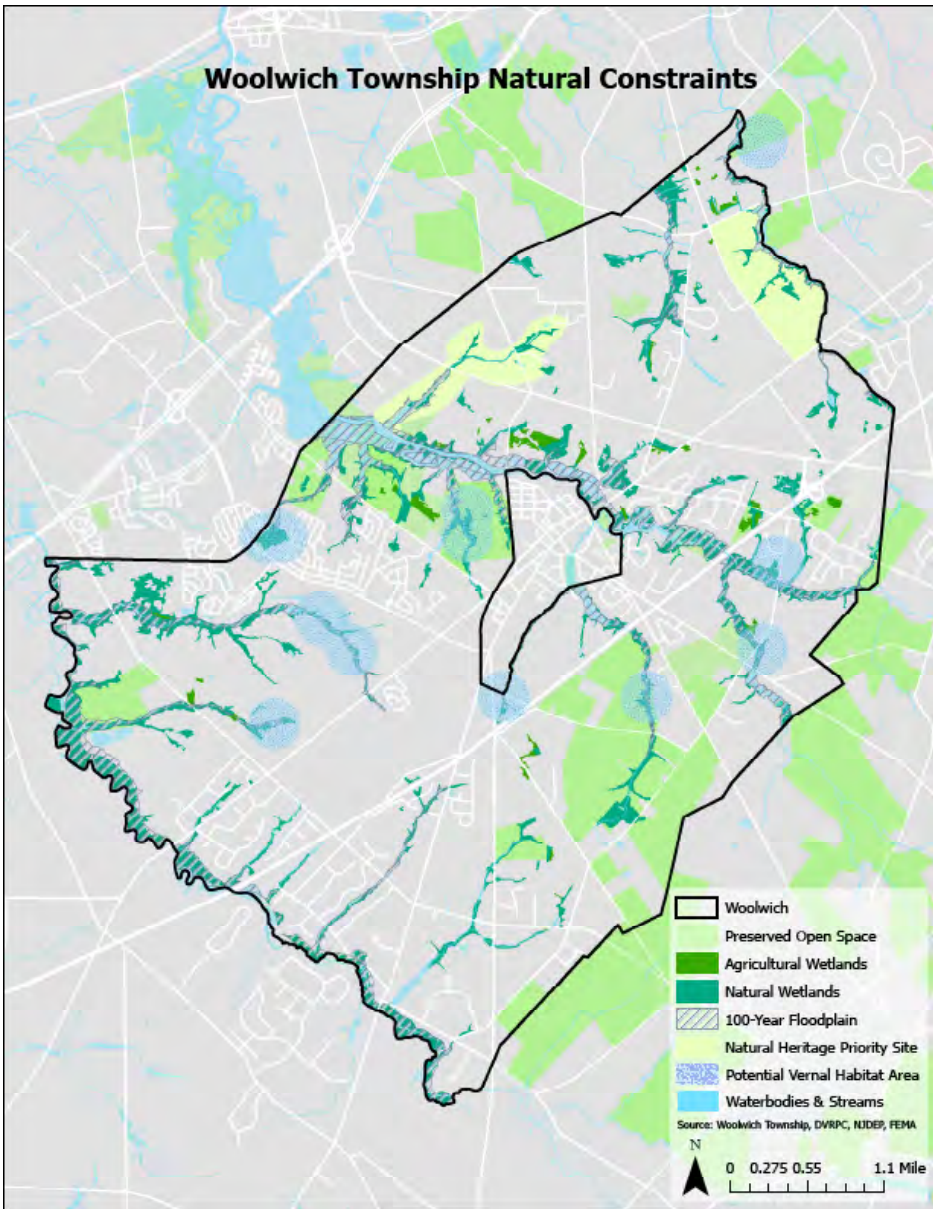
Woolwich Township contains 1,036 acres of lands that are within the 100-year floodplain. Most of the floodplain lands (758 acres) are located within FEMA Zone A, meaning they lay within the 100-year floodplain, but no base flood elevations have been determined. Base flood elevations are the height to which waters are expected to rise during a 100-year flood event. An additional 278 acres are located in FEMA Zone AE, meaning they lie within the 100-year floodplain, and base elevations have been determined. The remaining 63 acres lie within FEMA Zone X500.

These lands may lie within the 500-year floodplain, or may be subject to 100-year flooding with a drainage area of less than one square mile or average flood depth of less than one foot. Lands within FEMA Zone A in Woolwich are found primarily along Oldmans Creek along the southern Township boundary, Raccoon Creek and Basgolore Creek east of Swedesboro, and Little Timber Creek, Pargey Creek and Rattling Run in the northern portion of the Township.

Lands within FEMA Zone AE are found primarily along Raccoon Creek north and west of Swedesboro. Lands within FEMA Zone X500 are found along the outer edges of FEMA Zone AE along Raccoon Creek, north and west of Swedesboro.

NATURAL HERITAGE PRIORITY SITES

Woolwich Township contains two Natural Heritage Priority (NHP) sites as designated by NJDEP. The Grand Sprute Run site is located along the Grand Sprute Run stream, which flows south into Raccoon Creek near the western Township boundary. The site features a steep, wooded ravine, and open and emergent wetlands. The site contains two plant species of Special Concern status. The Tomlin Station site is located on the northeast Township boundary with East Greenwich, and features a dry pine/oak woodland habitat. The site contains plant species of Critically Imperiled status, as well as other rare plants species which are historic or extant to the area.



DEMOGRAPHICS

POPULATION

In 2013, Woolwich was home to 10,541 residents. Consistent with the narrative of rapid growth, the Township's population grew by 21.1 percent between 2009 and 2013. By comparison, Gloucester County's population grew by 1.6 percent during this time, and State of New Jersey's population grew by 2.1 percent. The Township is also aging, with the median age increasing from 33.4 in 2009 to 35.2 in 2013. By comparison, however, the median age for Gloucester County increased from 37.8 to 39.0 during this time, and the median age for the State of New Jersey increased from 38.3 to 39.1.

In 2013, there were 3,286 households in Woolwich, an increase of 23.6 percent from 2009. During this time, households grew at a faster rate than the population, suggesting that smaller, non-family households were developed at a faster rate than larger ones. This trend also occurred in Gloucester County, however, the population grew faster than the number of households in the State of New Jersey as a whole. In 2013, non-family households comprised 17.4 percent of all households in Woolwich, up from 14.9 percent in 2009. Non-family households comprised 27.5 percent of all households in Gloucester County, and 30.75 percent of all households

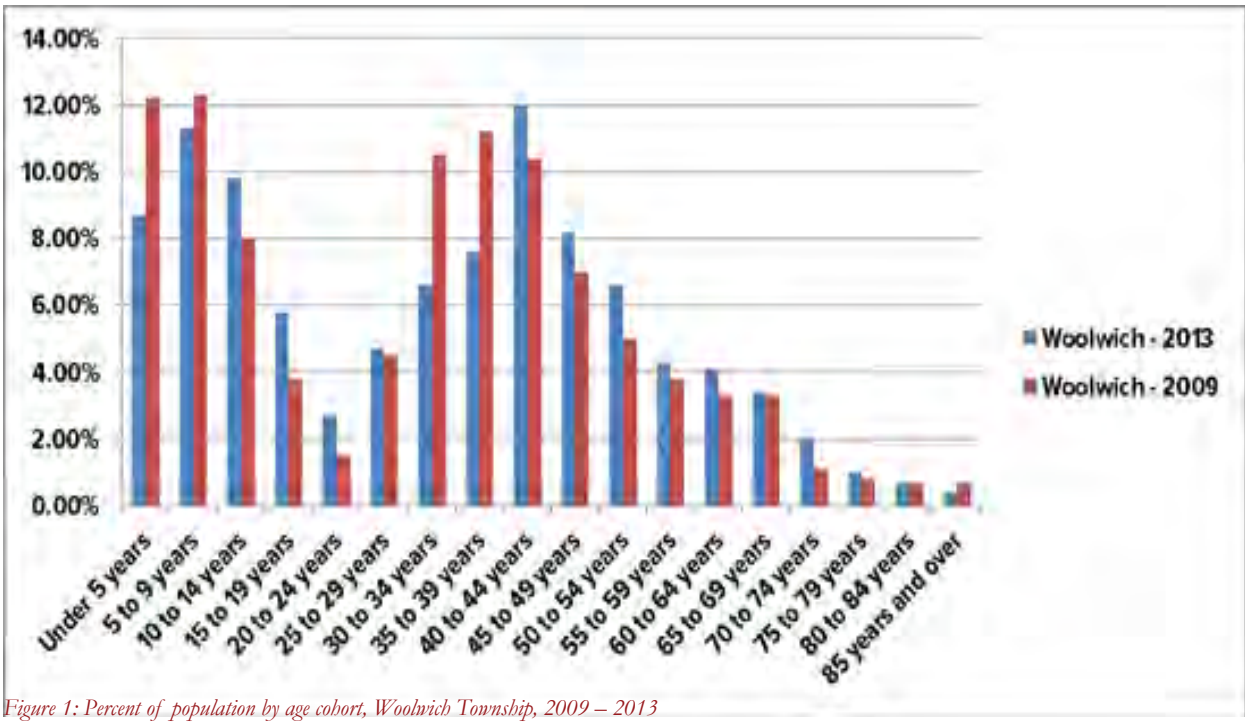


Figure 1: Percent of population by age cohort, Woolwich Township, 2009 – 2013

Between 2009 and 2013, the Township's population became slightly less diverse, with the share of the White population increasing from 78.8 percent to 80.3 percent, suggesting population growth in this time frame was largely fueled by White residents. In absolute terms, Asian and Hispanic populations saw increases, while the Black population saw a decrease. By comparison, from 2009 to 2013 the share of White residents in Gloucester

	WOOLWICH TOWNSHIP	GLOUSCESTER COUNTY	STATE OF NEW JERSEY
White alone	23.37	-1.08	-3.62
Black or African American alone	-5.94	3.15	0.07
Asian alone	80.84	28.43	17.87
Other	-54.86	7.43	23.50
Hispanic or Latino:	115.93	38.87	16.55

Table 4. Percent change by racial groups, 2009 - 2013

in the State of New Jersey in 2013, both insignificant changes from 2009. Average household size in Woolwich Township decreased from 3.27 in 2009 to 3.21 in 2013. Average household size in Gloucester County also decreased, from 2.83 to 2.71, but increased for the State of New Jersey as a whole, from 2.74 to 2.77.

The Delaware Valley Regional Planning Commission (DVRPC) projects that the Woolwich's population will grow to 23,098 by 2040, a 127 percent increase. Woolwich is expected to have the largest percent increase of any municipality in DVRPC's nine-county region, with nearby Elk Township having the next largest projected increase at 72 percent.

HOUSING

In 2013, Woolwich had 3,481 housing units, an increase of 22.7 percent from 2009. By comparison, between 2009 and 2013 the number of housing units in Gloucester County and the State of New Jersey increased by 3.9 percent and 2.0 percent, respectively. Roughly 5.6 percent of units in Woolwich Township were vacant in 2013. This is down from a vacancy rate of 6.2 percent in 2009. Between 2009 and 2013, vacancy rates increased slightly in Gloucester County, from 5.3 percent to 5.7 percent, and more significantly in the State of New Jersey, from 9.7 percent to 10.6 percent. In 2013, single-family units comprised 88.8 percent of all housing units in Woolwich, a decrease of 5.7 percent from 2009. Between 2009 and 2013, the percentage of single-family units in Gloucester County remained constant at 73.3 percent and decreased slightly for the State of New Jersey, from 53.9 to 53.7 percent. Renter-occupied units in Woolwich Township more than doubled between 2009 and 2013, increasing from 5.9 to 13.2 percent of all occupied units. By comparison, renter-occupied units increased from 18.9 to 19.8 percent of all occupied units in Gloucester County and from 32.9 to 34.4 percent of all occupied units in the State of New Jersey in this time. While the share of rental housing units in Woolwich Township suggests a lack of diverse housing options, it should be noted that in absolute terms, the number of renter-occupied households nearly tripled between 2009 and 2013, from 158 to 434 units.

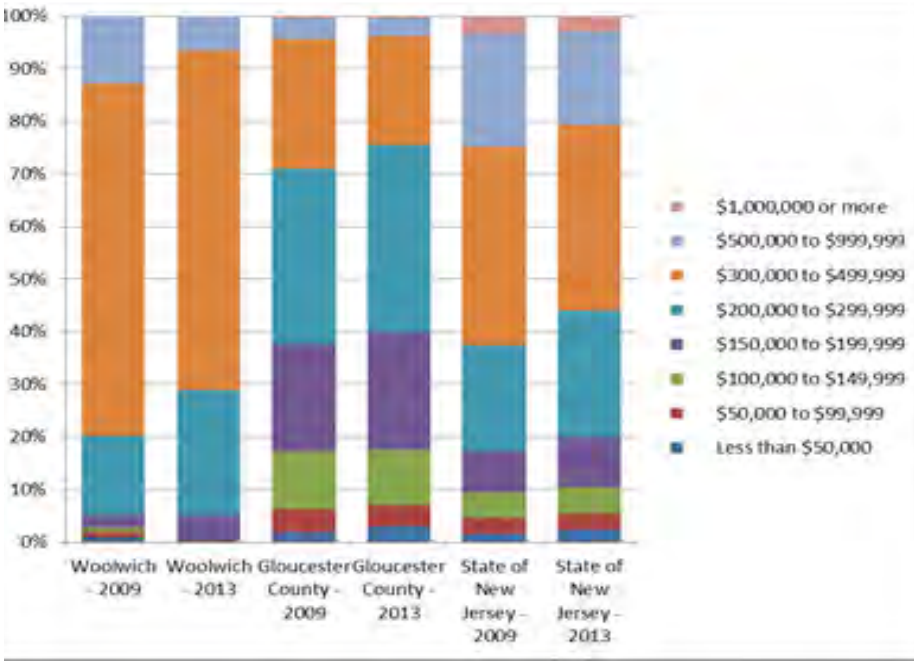


Figure 2. Population breakdown by median value of owner-occupied housing units,

Adjusted for inflation, the median value of owner-occupied units decreased considerably from roughly $413,000 to $340,000 between 2009 and 2013. This mirrors trends seen in both Gloucester County and the State of New Jersey, where median values fell by roughly $27,000 and$62,000 respectively. Median home values in 2013 in Woolwich were significantly higher than Gloucester County ($224,000), but comparable to those in the State of New Jersey ($327,100). Unadjusted for inflation, overall, the share of homes in Woolwich valued at less than $300,000 grew, while the share of homes valued at over $500,000 decreased. This mirrors trends seen in both Gloucester County and the State of New Jersey.

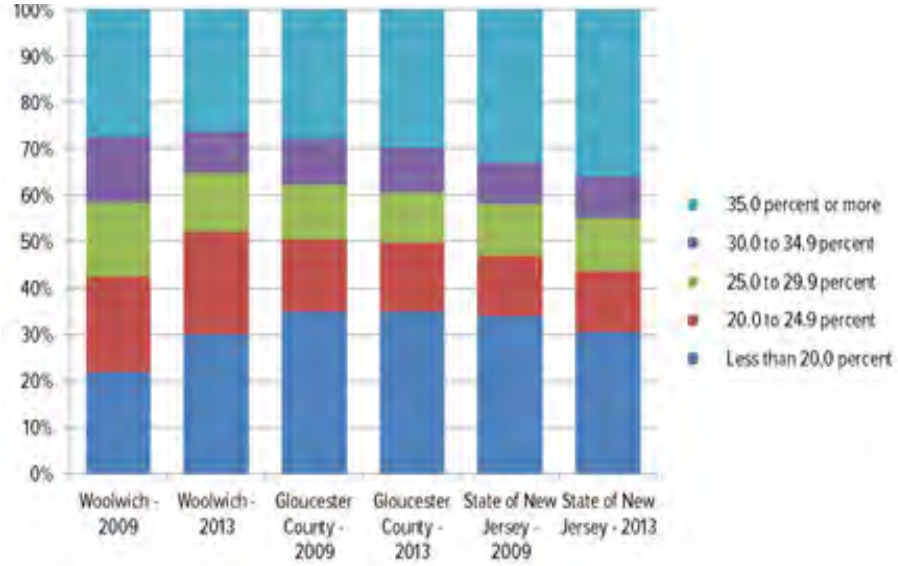


Figure 3. Population breakdown by percent of annual household income spent on housing costs, 2009-2013 Income & Poverty

Between 2009 and 2013, the share of households in Woolwich burdened by housing costs (contributing 30 percent or more of annual household income toward housing costs) decreased from 41.6 percent to 35.1 percent of all households. By comparison, the share of cost-burdened households rose from 38.6 to 40.3 percent in Gloucester County and from 43.5 percent to 44.8 percent in the State of New Jersey.

INCOME & POVERTY

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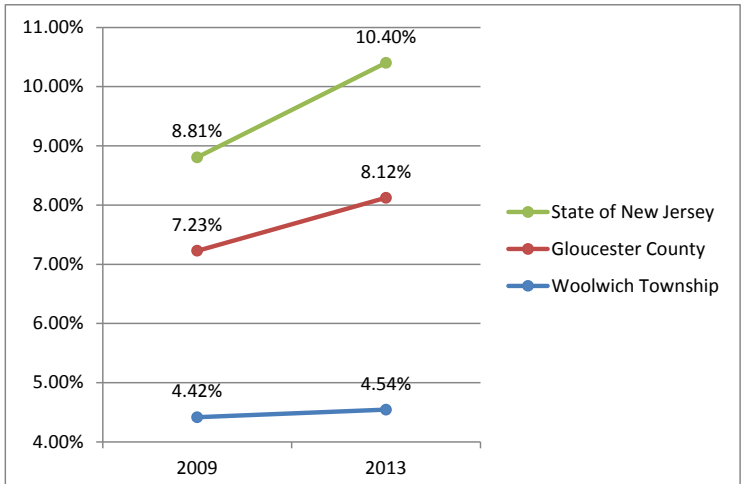


Figure 5. Percent of population living at or below federal poverty level, 2009 - 2013

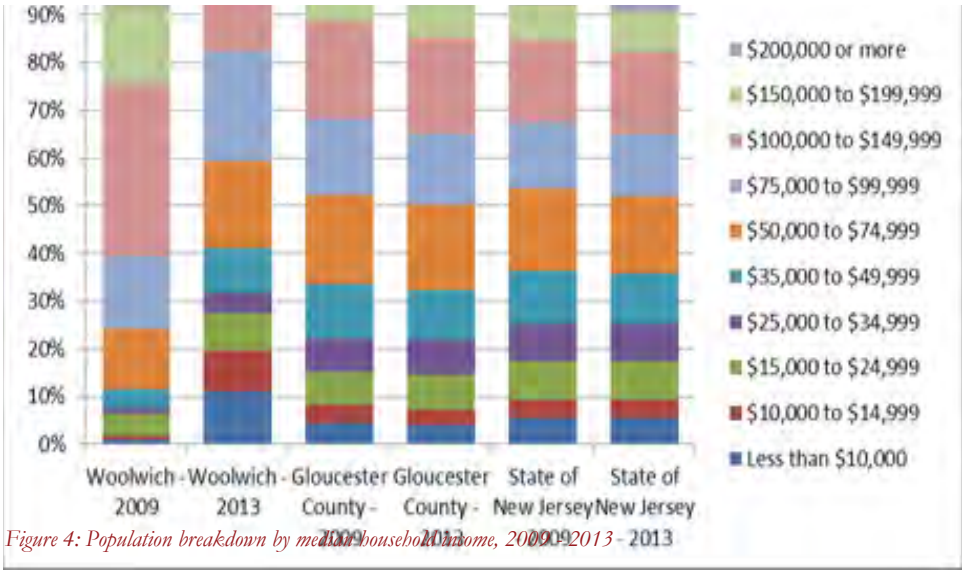


Figure 4: Population breakdown by median household income, 2009-2013

COMMUTING

Woolwich households have relatively high rates of vehicle ownership. In 2013, only 1.6 percent of households had no vehicle available, while 16.7 percent had only one vehicle available. Nearly 60 percent of households had two vehicles available, with the remaining 21.8 percent of households with three or more vehicles. By comparison, in Gloucester County, 5.7 of households had no vehicles available, 28.6 percent had one vehicle available, 43.4 percent had two vehicles available, and 22.4 percent had three or more vehicles available. In the State of New Jersey, 11.8 percent of households had no vehicles available, 34.7 percent had one vehicle available, 36.4 percent had two or more vehicles available, and 17.1 percent had three or more vehicles available. Rates of vehicle ownership did not change significantly in Woolwich Township between 2009 and 2013.

Residents of Woolwich Township largely choose to commute by car. In 2013, 82.9 percent of residents chose to drive alone to work, compared to 85.5 percent for Gloucester County and 80.3 percent for the State of New Jersey. An additional 10.7 percent of Woolwich residents chose to carpool, compared with 7.3 percent for Gloucester County and 8.4 percent for the State of New Jersey. Very few Woolwich residents chose to commute by public transportation, with just 0.9 percent of residents choosing this mode, compared with 2.1 percent for Gloucester County and 10.8 percent for the State of New Jersey. No Woolwich residents chose to bicycle to work, compared with 0.19 percent for Gloucester County and 0.36 percent for the State of New Jersey. Woolwich residents walking to work at 1.24 percent is comparable to Gloucester County at 1.5 percent, both of which lower than the 3.1 percent of those that walk to work in the State of New Jersey. Commuter mode choice has not changed significantly for any mode in Woolwich Township since 2009.

Commute times for Woolwich Township residents are long. In 2013, 58.4 percent of residents had commute times longer than 30 minutes, compared to 45.0 percent for Gloucester County and 31.5 percent for the State of New Jersey. This percentage is up from 52.9 percent of residents in 2009; which represents an even more significant in total people commuting over 30 minutes, considering the population increase over the same period. In 2013, 26.8 percent of residents had commute times longer than 45 minutes, compared to 20.8 percent for Gloucester County and 24.0 percent for the State of New Jersey. This represents a slight decrease of 0.4 percent from 2009. Between 2009 and

2013, the mean travel time to work for Woolwich resident decreased by 0.5 minutes.

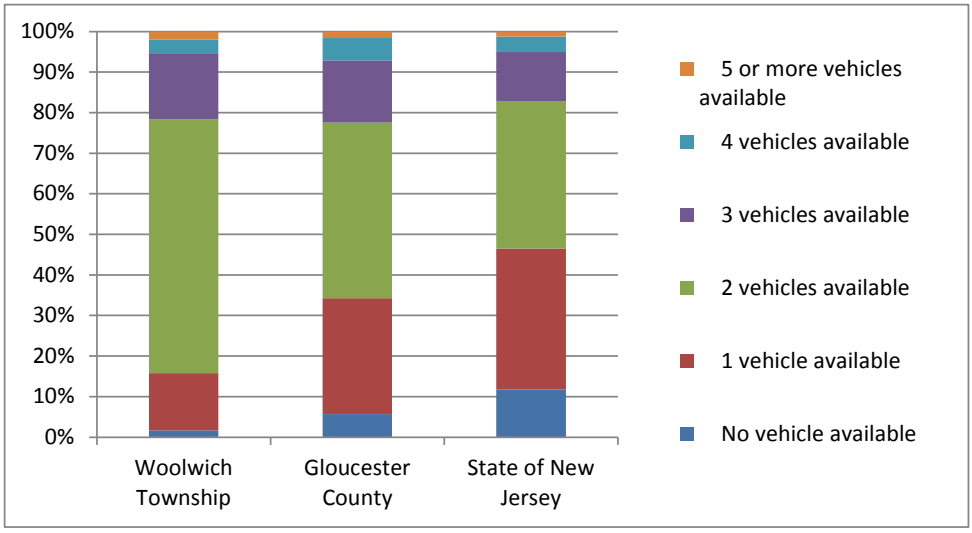


Figure 6: Population breakdown of vehicles available per household, 2013

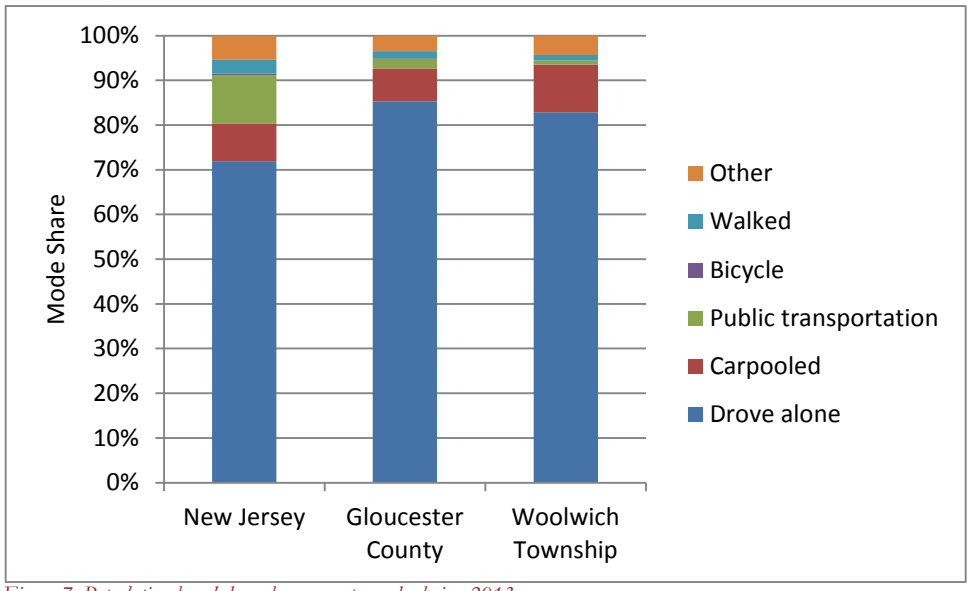


Figure 7; Population breakdown by commute mode choice, 2013

EMPLOYMENT

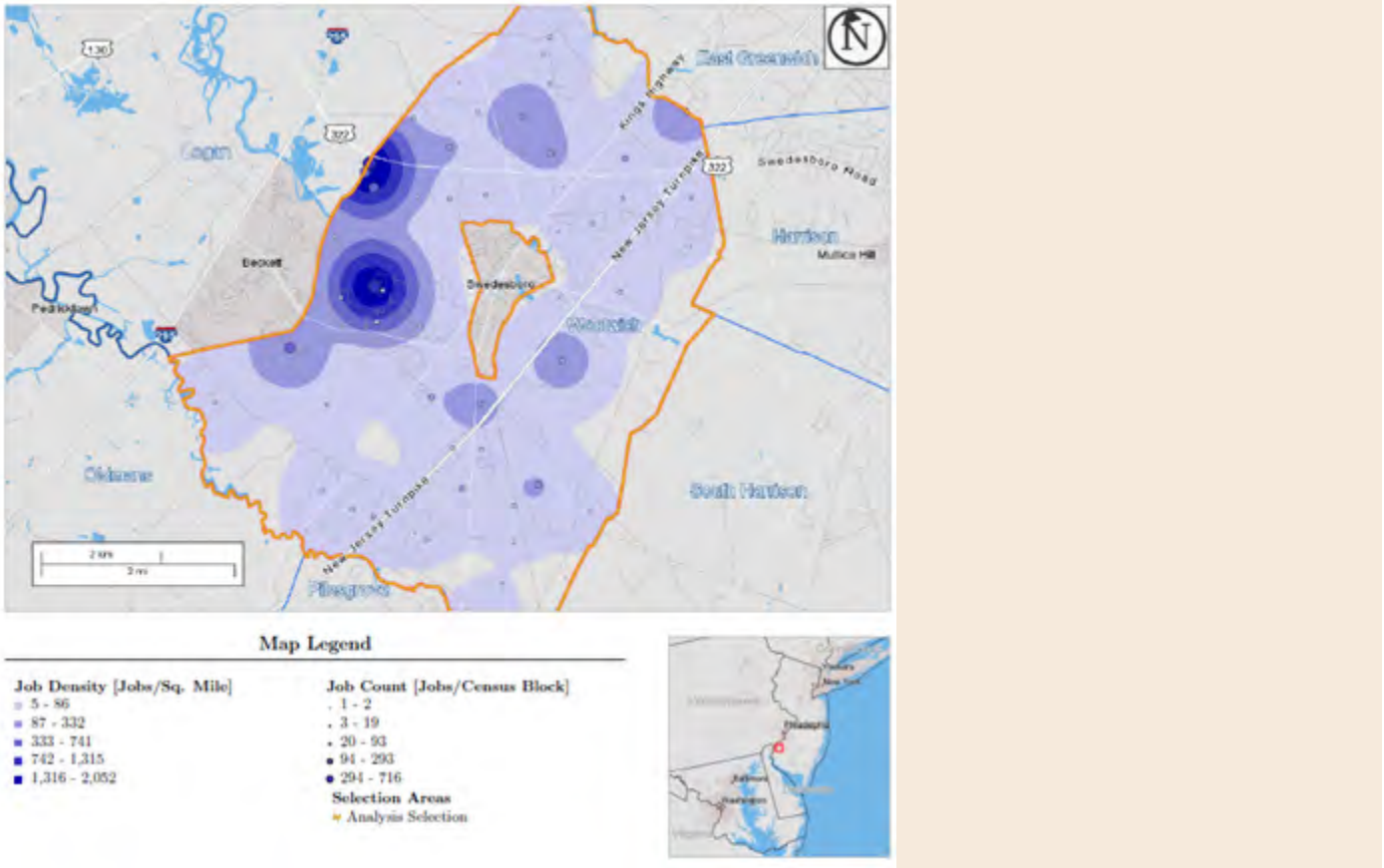
HOME AREA

The home area profile contains data on employed workers who live in Woolwich Township. There are 5,386 workers living in Woolwich. Approximately 18.0% of the Township's resident workers earn $15,000 or less annually, while the majority of workers (59.1%) earn more than $40,000 annually, which is consistent with demographic research suggesting relatively high median household incomes. While resident workers are employed in many industries, those that rise to the top in terms of share of employment include; health care and social assistance (13.9%), educational services (11.5%) and retail trade (11.5%).

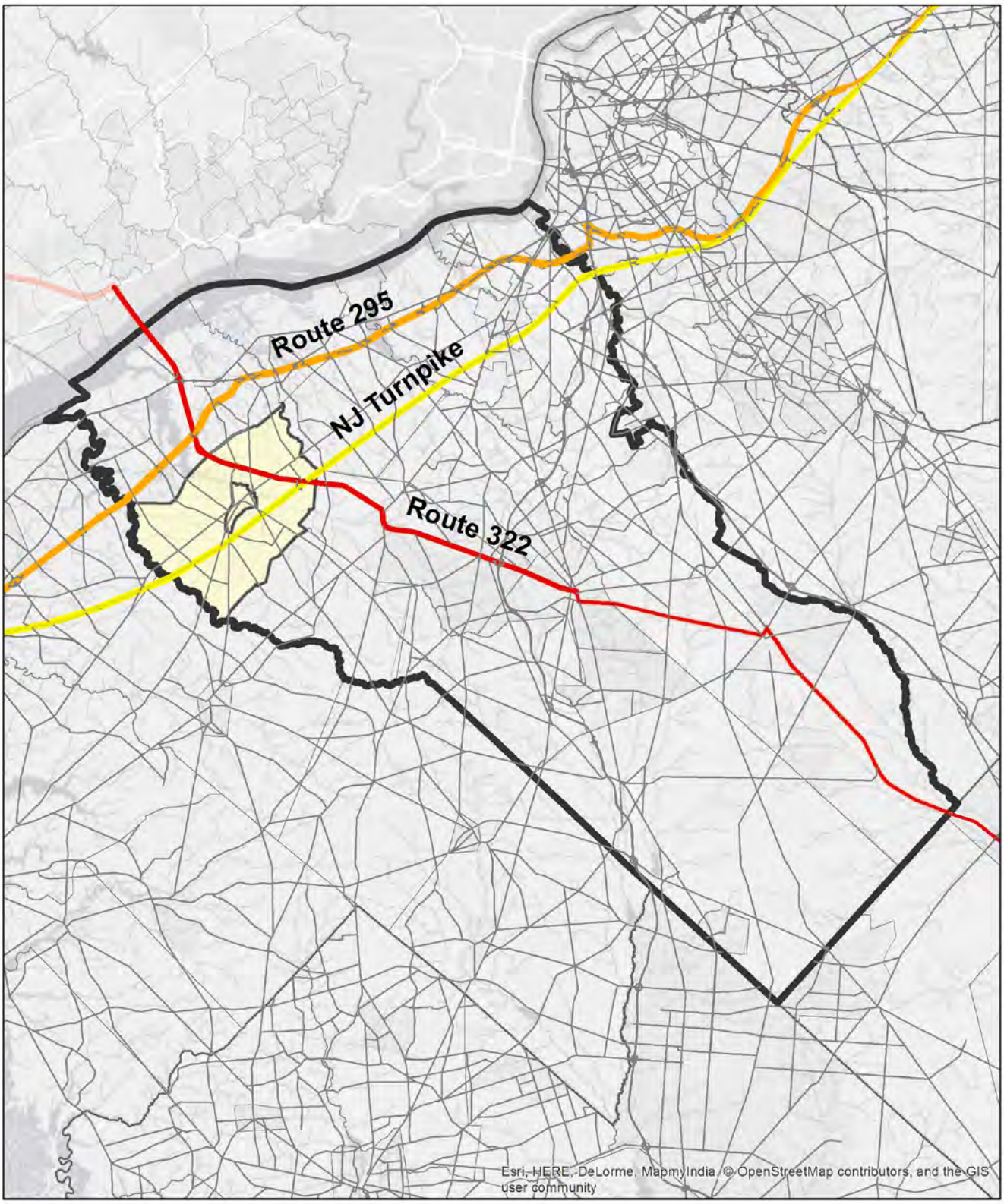
In terms of commuting, over 81% of workers travel greater than 10 miles to work. Roughly 48.2% of all workers commute 10 to 24 miles to work. Noticeably, nearly one-quarter of all resident workers travel greater than 50 miles to get to work. Most workers who travel greater than 50 miles for work travel southwest and northeast to commute to work. In terms of place of work, roughly 12.2% of Woolwich's resident workers work in Philadelphia. Gloucester County is a work destination for 21% of resident workers, while Camden County is a destination for 10% of all workers. Only 172 resident workers were employed within Woolwich Township.

WORK AREA

The work area profile contains data on employed workers working within Woolwich Township. There are 2,351 workers employed within the Township. With a net job outflow of over 3,000, Woolwich can be characterized as a commuter town, rather than a center of employment. Approximately 14.2% of workers employed in the Township earn $15,000 or less annually, while 48.5% earn more than $40,000 annually. Employment is concentrated primarily in wholesale trade (24.9%), professional, scientific and technical services (19.8%), and educational services (16.8%). In terms of commuting, roughly 68.6% commute greater than 10 miles to travel to jobs in Woolwich Township, while 46.5% commute between 10 and 24 miles to travel to work. While jobs generally seem to be dispersed throughout the municipality, employment centers can be found in the western portion of the Township. Employment centers shown in Figure 8 roughly match a school location and the industrial center.



TRANSPORTATION



Regional Principal Arterial Roadways

EXISTING ROAD NETWORK

Gloucester County has roughly 1,702 miles of public roadway. Major roadways in Woolwich Township are listed in the Table 5. These roadways comprise the main arteries of the township, with local roads connecting to housing and residential neighborhoods.

ROADWAY	ALTERNATIVE/LOCAL NAME	FUNCTIONAL CLASSIFICATION	DIRECTION
CR 551 (north of US 322)	Kings Highway	Minor arterial	North-south
CR 551 (south of US 322)	Kings Highway, Auburn Avenue, Auburn Road	Major collector	North-south
US 322	Swedesboro Road	Other principal arterial	East-west
NJ Turnpike		Other freeway/expressway	North-south
CR 653	Swedesboro-Paulsboro Road	Major collector	North-south
CR 671	Oak Grove Road, Locke Avenue	Major collector	North-south
CR 662	High Hill Road	Major collector	East-west
CR 620 (west of Swedesboro)	Center Square Road	Major collector	East-west
CR 620 (south of Swedesboro)	Kings Highway	Major collector	East-west
CR 605	Woodstown Road	Major collector	North-south
CR 638	Glen Echo Avenue, Franklinville Road	Major collector	East-west
CR 694	Monroeville Road	Major collector	East-west

Table 5. Woolwich Township Major Roadways

US 322 is a principal arterial highway that extends from the Commodore Barry Bridge over the Delaware River, through Gloucester County to the Black Horse Pike – NJ Route 42. From there US 322 continues as the Black Horse Pike to Atlantic City. US 322 is one of three east-west arterial highways in southern New Jersey south of the Atlantic City Expressway, all of which have limited vehicular capacity.

US 322 from the Black Horse Pike to the boundary of Woolwich and Logan Township consists of a two lane arterial highway with shoulders in most sections. In Logan Township, US 322 has been widened to four lanes with a center grass median from the Township boundary to I-295 and again from US 130 to the Commodore Barry Bridge.

Perpendicular to the US 322 Corridor on either side of the Regional Center are the New Jersey Turnpike and I-295. These two freeways are the most intensely traveled highways in the region, carrying high volumes of regional, statewide and national traffic.

As a result of its location, the Regional Center promise excellent vehicular connections to the rest of New Jersey, to Philadelphia, PA and Wilmington, DE, as well as to the rest of the northeastern portion of the nation. A network of county highways serves the Regional Center and the Borough of Swedesboro, providing additional roadway linkages to surrounding communities and carrying traffic through the New Town and through the existing Borough center. These roads have been classified as either minor arterial highways or major collector roads and include the following:

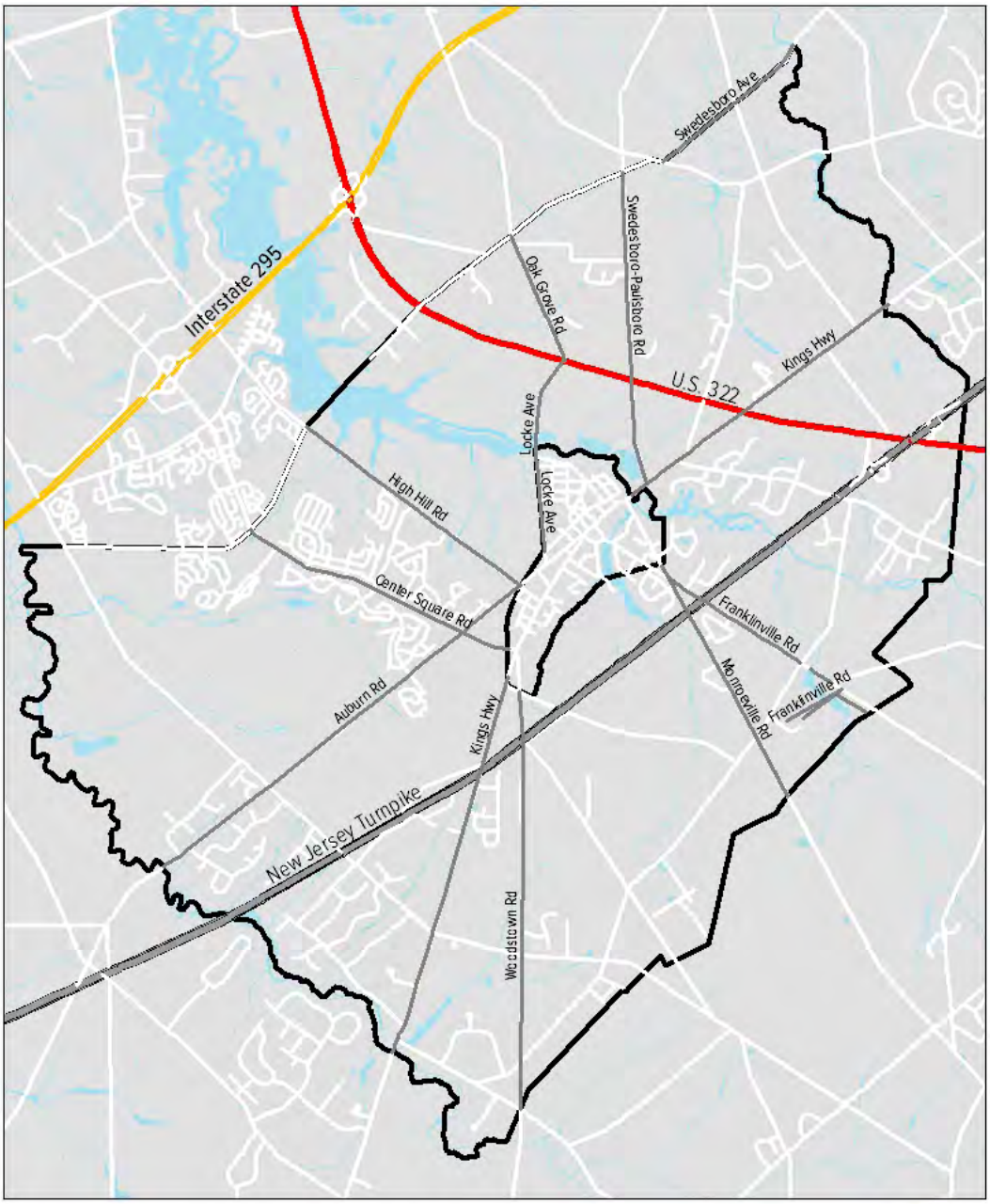
CR 551	A secondary highway that extends from Carney's Point in Salem County to the City of Camden. From Swedesboro north to Woodbury, CR 551 is known as Kings Highway and follows the alignment of the colonial Kings Highway, which at one time extended from Burlington, NJ to Salem, NJ.
CR 620	South of Swedesboro CR 551 becomes Auburn Road. The portion of the colonial Kings Highway between Swedesboro and Salem has been designated County Route 620 in both Gloucester and Salem Counties.
CR 653	Swedesboro-Paulsboro Road (also referred to as Paulsboro-Swedesboro Road) extends from Swedesboro to Paulsboro and has an interchange with I-295 just south of Paulsboro.
CR 671	Locke Avenue provides a diagonal connection between US 322 and Swedesboro. Locke Avenue and Kings Highway provide the only crossings of the Raccoon Creek between the New Jersey Turnpike and I-295. North of US 322 CR 671 is known as Oak Grove Road and parallels US 322 to the village of Bridgeport in Logan Township. This portion of the road is classified as a local road by NJDOT.
CR 538	Franklinville Road extends from Swedesboro to NJ 55 south of Clayton, then passes through Franklinville and continues due east until it meets US 322 just west of the Atlantic County boundary. CR 538 serves as alternative to US 322, especially for trips between the Delaware River and NJ 55. Just east of Swedesboro, CR 538 intersects CR 694 (Monroeville Rd). At this intersection, CR 538 bears onto Monroeville Rd, which is called Glen Echo Road in Swedesboro, and CR 694 bears right onto Franklinville Road, which is called Franklin Street in Swedesboro.

Table 6. Woolwich Township Major Roadways Descriptions

OTHER SIGNIFICANT ROADS

US 322 is intersected by additional county and municipal roads that augment travel options through the Regional Center. These include from west to east:

- Stone Meetinghouse Road (CR 669); south of US 322 this road turns into Berkeley Street, a municipal street that provides access to warehouse developments in Woolwich and Logan Township and has no outlet
- Garwin Road a municipal street linking US 322 with Kings Highway and extending north to Hendrickson Mill Road
- Pancoast Road (CR 672) – a diagonal road that links US 322 near the NJ Turnpike with Kings Highway. Repaupo Road (CR 684) intersects Kings Highway 0.2 miles northeast of the Pancoast Road intersection and runs from Kings Highway to US 130.



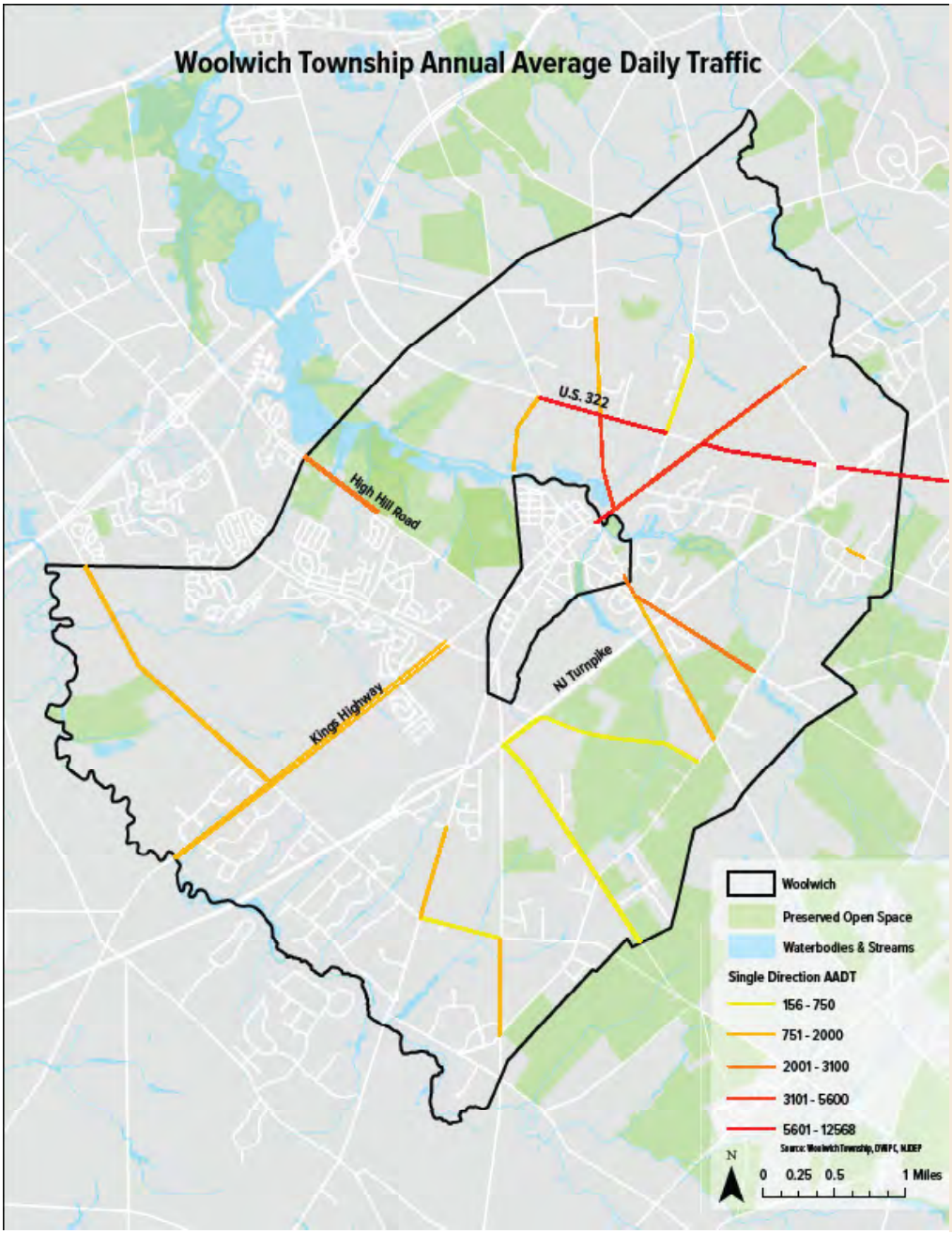
Woolwich Township Major Roads

0 1,350 2,700 5,400 Feet

VEHICULAR AND ROADWAY TRANSPORTATION

TRAFFIC COUNTS

Annual average daily traffic (AADT) [1], the sum of annual traffic divided by 365, can indicate how busy a roadway is on an average day. Unsurprisingly, US Route 322 is among the busiest of roadways in Woolwich. West of the US 322-CR 653 intersection, AADT along US 322 is 8,771 in the westward direction and 8,666 in the eastward direction. Just east of this intersection, AADT drops down to 6,734 in the westward direction and 6,599 in the eastward direction. East of Kings Highway heading toward the NJ Turnpike entrance, AADT increases in both directions. The stretch of US 322 between CR 672 and CR 607, a roadway slightly east of the township boundary, exhibits the highest AADT of any segment along US 322 in Woolwich Township, at 12,568 in the eastward direction. By contrast, AADT in the westward direction is 7,655, suggesting that the high volume of vehicles in the eastward direction are coming from the NJ Turnpike exit 2. AADT for NJ Turnpike exit 2 is 3,274 for traffic entering the Turnpike and 3,747 exiting the Turnpike. Traffic entering and exiting the NJ Turnpike at exit 2 primarily originates and terminates at NJ Turnpike exits 1, 3 and 4. AADT for exit 2 traffic originating at exit 1 is 1101, and AADT for exit 2 traffic terminating at exit 1 is 1169. AADT for exit 2 traffic originating at exit 3 is 309, and AADT for exit 2 traffic terminating at exit 3 is 313. AADT for exit 2 traffic originating at exit 4 is 907, and AADT for exit 2 traffic terminating at exit 4 is 802.



1 *Note that this analysis is based primarily on single direction counts for the most recent year of available data.*

Table 7 provides a breakdown of AADT for all origins and destinations for NJ Turnpike exit 2. Other heavily used roadways in Woolwich Township include CR 653 (Paulsboro Road) south of US 322, and CR 551/Kings Highway. Moderately used roadways include CR 653 (Paulsboro Road) north of US 322, CR 671/Locke Avenue, CR 538/Swedesboro Road, and CR 662/High Hill Road.

US Route 322 experiences heavy truck traffic through Woolwich Township. US Route 322 crosses the NJ Turnpike, Interstate 295 and Interstate 95 within a span of 12 miles; and thus, is an important shipping connection between these major highways. Between Rulon Road and Kelley Road, AADT for trucks is 778 in the eastward direction and 827 in the westward direction, accounting for 12.7 percent of overall AADT on US Route 322 in the eastward direction and 15.43 percent of overall AADT in the westward direction. AADT for trucks exiting the NJ Turnpike on to US 322 at exit 2 is 457, and AADT for trucks entering the NJ Turnpike from US Route 322 at exit 2 is 353. Truck traffic at NJ Turnpike exit 2 most frequently originates and terminates at NJ Turnpike exit 1. AADT for truck traffic originating at exit 1 is 123, and AADT for truck traffic terminating at exit 1 is 100. Table 8 provides a breakdown of AADT for truck traffic at NJ Turnpike exit 2.

ENTERING TP AT EXIT 2	Origin Exit	1	2	3	4	5	6	7	7A	8
	AADT	1101	114	309	907	168	65	55	143	63
	Origin Exit	8A	9	10	11	12	13	13A	14	14A
	AADT	47	65	150	138	18	95	36	26	6
	Origin Exit	14B	14C	15E	15W	15X	16E	16W	18E	18W
	AADT	2	10	22	17	11	16	38	31	58
ENTERING TP AT EXIT 2	Destination Exit	1	2	3	4	5	6	7	7A	8
	AADT	1169	114	313	802	161	322	61	118	55
	Destination Exit	8A	9	10	11	12	13	13A	14	14A
	AADT	41	62	121	124	13	79	35	16	6
	Destination Exit	14B	14C	15E	15W	15X	16E	16W	18E	18W
	AADT	2	23	9	13	3	32	22	28	117

Table 7. Origin and destination of NJ Turnpike exit 2 traffic, all vehicle classes, 2014

ENTERING TP AT EXIT 2	Origin Exit	1	2	3	4	5	6	7	7A	8
	AADT	123	6	16	27	38	16	10	17	9
	Origin Exit	8A	9	10	11	12	13	13A	14	14A
	AADT	15	10	62	59	11	22	13	8	3
	Origin Exit	14B	14C	15E	15W	15X	16E	16W	18E	18W
	AADT	1	0	2	9	4	2	6	8	14
ENTERING TP AT EXIT 2	Destination Exit	1	2	3	4	5	6	7	7A	8
	AADT	100	6	12	24	11	11	8	13	7
	Destination Exit	8A	9	10	11	12	13	13A	14	14A
	AADT	14	9	36	2	6	14	14	7	3
	Destination Exit	14B	14C	15E	15W	15X	16E	16W	18E	18W
	AADT	0	1	4	5	1	3	5	8	36

Table 8. Origin and destination of NJ Turnpike Exit 2 truck traffic, 2014

CRASHES

Crash data was obtained for Woolwich and Swedesboro from 2004 to 2014[1]. Between 2004 and 2014, there were at least 1,046 accidents in Woolwich and Swedesboro. Of these, eight were fatal crashes, while twelve caused incapacitating injury. Table 4 lists the number of accidents by type.

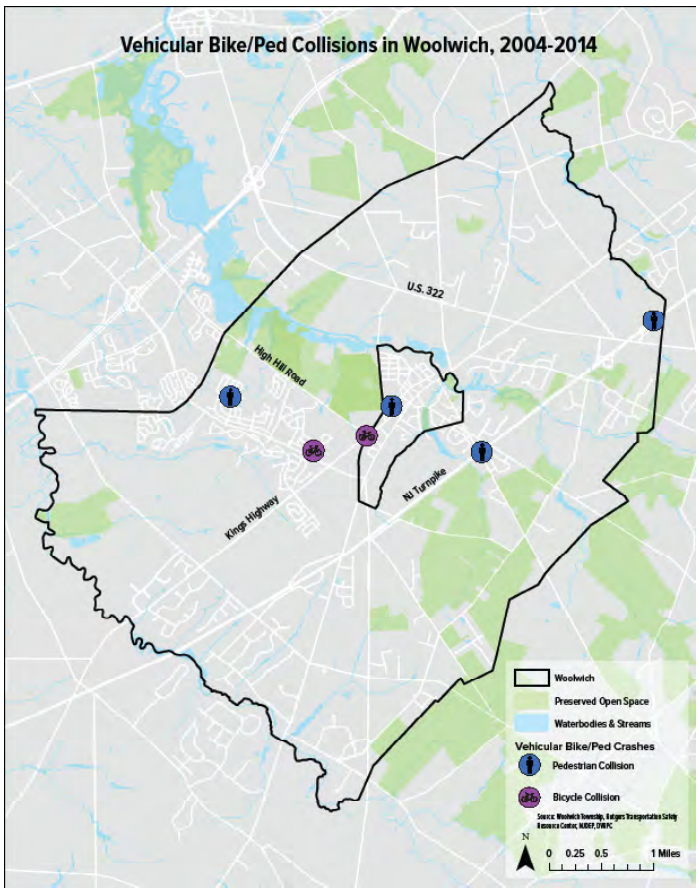
Not surprisingly, the majority or crashes within this time frame occurred along the New Jersey Turnpike and US 322. After removing NJ Turnpike crashes from the analysis, total crashes within this time frame total 349. Three of these were fatal, with nine causing incapacitating injury. The most frequent types of crashes include same direction rear end, fixed object, right angle and animal.

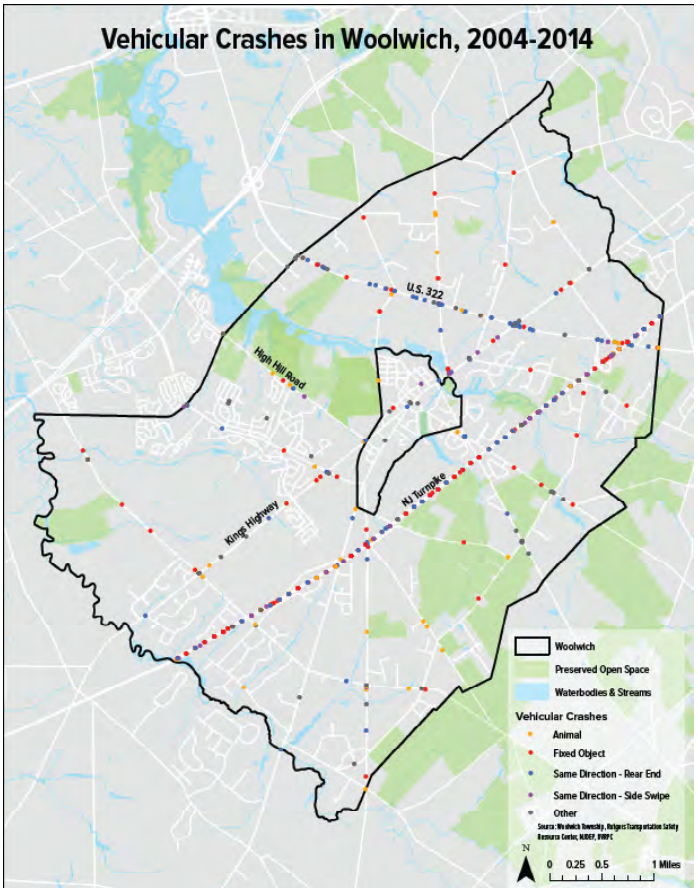
According to data obtained from Rutgers University, there were only seven crashes in Woolwich/Swedesboro involving cyclists and/or pedestrians, none of which were fatal. There is no apparent pattern to where these crashes have occurred.

Crash Type	Count
Animal	139
Fixed Object Crash	326
Same Direction Rear End	232
Same Direction Side Swipe	122
Other	227

Table 9. Automobile crash types, Woolwich Township and Swedesboro, 2004 - 2014

1 Note that the annual accident counts obtained from Rutgers University Transportation Safety Resource Center (submitted to the NJ Department of Transportation by Woolwich Township) are less than the annual accident counts submitted directly from the township to RPA. The analysis utilizes the geocoded data obtained from the Rutgers University Transportation Safety Resource Center.





BICYCLE & PEDESTRIAN MOBILITY

As described above, there have been relatively few bicycle/pedestrian-vehicular crashes over the past ten years. The prevalence of such accidents; however, also depends on the prevalence of pedestrians and cyclists within Woolwich.

The Delaware Valley Regional Planning Commission (DVRPC) collects data on average bicycle counts in the Delaware Valley region. There are no monitoring sites in Woolwich; as such, this analysis utilizes data from the Swedesboro monitoring area, which reports bicycle ridership on Kings Highway between Allen Street and Ashton Avenue. DVRPC's interactive map reports 19 annual average daily bicycles on the northbound lane and 16 in the southbound lane.

Given the extent of preserved open space in Woolwich, the Township's existing trail network is relatively sparse. Existing trails run along Lake Narraticon, Center Square Road, Auburn Road, and in various open space parcels.

PUBLIC TRANSPORTATION

NJ TRANSIT

Woolwich and Swedesboro are served by NJ TRANSIT Route 401, which operates between Salem and Philadelphia and through Camden, Gloucester City, Westville, Woodbury, Clarkboro, Mickleton, and Woodstown. In Woolwich/Swedesboro, the route runs along Kings Highway. There are three bus stops (operating in either direction) in Woolwich Township along this route located at the intersections of Kings Highway and Paulsboro-Swedesboro Road, U.S. 322, and Asbury Station Road. There are an additional six stops in Swedesboro operating in either direction.

Service on this route is somewhat limited, with thirteen buses operating from Philadelphia and twelve operating from Salem daily on weekdays. On weekdays, service to Philadelphia operates hourly in the morning peak period. Service from Philadelphia operates hourly in the evening peak period. Service to Woolwich and Swedesboro is further limited by the fact that the last weekday bus to these communities departs Philadelphia at 7:29pm. According to the schedule, the commute time between Swedesboro/Woolwich and Philadelphia is generally between 80-90 minutes. Weekend service is even less frequent, with very limited Sunday service between Woolwich/Swedesboro and Philadelphia.

Running in either direction, average daily boardings within Woolwich/Swedesboro on this line is 29, with 25 average daily alightings. However, the majority of average daily boardings and alightings are in Swedesboro, not Woolwich, suggesting that the route currently serves very few Woolwich residents. Based on median ridership data between 2009 and 2014, the route has seen its highest level of ridership in 2014, ranging from a low of 671 average daily riders in January 2014 to 808 average daily riders in June 2014.

COUNTY & OTHER PUBLIC SHUTTLES

Beyond NJ TRANSIT bus route 401, there are few public transportation options available to Woolwich residents. The Gloucester County Division of Transportation Services (DTS) offers an on-demand transportation service (Rapid Ride) for senior, rural, low income and disabled residents within the county. Residents call in advance to make appointments as needed. This service operates five days a week from 7AM to 5PM, with limited morning service on weekends. In addition to Gloucester County, the DTS service area encompasses portions of Camden County, Cumberland County and Philadelphia.

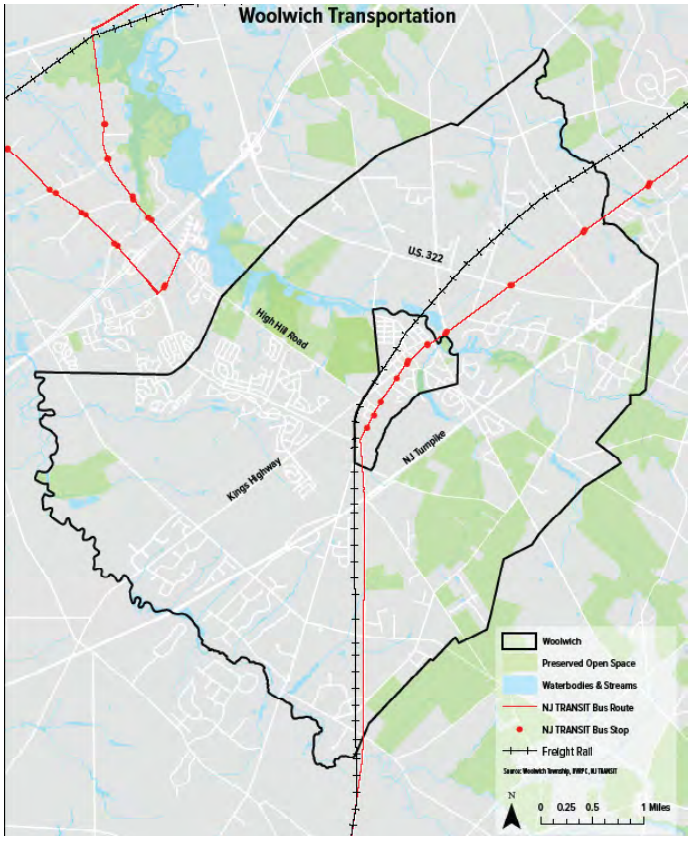
In addition to Rapid Ride, DTS offers one modified fixed route that provides service for residents traveling from rural areas to commercial centers in the northern and eastern portions of the county. In terms of other county-wide services, The Arc Gloucester provides transportation services to moderately and severely disabled adults in the county. There are no other known county and public shuttle routes operating in Woolwich and Swedesboro.

GOODS MOVEMENT

In discussing circulation issues, focus is often placed on the facilities used to move people. But planning for an adequate circulation system must also address the need to send, move and receive goods and services.

MOVING GOODS

Since there are no east-west freeways or multi-lane highways south of the Philadelphia-Atlantic City corridor, rural arterial highways such as US 322 must continue to serve the mobility needs of trucks. As a result, in developing this Circulation Plan, a basic ground rule was



that Route 322 would have to continue to serve as an important regional truck corridor.

An extensive number of truck intensive land uses exist in the communities surrounding the Woolwich Regional Center, most notably the Pureland Industrial Complex. In Logan Township, Pureland is a 3,000 acre warehouse and distribution center with over 15 million square feet of leasable building space and 150 tenants. Although most of the trucks serving Pureland will use I-295, US 130 or the Commodore Barry Bridge, a substantial number of drivers will want to access the New Jersey Turnpike at Exit 2 in Woolwich. Furthermore, although southern New Jersey may constitute only a small percentage of the market area being served by the warehouse and distribution center, even a small amount of the truck traffic from such a large center results in significant amounts of trucks that must travel along either US 322 or Center Square Road to reach their destinations.

Although the giant Pureland complex is responsible for much of the regional truck traffic passing through Woolwich, there are many other businesses that are dependent on US 322 to provide truck service including businesses in Woolwich and Swedesboro. Farms in Woolwich and surrounding communities depend on truck access both to bring supplies to their farms and to ship farm products to markets. Extensive resource extraction industries in southern New Jersey also generate truck traffic. Finally, the highway oriented development authorized in the RC-2, RC-3, and RC-4 (Gateway Commercial, east of the NJ Turnpike) portions of the Regional Center will in the future also attract a substantial amount of truck volume and will be dependent on convenient access to reliable truck services.

Of course, the need to accommodate regional truck traffic along the US 322 corridor conflicts with the goal of making Woolwich New Town inviting to future residents and businesses, and the goal of assuring that the Regional Center will be designed to encourage pedestrian and bicycle trips. Yet the economic success of southern New Jersey and Woolwich requires that goods movement be adequately served, and equally importantly that shippers be assured of predictable and consistent service.

FREIGHT RAIL TRANSPORTATION

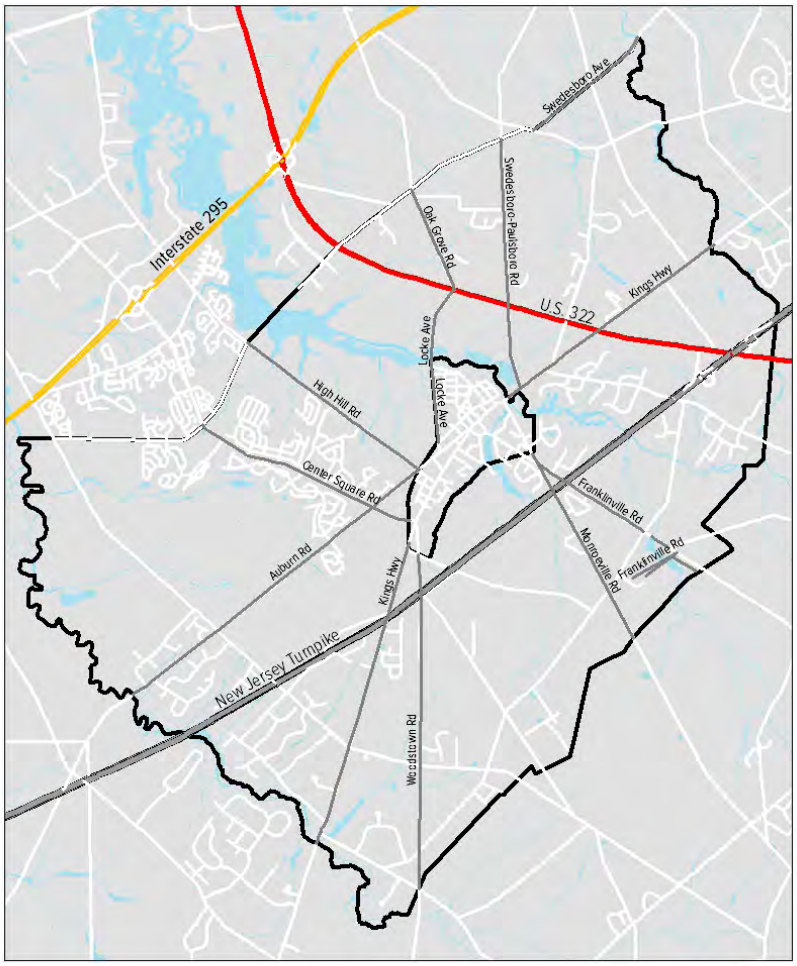
There is an active single-track freight line, the Salem Branch, which operates through the two municipalities. In Swedesboro, the freight line changes ownership. The northern portion is a secondary freight line owned by Conrail and operated by Contrail, CSX and Norfolk Southern. The southern portion is an industrial track/short-line owned and operated by the Southern Railroad of New Jersey. This freight line crosses US Route 322 through the future Woolwich Kings Landing Regional Center, and could be an impediment to automobile and pedestrian circulation should the area be developed as planned.

VISION

Contents

INTRODUCTION

"Restore human legs as a means of travel. Pedestrians rely on food for fuel and need no special parking facilities."
Lewis Mumford
"The street is the river of life of the city, the place where we come together, the pathway to the center."
William Whyte



In the face of rapid growth and changing conditions, Woolwich Township is updating the Circulation Element of the Township Master Plan. The Circulation Element will provide guidance to the Township towards achieving a pedestrian-friendly, traffic-calmed, uncongested and multi-modal transportation network. The Circulation Element will also support the development of the US Route 322 Regional Center as a dense and walkable area with a mix of residential and commercial uses.

Located 20 miles to the southeast of Philadelphia in Gloucester County, Woolwich Township is a bedroom community that also boasts rich rural and natural assets. Woolwich boasts vegetable crops and farmstands, and has seen an increase of viniculture with the opening of several wineries. Another asset is the New Jersey Turnpike Exit 2, located at the eastern side of the Regional Center, which is the last exit in the region to remain largely undeveloped.

Although a number of longtime residents work in agriculture; due to its convenient access to major highways and the Delaware River Bridge, many of the Township's newer residents work in and commute to Delaware, Chester, and Philadelphia Counties in Pennsylvania. An affordable, diverse housing stock and excellent public school system makes the area appealing to families.

PROCESS

The concepts presented in this vision document were informed by several sources, including the ULI Philadelphia Technical Assistance Panel Report (2014), the Woolwich-Swedesboro Open Space and Recreation Plan (2015), and Woolwich Township's most recent Circulation Plan (2008) adopted as part of the overall Woolwich TDR Plan. Each of these planning activities included significant public and stakeholder engagement, which has been supplemented through meetings and workshops with the Woolwich Township Master Plan Reexamination Committee and other key stakeholders.

The ULI Technical Assistance Panel (TAP) provided guidance to the Township as it sought solutions to its planning challenges. The TAP identified key land use and transportation priorities that could guide plans for the Regional Center, including emphasis on mixed use development, walkable neighborhoods, and overall pedestrian connectivity.

The Woolwich-Swedesboro Open Space and Recreation Plan (OSRP) emphasized Woolwich's open spaces and natural assets, and provided a framework for interconnected trail networks to and between open spaces and activity nodes.

The Woolwich Circulation Plan identified critical concepts such as smart growth principles, the need to integrate land use and transportation planning, and major circulation routes.

Workshops with the Woolwich Township Master Plan Reexamination Committee and other key stakeholders helped to synthesize and refine the breadth of input received through previous planning processes.

Finally, the Vision is guided by the Township's commitment to Complete Streets, as emphasized through previous planning efforts and the 2013 municipal resolution establishing a Complete Streets Policy.

MAJOR CONCERNS

RESPONSE TO RAPID GROWTH

Woolwich Township has experienced extensive growth in recent decades, with the population increasing by over 20 percent between 2009 and 2013 alone. Much of the resulting development in the Township has come in the form of low-density, single-family homes, with new subdivisions expanding out into formerly agricultural, rural and natural landscapes.

Since 2000, Woolwich has experienced significant population growth, increasing from 3,032 residents in 2000, to 10,541 residents by 2013. The Township remains one of the fastest growing municipalities in the Northeast United States. Hoping to curb the trend of sprawl, the Township sought to harness its growth by implementing a Transfer of Development Rights (TDR) program, encouraging dense development, and improving multi-modal transportation options.

By implementing these measures, the Township intends to maximize economic development potential, mitigate traffic congestion, improve livability, and preserve the rural and natural landscapes from which the Township derives its character.

NEED FOR WATER & SEWAGE INFRASTRUCTURE

Another major consideration in discussions about the Regional Center, is its current lack of water and sewer service. Woolwich has been proactively seeking a long-term solution, with negotiations leading to service agreements with Logan Township Municipal Utilities Authority and Aqua New Jersey to provide sewer and water service, respectively, to the Regional Center.

Figure 9. Woolwich polutation growth from 2000 to 2013.

KEY TRANSPORTATION PLANNING GOALS

In order to develop a circulation network that can successfully meet its land-use and development needs in light of rapid growth, Woolwich has focused on two primary goals. The first is Smart Growth, emphasizing compact development in order to avoid suburban sprawl and dependency on automobiles as the predominant travel mode, especially for short distance trips. The need to synergize transportation and land-use is further illustrated by nearly 83% of current Woolwich residents driving alone to work in 2013.

This existing car dependency will be increasingly untenable in terms of both meeting future traffic growth and supporting walkable neighborhoods. A critical step to address these challenges is a multi-modal Complete Streets network that provides viable alternatives to automobiles and supports diverse land uses. The next goal in supporting the Township's vision of becoming a regional destination and promoting healthy, active means of travel (e.g. walking,cycling), is developing a system of interconnected trails that connect civic, natural, and historic nodes, as well as activity centers.

SMART GROWTH & COMPLETE STREETS

WOOLWICH AS A REGIONAL DESTINATION

Accommodate growth and create a sustainable land-use plan, featuring a multi-modal circulation system that accommodates automobiles, while also emphasizing alternative modes of transportation. This enables Woolwich to become a major growth area for regional tourism and entertainment, and commercial destination. Including and integrating the community's natural assets further supports this goal.

SYNERGIZE LAND-USE & TRANSPORTATION

Coordinate land development planning and transportation infrastructure investments to reduce total travel times and increase use of alternative travel modes. The local transportation structure should be layed out in a manner that supports proposed growth in Weatherby, Auburn Road Village, and the Woolwich Regional Center.

EMBRACE COMPLETE STREETS

Emphasize alternatives to automobiles by prioritizing public transit, and pedestrian and bicycle transportation accommodations. The street network should be coordinated with land-use in order to support residential, commercial, light industrial, recreation and institutional uses.

PLAN FOR INCREASED PUBLIC TRANSIT

Consider existing and potential future regional mass transit linkages that may occur within and outside municipal boundaries.

INTEGRATE STREET NETWORK & COMMUNITY DESIGN

Provide streets that are integral components of community design. Streets should be detailed to compliment neighborhoods and commercial centers.

INTERCONNECTED PEOPLE & FREIGHT MOVEMENT

Consider the movement of both people and freight. Maintain Route 322 as a regional truck corridor, yet also mitigate the impact of truck traffic and noise on adjacent residential areas.

TRAILS & OPEN SPACE

ENHANCE ASSETS

Identify opportunities to enhance local tourism, eco-tourism and marketing of Woolwich Regional Center through park, open space and trail development, as well as recreational programs and events.

TOWNWIDE TRAIL NETWORK

Plan for and develop routes and locations for a system of interconnected trails and off-roads trails that also offer connections to existing or planned trails in adjoining municipalities. Establish greenway corridors throughout the Township.

PROMOTE SAFE & HEALTHY MEANS OF TRAVEL

Support healthy, active alternatives to automobile travel.

ENHANCE CONNECTIVITY & LINKAGES

Enhance trail network connectivity and linkages to civic, natural and historic nodes, and to activity centers.

TRANSPORTATION PLANNING CONCEPTS

Contents

INTRODUCTION

Woolwich Township is seeking to develop circulation system that will enable it to manage its rapid growth and foster a pedestrian and bicycle friendly mobility network. A synergy between sustainable land-use planning and transportation will further enable the success of these goals. Based on these goals, the following transportation planning concepts will inform the Circulation Plan.

SYNERGY BETWEEN LAND-USE & TRANSPORTATION

Since World War II there has been little coordination between land use planning and transportation infrastructure investment. The lack of coordination has frequently resulted in unintended consequences.

Highways were extended and enlarged throughout New Jersey to address capacity restrictions or to improve travel flow.

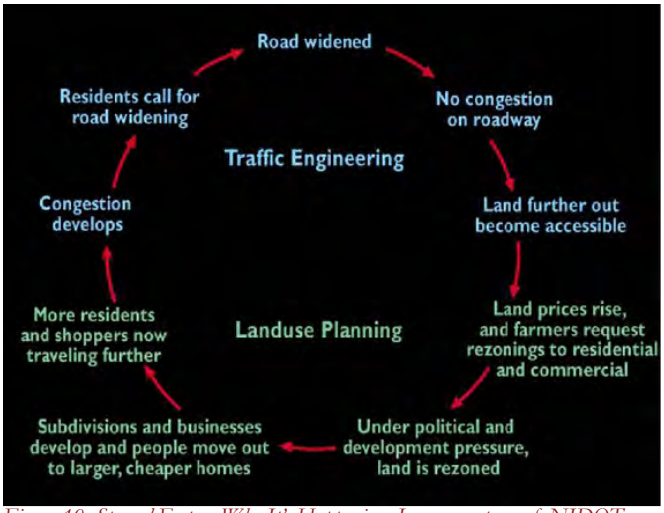


Figure 10. Sprawl Factor: Why It's Happening. Image courtesy of NJDOT

The new capacity and reduced travel times created by highway investments attracted developers who constructed new homes, stores and offices near the highways. This new development added travel demand. Eventually, travel demand once again exceeded transportation capacity, prompting another cycle of highway expansion and widening. According to the New Jersey Department of Transportation, this approach provides five to six years of added capacity at best before it fills up again. And the cost of doing so is simply unsustainable.

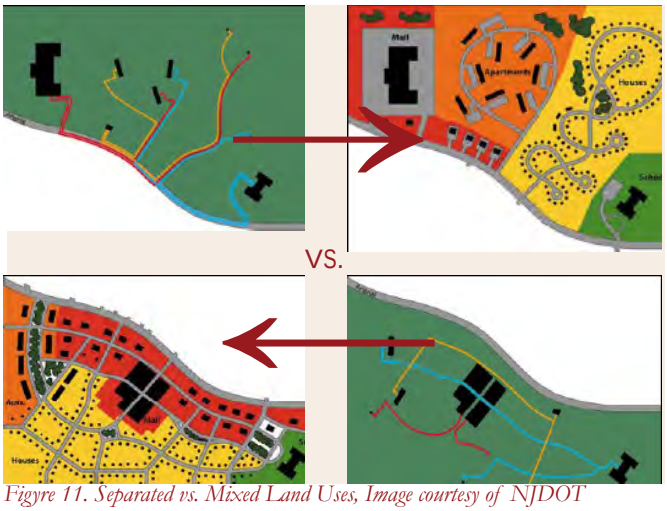
Land development tended to occur in large blocks of uniform land uses – single family residential here, apartments there, retail some place else and employment – offices and industrial sites – in yet another area.

The resulting separation of land uses, and the large parking lots provided to accommodate automobile travel, resulted in decreased development densities, longer travel distances and a great increase in dependence upon automobiles to complete any trip.

However, development does not have to occur in that fashion. By integrating land development planning and transportation infrastructure investment, governments can create synergy between land uses and thereby reduce trip distances, increase use of alternative travel modes and reduce total travel time. The "bad" street system in the top half of the figure below results in separated land uses while the "good" street system results in an integrated road system.

SUPPORTIVE STREET NETWORK FOR PROPOSED LAND DEVELOPMENT

Street grids that provide redundancy in travel routing options and more direct travel linkages can reduce total travel demand by making trip distances shorter. An interconnected street grid can also allow drivers to choose between alternative routes, reducing the amount of traffic that any one road must serve and thus reducing cartway widths per roadway.



Figyre 11. Separated vs. Mixed Land Uses, Image courtesy of NJDOT

Most importantly, if parallel local collector streets are constructed as part of new development, these streets can be used to serve local traffic, thereby leaving the arterial road capacity for longer distance trips. When local traffic must use through highways, the local drivers both consume capacity on the main highway, but more importantly must enter and leave the arterial highway frequently, creating increased turning demands at intersections.

The congested intersections that result are usually the chief location of traffic congestion along an arterial highway corridor and are also the location for most vehicle crashes. Local collector streets, which will generally have less traffic and slower speeds, can also be designed to support alternative travel modes – walking and bicycling.

A given transportation network can support only so much travel demand. As a result, the land development program for an area needs to respect the capacity of the available system. However, since most trips are local – shorter than five miles – effective use of available and new transportation resources can support economic development in targeted locations provided that the

planning for all systems is integrated.

Center-oriented land development, in which uses are mixed and densities are kept high, can further reduce congestion by allowing more travel to occur by alternative travel modes. Ten percent of workers in Woolwich and Swedesboro in the year 2000 worked in Philadelphia. As a result, it should be possible to attract at least these workers to transit provided that an efficient transit system exists. If residences are concentrated, as proposed in Woolwich New Town, it will be possible to collect most transit riders at just a few transit stops. Conversely, if development is spread out across many square miles at low densities, residents will have to drive to a park-and-ride lot to take a bus. Once a person warms up the car and starts driving, it becomes much more difficult to get the person out of the car.

THE IMPORTANCE OF NON-WORK TRAVEL

Much focus is placed on the trip to work, because it occurs during a concentrated time period and data regarding such trips are relatively easy to collect. However, the trip to work in 2001 accounted for only one in six daily trips, according to the National Personal Transportation Study. Non-work trips thus constitute the large majority of trips that people make on a daily basis. Many of these trips occur close to home or work and can be readily made by alternative travel modes or by driving on local streets, provided that the opportunity to make trips in those ways is provided. Within a mixed use development area, trips to school, to shop, for entertainment or to visit friends are likely to be short, making alternative travel modes feasible.

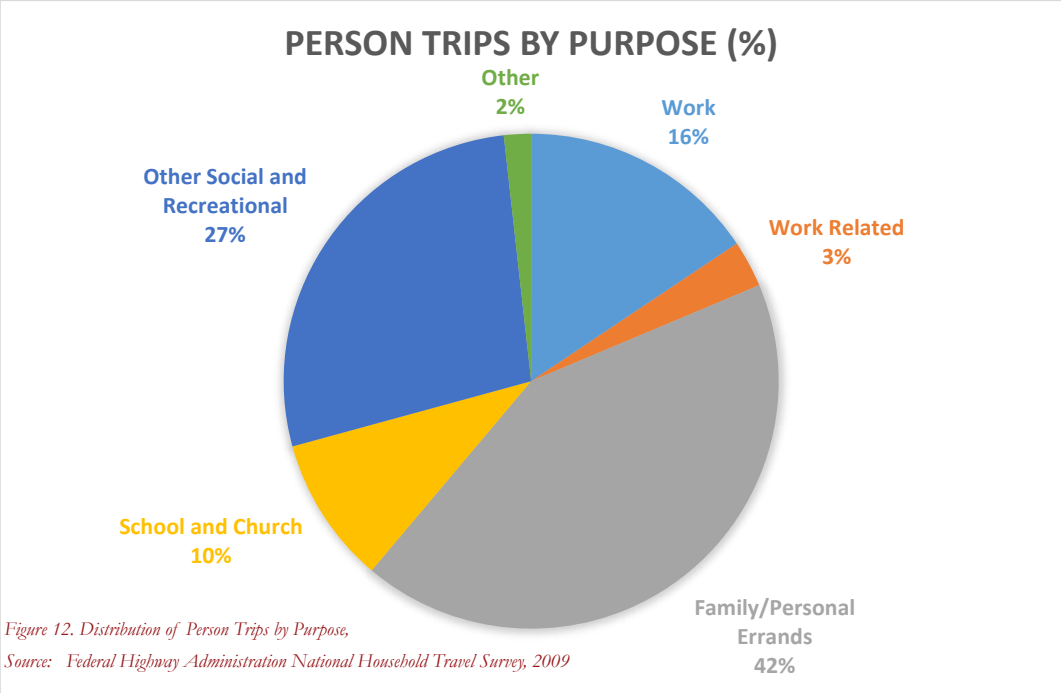


Figure 12. Distribution of Person Trips by Purpose,
Source: Federal Highway Administration National Household Travel Survey, 2009

RIGHTSIZING

The needs of our communities evolve over time, and our street design should, too. That's the idea behind 'rightsizing streets' – reconfiguring the layout of our streets to better serve the people who use them, whether they're commuters driving, shoppers walking, or children bicycling. Across the country, communities large and small are achieving impressive safety, mobility, and community outcomes by implementing such reconfigurations.

Rightsizing is the process of reallocating a street's space to better serve its full range of users. Picture a four lane road that was built thirty years ago in an undeveloped area, but that now has housing, shops, and an elementary school in close vicinity. The needs of the community surrounding that road have changed over three decades – and the design of that road may need to change to meet those needs as well. It may need a sidewalks or a median to help people cross safely, or on-street parking for folks who want to frequent local shops, or other safety features to prevent injuries. Rightsizing a road can encompass a broad array of redesign measures, and should always be sensitive to context and the vision of the local community.

TYPICAL GOALS

- Increasing safety and access for all users
- Encouraging walking, biking, and transit use
- Supporting businesses and the local economy
- Creating places that foster community livability

TYPICAL STRATEGIES

- Converting vehicle travel lanes to other uses
- Narrowing vehicle lanes
- Adding bike lanes
- Improving pedestrian infrastructure
- Changing parking configuration
- Adding roundabouts and medians

CIRCULATION CONCEPTS

Contents

WOOLWICH TOWNSHIP CIRCULATION CONCEPTS

OVERALL ROAD NETWORK

Woolwich is located between the New Jersey Turnpike and I-295. These two freeways are the most heavily traveled highways in the region, carrying high volumes of regional, statewide and statewide traffic. Moreover, a network of secondary highways and county roads, such as USS 322, also cross through the Township. Thus, Woolwich's location provides excellent connections to the rest of New Jersey, to Philadelphia, PA and Wilmington, DE, as well as to the rest of the northeastern portion of the nation.

MAJOR CIRCULATION ROUTES

US 322 is a principal arterial highway that extends from the Commodore Barry Bridge over the Delaware River, through Gloucester County to the Black Horse Pike – NJ Route 42. From there US 322 continues as the Black Horse Pike to Atlantic City. US 322 is one of three east-west arterial highways in southern New Jersey south of the Atlantic City Expressway, all of which have limited vehicular capacity.

US 322 from the Black Horse Pike to the boundary of Woolwich and Logan Township consists of a two lane arterial highway with shoulders in most sections. In Logan Township US 322 has been widened to four lanes with a center grass median from the Township boundary to I-295 and again from US 130 to the Commodore Barry Bridge. Perpendicular to the US 322 Corridor on either side are the New Jersey Turnpike and I-295.

A network of county highways serves the Township and the Borough of Swedesboro, providing additional roadway linkages to surrounding communities and carrying traffic through Woolwich and through the existing Borough center. These roads have been classified as either minor arterial highways or major collector roads and include the following:

ROADWAY	ALTERNATIVE/LOCAL NAME	FUNCTIONAL CLASSIFICATION	DIRECTION
CR 551 (north of US 322)	Kings Highway	Minor arterial	North-south
CR 551 (south of US 322)	Kings Highway, Auburn Avenue, Auburn Road	Major collector	North-south
US 322	Swedesboro Road	Other principal arterial	East-west
NJ Turnpike		Other freeway/expressway	North-south
CR 653	Swedesboro-Paulsboro Road	Major collector	North-south
CR 671	Oak Grove Road, Locke Avenue	Major collector	North-south
CR 662	High Hill Road	Major collector	East-west
CR 620 (west of Swedesboro)	Center Square Road	Major collector	East-west
CR 620 (south of Swedesboro)	Kings Highway	Major collector	East-west
CR 605	Woodstown Road	Major collector	North-south
CR 638	Glen Echo Avenue, Franklinville Road	Major collector	East-west
CR 694	Monroeville Road	Major collector	East-west

Table 10. Woolwich Township Major Roadways

FUTURE CONDITIONS OF US 322 & COUNTY ROADS

Traffic on US 322 is projected to grow to approximately 30,000 vehicles per day at the Logan Township boundary by the year 2025. Traffic volumes would range between 25,000 and 30,000 vehicles per day along most of US 322 within Woolwich Township. The highest traffic volumes are projected to occur between Kings Highway and the concentration of retail development proposed between the New Jersey Turnpike and Kings Highway.

Most county roads crossing US 322 would operate with traffic volumes that could be accommodated with a single lane of traffic in each direction. Kings Highway and Swedesboro-Paulsboro Road would have the highest traffic volumes, as they do today, but volumes would remain below 20,000 vehicles per day except for the roadway segments leading into Swedesboro.

Swedesboro itself will serve as a long term constraint to traffic growth, since the existing roadway cannot be readily widened within the Borough.

The bridge over Raccoon Creek will experience the most concentrated north-south traffic flow in the area because roads both north and south of the creek funnel traffic to the bridge – in particular, Swedesboro-Paulsboro Road (CR 653) just north of the bridge and Glen Echo Avenue (CR 538) just south of the bridge. Approximately 35,000 vehicles per day could seek to cross the Raccoon Street Bridge in the future based upon the traffic analysis.

The capacity of roadways and intersections in Swedesboro would prohibit that many vehicles from using the bridge. As

a result, actual future traffic volumes would be less. Drivers will seek to use alternative roadways such as Locke Avenue or will attempt to by-pass the area entirely. Drivers using CR 538 in particular will seek to use alternative roads to reach either US 322 or the retail developments between Kings Highway and the Turnpike.

TRANSPORTATION & LAND USE

The Township's Circulation Plan will integrate land use and transportation development to encourage and support alternative travel modes, in particular walking, bicycling, and transit. In concentrated areas, particularly the proposed Regional Center, it seeks to support the development of walkable, higher density neighborhoods and mixed-use commercial in concentrated areas. It also seeks to support tourism and access to its agricultural and open space areas through a network of rural roads and trails.

To accommodate additional growth in the Regional Center, Woolwich Township proposes to create a sustainable land plan that features a multi-modal circulation system.

This transportation plan lays out a local transportation structure for Woolwich Township required to support the proposed growth in Woolwich New Town and throughout the Woolwich Regional Center and Auburn Road Village. It analyzes the potential traffic impacts associated with that growth and makes recommendations regarding how development can occur in a fashion that will give greater priority to the use of public transportation and human powered transportation – walking and biking – thereby reducing total trip making and total vehicle travel.

In analyzing the potential transportation impacts of growth along the US 322 Corridor, it is important to remember that growth will occur with or without the transfer of development rights. However, fragmented, spread out development of low density housing across the farmland of Woolwich Township will necessitate greater use of automobiles for travel purposes, since other travel modes are not practical at low densities, and will require longer average trip distances, increasing the total amount of vehicle miles traveled. As a result, although traffic impacts from the Regional Center may be concentrated, they should be less than what would result under previous zoning.

GOODS MOVEMENT

As noted previously, US 322 will continue to serve as a regional truck corridor,and thus serve as the primary artery to successfully accommodate regional truck traffic in Woolwich. Thus, the majority of goods movement will be directed through US 322 and the proposed Regional Center area.

ENCOURAGING TRANSIT

A formal mode split analysis was not performed. However, one can readily conclude that design standards and a street network alignment that facilitate walking will assure that a larger portion of the internal trips in the Regional Center will be made on foot.

Woolwich Regional Center will approximately double the number of trips to work originating in residences in Woolwich. When combined with the added trips generated by surrounding residential growth, it would appear that a market for express bus travel to Camden and Philadelphia could evolve in the future.

A smaller concentration of trips will exist to Delaware County in Pennsylvania. With the development of a Regional Center with transit supporting land densities, it may become feasible for NJ Transit and SEPTA to initiate a joint service between Chester, PA and Glassboro, NJ.

In order to successfully encourage greater public transit ridership and access for the Township as a whole, the following steps are recommended:

- Working with NJ Transit to increase the frequency of bus service to Philadelphia through Woodbury;
- Working with NJ Transit to establish subscription express bus service to Philadelphia and perhaps New York City using the New Jersey Turnpike;
- Reserving flexibility in the use of the right-of-way of the Salem Secondary to allow future passenger rail service if NJ Transit and the Federal Transit Administration determine at some point in the future that such use is feasible;

ENCOURAGING WALKING & BIKING

Woolwich Regional Center will integrate land use and transportation development to encourage and support alternative travel modes, in particular walking and bicycling.

- Encouraging walking trips to schools, shopping, recreation and civic nodes;
- Constructing streets with cross-sections that include comfortable sidewalks, multi-purpose paths, on-road bicycle lanes, shade trees and other amenities for pedestrians and bicyclists;
- Providing frequent and safe methods of crossing arterial roads and collector streets so that walking routes do not become prohibitively long and hazardous;
- Require the provision of bicycle racks and all weather storage.

The Township has an existing network of shared use paths (SUP) that can be used for both walking and biking trips. This plan aims to expand the SUP network to accommodate areas that are currently lacking facilities along with future growth areas. Recognizing that pedestrians and bicyclists also need to be able to cross the road safely, the plan aims to improve conditions at existing crossing locations and also provide additional crossing locations where needed to accommodate walking and biking desire lines.

INTERSECTION IMPROVEMENTS

Woolwich Township has identified a number of key intersection for improvements that enable safe walking and biking to key destinations throughout the community. Roundabouts are the ideal major traffic control device, which slows and meters vehicular traffic flow, thus accommodating a safer flow for walkers and cyclists. These locations were determined based on the analysis of existing conditions, site observations, plans for future growth areas, and public input.

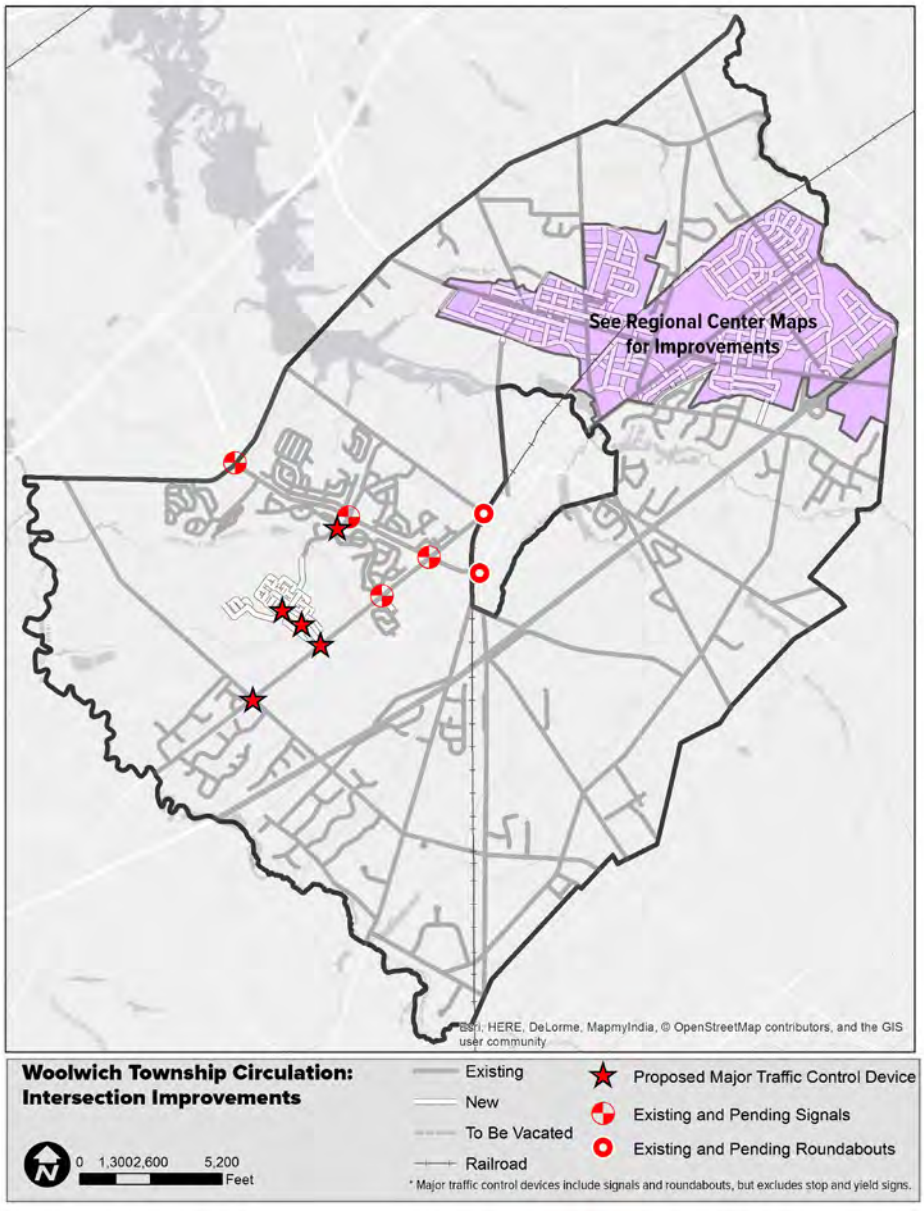


Figure 13. Woolwich Township Intersection Improvements

BICYCLE & PEDESTRIAN CROSSING IMPROVEMENTS

Woolwich Township has identified locations for enhanced pedestrian crossings within the Township. The map has two categories (1) enhancements at major traffic control devices (signals or roundabouts) and (2) enhancements at general locations (un-signalized intersections and mid-block crossings). These locations were determined based on the analysis of existing conditions, site observations, plans for future growth areas, and public input.

Enhancements at Major Traffic Control Devices

Addressing deficient conditions at signalized intersections is an important component of improving bicycle and pedestrian safety. Integration of roundabouts or traffic signal upgrades are recommended at the locations shown in Figure 14. Upgrades should include high-visibility painted crosswalks and ADA-compatible curb ramps; and at signals, include countdown pedestrian signal heads, and No Turn on Red (R10-11 in MUTCD) signage at each of the four intersection legs. The No Turn on Red signage recommendation, per MUTCD, is based on the potential for pedestrian conflicts with right-turn-on-red maneuvers.

Enhancements at General Locations

A multitude of treatments can be used to improve safety at un-signalized crossing locations. These measures include high-visibility crosswalk striping, In-Street Pedestrian Crossing signs (R1-6a), Pedestrian Warning Signs (W11-2), textured crosswalks, curb extensions, median refuge islands, and Rectangular Rapid Flashing Beacons (RRFBs). At locations with higher vehicle speeds/volumes and/or multiple lanes in each direction, a higher level of control is desired to stop vehicles and provide additional protection for pedestrians. Types of intersection control include Pedestrian Hybrid Beacons (PHBs), pedestrian-actuated traffic signals, and full traffic signals. Each location should be evaluated to determine the appropriate treatment. At locations with traffic signal, the township should request the entity with jurisdiction (State or County) to initiate an engineering study to determine if warrants specified in the Manual of Uniform Traffic Control Devices (MUTCD) can be met.

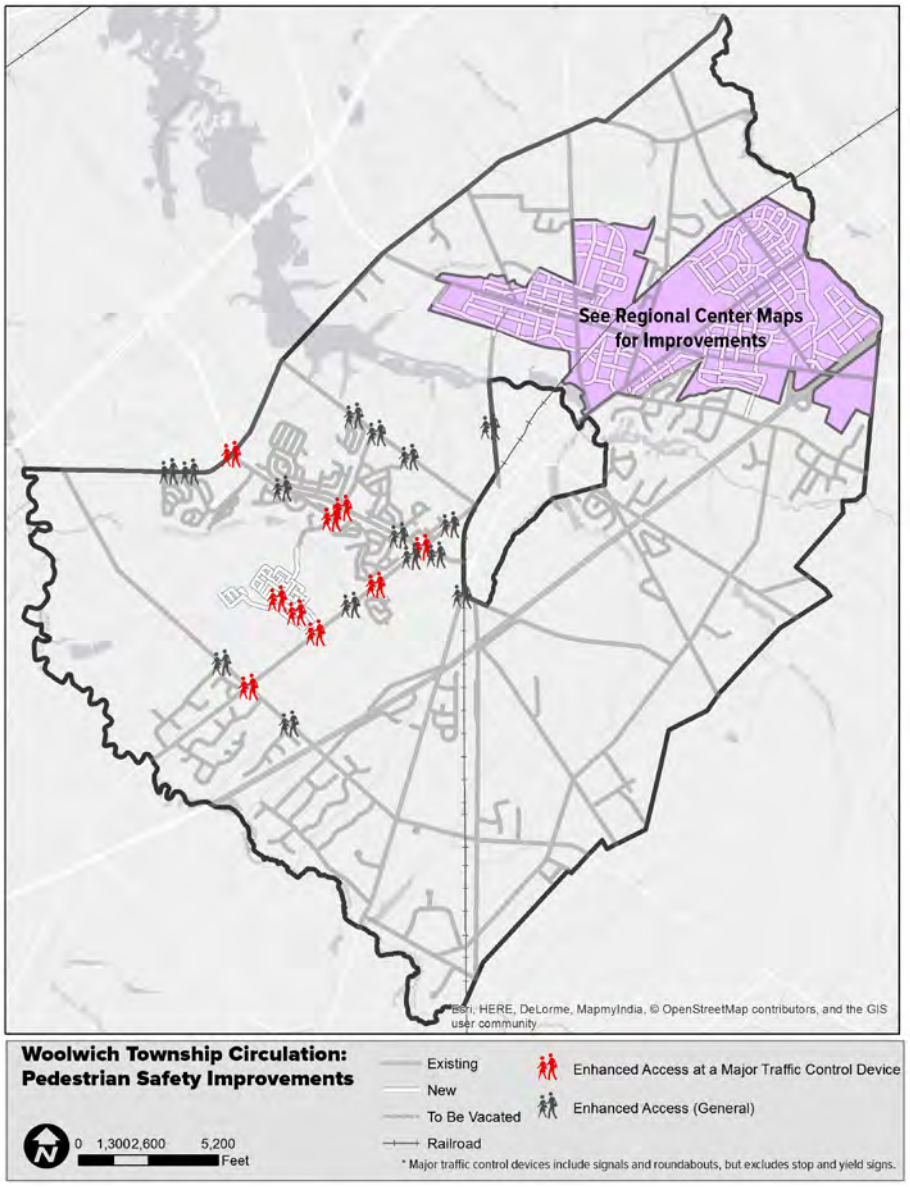


Figure 14. Woolwich Township Pedestrian Safety Improvements

BICYCLE & TRAILS NETWORK

The Township and Borough lack trail infrastructure for both recreation and non-motorized transportation connections to parks, open space, schools, and other important destinations. Pedestrian sidewalks are also lacking throughout much of Woolwich, further limiting the ability for pedestrians to walk safely though the community. As development increases, this need will only be exacerbated. This plan proposes to create the links between residential areas, recreational destinations, and future centers of development. The trail and bicycle linkages will also establish a non-motorized connected network to parks and open space, and to destinations and trails in adjacent municipalities, and will create additional recreational opportunities.

To encourage walking and biking, it is important to develop a continuous network of safe and convenient facilities that allow residents, workers, and visitors to walk and bike between activity generators. Trails and greenways provide for a safe and comfortable walking and bicycling experience. Trails and greenways may be located in abandoned railroad corridors, conservation easements, parks, or flood zone easements. A well-connected, well-designed trail network can generate economic activity from bicycle tourism. Exceptionally popular routes may stimulate the establishment of bed & breakfasts, restaurants, and bike shops.

Trails, paths and greenways may exist in a variety of contexts from rural to urban. Where trails intersect with roadways, crossings must be well-designed and provide sufficient warning to drivers and trail users. Trails, paths and greenways can be enhanced with such amenities as solar lighting, restrooms, water fountains, wayfinding maps, mile markers, and benches. The surface may be cinder, gravel, asphalt, concrete, or crushed limestone. Trails may be groomed in the winter for cross-country skiing. The intended users of trails are pedestrians and cyclists. Trails require regular maintenance to prevent overgrowth of vegetation.

The recommended future bicycle and trail network for Woolwich Township. Each link within the future bicycle and trail network is color-coded according to the recommended facility type. The plan was developed to connect major destinations within the township and make bicycling a viable alternative for travel. Desired bicycle routes were identified based on the location of activity generators, input from the public and other stakeholders, and physical characteristics of the roadway network. Specific facility types for each identified route were determined based on roadway characteristics – curb-to-curb widths, posted speed limits, and traffic volumes – and are described below in more detail:

Bicycle & Trails Network Highlights

A Shared Use Path (SUP) network will be completed in order to better connect residential areas to schools, parks and other key destinations:

- Entire length of High Hill Road to connect residents in Weatherby to the Gloucester County Park/Recreation area, and across Auburn Road to the Walter H. Hill School
- Township Line Road from Oldmans Creek Road up to, and connecting to, the shared use path along Township Line Road
- Auburn Road from Swedesboro border to Meadowlark Drive
- Oldmans Creek Road from Meadowlark Drive to Hunter's Run connecting existing residential neighborhoods to General Charles G. Harker School
- Along Kings Highway from Swedesboro border, then continuing along Rainey Road, and ultimately connecting to the SUP along Oldmans Creek Road
- Complete the SUP on either end of Center Square Road to Township Line Road and Kings Highway
- See Regional Center section for north of Swedesboro bicycle and trails highlights

Shared Lane Markings

Shared lane markings (commonly referred to as "sharrows") are appropriate on streets where the posted speed limit is low enough to accommodate bicyclists and motor vehicles in the same lanes (35 mph or less). They are useful in situations where providing separate facilities for cyclists is difficult due to insufficient width. Shared lane markings on the pavement increase the visibility of cycling along a street and provide guidance to the cyclist on the proper location to ride. Similar to bike lane symbols, sharrows should be placed after each intersection and then spaced as required in the MUTCD.

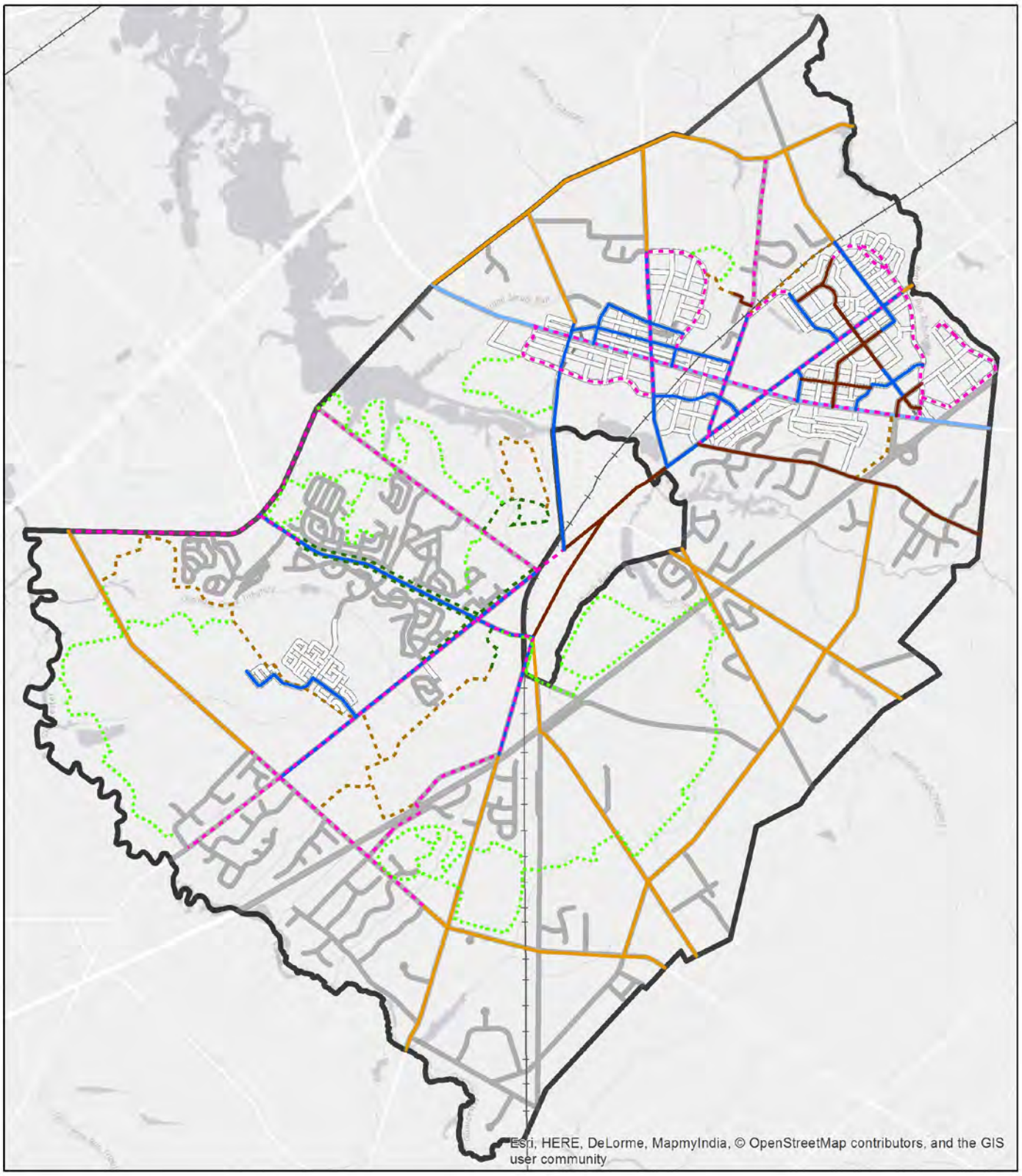
Bike Lanes

Bike lanes are portions of the roadway that are reserved for the exclusive use of cyclists through designated signage, striping, and pavement markings. Bike lanes increase the comfort of cyclists by providing a dedicated space, increase driver awareness of cycling, and increase the predictability of bicycle and motor vehicle movements. Bike lanes travel in the same direction as motor vehicle traffic and should be a minimum of 5 feet wide on curbed roadways. While 5 feet wide bike lanes are typical, wider lanes are desirable on streets with higher traffic speeds and volumes, a high percentage of heavy vehicles, on-street parallel parking, and/or relatively steep inclines.

At 7 feet wide or wider, a buffered area can be striped to further separate bike traffic from motor vehicle traffic and/or the door zone of parked vehicles. When bike lanes are placed next to parking, these buffered areas enable bicyclist to ride outside of the "door zone" where drivers enter and exit vehicles. Where possible, a 2 foot wide separation between the parking lane and the bike lane is desirable. Parking is not permitted inside of the bike lane. Drainage grates can also pose a hazard for cyclists if the openings are parallel to the direction of travel. Bicycle safe drainage grates must be installed on all roads with bike lanes.

Paved Shoulders

Paved shoulders provide bicyclists with a riding space that is separated from traffic, but without the signage, pavement markings, and intersection treatments that are used to establish bike lanes. For this facility, a minimum 4-foot wide shoulder should be provided in both directions with a striped edge line between the shoulder and travel lane. Wider shoulders are desirable on roads



Woolwich Township Circulation: Bicycle & Trail Network

Existing
New
To Be Vacated
Railroad
Existing Path
Walking Trail
Shared Use Path (Road Adjacent)
Shared Use Path (Off-Road)
Buffered Bike Lanes
Bike Lane
Shared Lane Markings
Paved Shoulder

0 1,3002,600 5,200
Feet

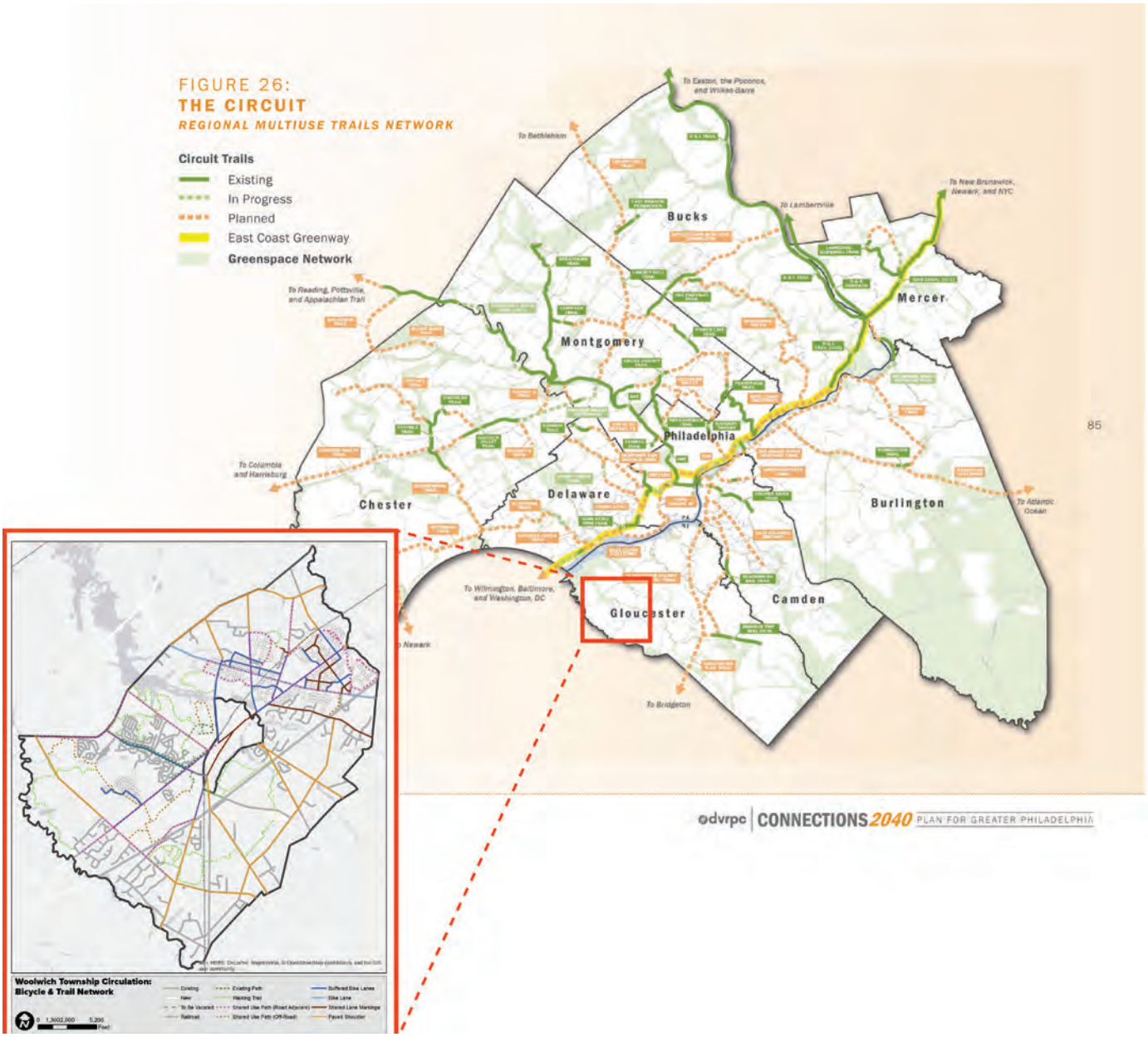
with higher traffic speeds and volumes, a high percentage of heavy vehicles, and/or relatively steep inclines. As with bike lanes, it is important that shoulders have bicycle safe drainage grates.

Shared Use Paths

Shared use paths (also referred to as "multi-use trails") provide a dedicated pathway for bicycles and pedestrians that is physically separated from motor vehicle traffic. These facilities can be placed along roadways, through parks/open space, or along other rights of way such as rail corridors. When shared use paths are located adjacent to the roadway, they should be designed with an adequate buffer between the path and the roadway, and careful design is necessary to minimize conflicts with side street crossings and driveways.

REGIONAL CONNECTIONS

Woolwich Township's bicycle and trail network is part of a larger regional effort to encourage walking and biking through a unified network. The trail plan links to multiple regional trails including existing and proposed on road and off road routes identified by the Cross County Connection Transportation Management Association and Gloucester County. The planned Delaware Estuary Route lies to the north of Woolwich and Swedesboro in Logan Township. This trail would continue east into Greenwich Township and beyond to National Park. The Delaware Valley Regional Planning Commission (DVRPC) Circuit lies just across the Delaware River in Pennsylvania and to the north in Camden, NJ. The Circuit is a network of existing and planned trails that, when completed, will total approximately 750 miles of bicycle and pedestrian trails in the greater Philadelphia Area.



REGIONAL CENTER CIRCULATION CONCEPTS

OVERALL ROAD NETWORK

The future Regional Center (aka Kings Landing) lies at the intersection of several major arterial roads, such as Kings Highway and Swedesboro-Paulsboro Road. These will serve as a framing roads that support a grid network of interconnected streets.

MAJOR CIRCULATION ROUTES

ROUTE 322 - THE BOULEVARD

Route 322 will continue to function as an important principal arterial highway in the future, serving county and statewide travel patterns. A substantial volume of trucks will seek to use the road, both to travel through Woolwich Regional Center and to bring supplies to businesses in Swedesboro and Regional Center. As a result, it will be strategically important to assure that appropriate facilities are provided to serve both local and through traffic. At the same time, Route 322 will divide the Regional Center and could become a barrier between development areas north and south of the Center.

A classic boulevard cross-section is recommended along the corridor, with two directional service roads provided north and south of the state highway. These service roads would function as local streets, providing access to abutting properties. The service roads should be designed to terminate prior to meeting major signalized cross streets in order to reduce conflicts near major traffic control devices, and to keep traffic flow on the service roads local. A boulevard parkway would extend the length of Kings Landing, including an east-west multi-use trail/walkway.

RIGHTSIZING THE BOULEVARD

The New Jersey Department of Transportation (NJDOT) is currently reviewing two projects along the Route 322 corridor in Woolwich Township. The first project is a NJDOT initiative to improve traffic conditions at Route 322 and Kings Highway by enlarging the signalized intersection to accommodate turning lanes. The second initiative relates to the access permit application by Wolfson Development, whereby the NJDOT is requiring the developer to install a 5-lane cross-section with two through lanes in each direction, as well as a center turning lane. Both of these initiatives are in conflict with Woolwich Township's vision for a Boulevard along Route 322 that prioritizes bicycle and pedestrian users. Following national trends, Woolwich Township expects Route 322 to be ultimately be rightsized to a 2-lane boulevard that incorporates street networks, roundabouts, and other traffic calming to most effectively accommodate both vehicular and non-vehicular users of the roadway.

KINGS HIGHWAY

Kings Highway provides an important linkage between the Kingsway Regional School complex and Swedesboro. It also functions as the front door to the school and will provide an important access for the residential development to the north and the mixed use development on the east side of Kings Highway. Because of its arterial function, it is appropriate to improve the roadway over time so that it can continue to serve the important function of linking town and village centers that have long existed along the ancient roadway. The stretch of Kings Highway between Asbury Station Road and Swedesboro needs to be designed so that it will create a transition between the more open roadway to the north and the urban context of Kings Landing and Swedesboro.

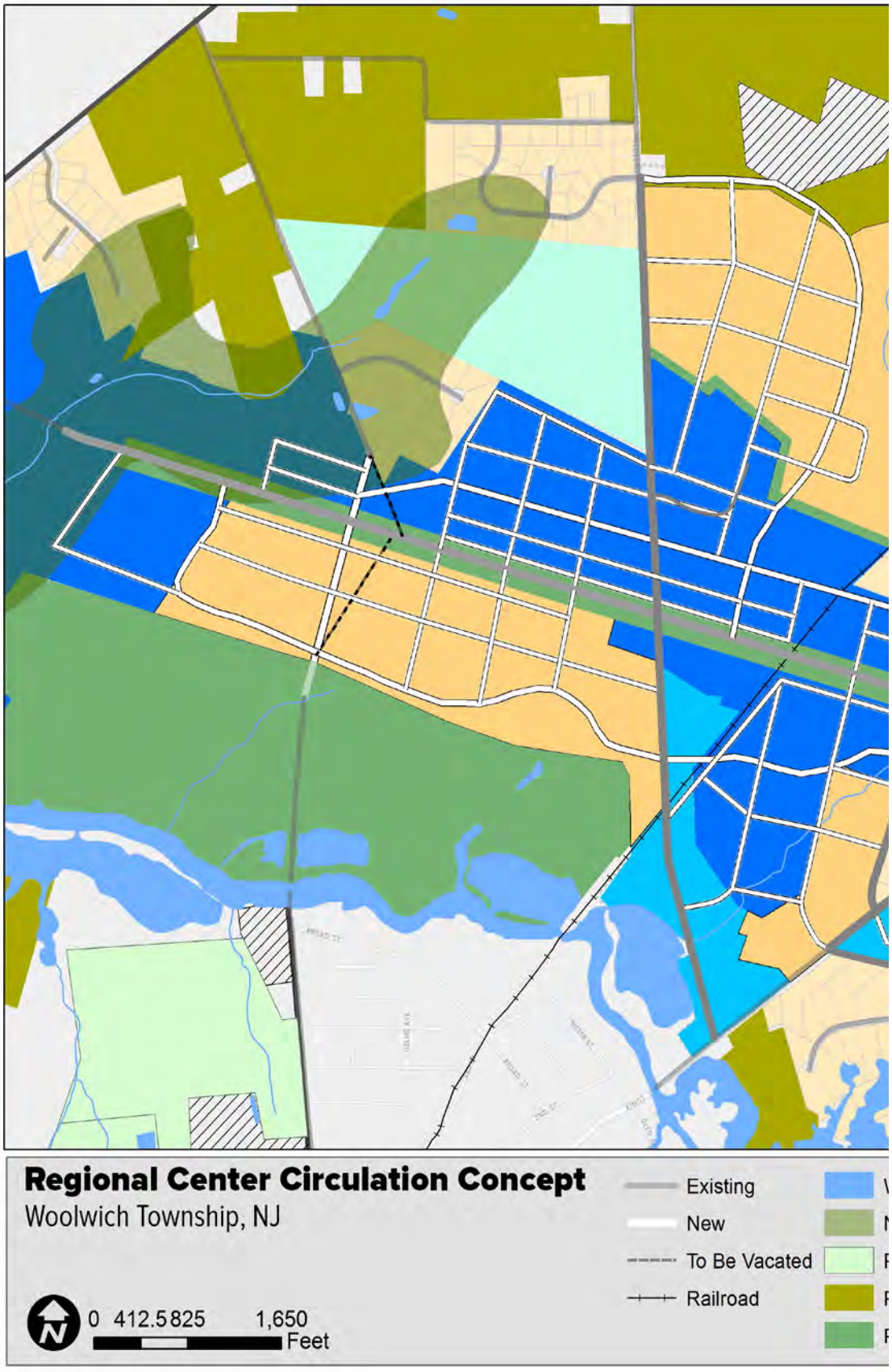
RACCOON CREEK BRIDGE

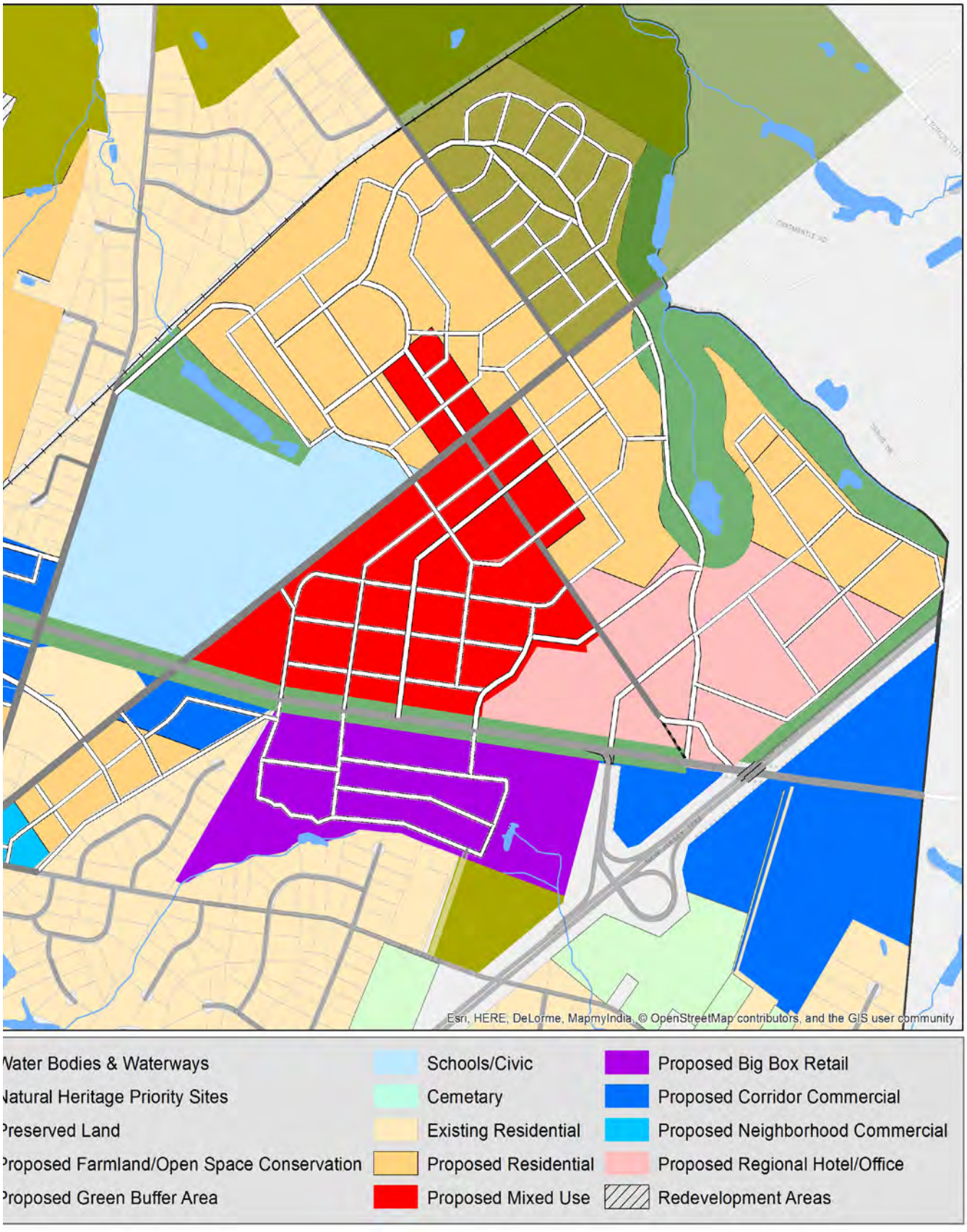
The Kings Highway bridge over Raccoon Creek must serve a concentrated flow of traffic. North of the creek, Paulsboro-Swedesboro Road and Garwin Road join Kings Highway. South of the creek, Kings Highway, Auburn Road and other county roads bring traffic to the bridge. A critical issue will be to efficiently manage the concentrated flow of traffic across Raccoon Creek between the intersection of Swedesboro-Paulsboro Road to the north and the intersection of Franklintown Road to the south. Roundabouts at the intersection of Kings Highway with Paulsboro Road north of the bridge and Glen Echo Avenue south of the bridge would enhance traffic flow and safety and would result in the least delay. In the future one of two options will be necessary.

Another option is to widen the bridge to provide a two lane cross-section with a center median and improved pedestrian walkways. Alternatively, consideration could be given to constructing one or more additional crossings of Raccoon Creek to allow some traffic to bypass this bottleneck.

MAIN STREET

Located along Pancoast Road, east and west of Kings Highway, the proposed Main Street is intended to function as the primary mixed-use commercial corridor for Kings Landing. Projected traffic volumes for the road are consistent with the volumes on typical Main Streets in town centers. The road will be able to support on-street parking in its commercial core. Roundabouts with ample pedestrian and bicycle accommodation are desired at all major intersections with Main Street. Opportunities for pedestrians to safely cross the street should be provided frequently – at least every 400 feet, preferably more frequently.


Regional Center Circulation Concept
Woolwich Township, NJ
Existing
New
To Be Vacated
Railroad
0 412.5 825 1,650
Feet


Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user community
Water Bodies & Waterways
Natural Heritage Priority Sites
Preserved Land
Proposed Farmland/Open Space Conservation
Proposed Green Buffer Area
Schools/Civic
Cemetary
Existing Residential
Proposed Residential
Proposed Mixed Use
Proposed Big Box Retail
Proposed Corridor Commercial
Proposed Neighborhood Commercial
Proposed Regional Hotel/Office
Redevelopment Areas

LOCAL CONNECTOR ROADS

A key function of the Kings Landing roadway network will be collector streets running east-west and parallel to Route 322. These roads will be used primarily by residents and persons with business in the center. But they will also serve as a relief route for some of the through routes and particularly for drivers who must transition from a north-south roadway to an east-west roadway.

The roads do not necessarily have to provide a continuous east-west alignment so long as the ability to travel from one end of Kings Landing to the opposite end is reasonably convenient. Indeed, some friction is desirable to assure that through-drivers on Route 322 do not divert to these other roads to avoid traffic signals or other constraints. The connector roads, with less traffic on them, will be important pedestrian corridors and will provide residents with a calmer environment for bicycle travel.

SCHOOL TRIP MANAGEMENT

National data indicates that school and church related trips account for 10% of daily household trips. Some studies have indicated that school trips can compose up to 20% of traffic volume in the morning peak hour. Managing school traffic to reduce both the number of trips to a school and the length of school trips can be one effective method of reducing peak hour traffic requirements.

Because of the concentrated residential development in Beckett in Logan Township, in 2000, approximately 60% of high school students in the regional district lived south of the Raccoon Creek. As a result of the Weatherby development in Woolwich and the larger homes being constructed south of the creek in all municipalities, the number of students living south of the creek will continue to grow. Methods should be sought to assure that a high percentage of students living south of the creek use available school buses or a robust trail network, rather than travel to the school complex by car. One option to consider would be to modify the railroad bridge over the creek so that it could also serve school buses, thereby creating a bus rapid transit route for only school buses.

TRANSPORTATION & LAND USE

The successful integration of transportation and land use will enable Kings Landing to become established as a sustainable, mixed use, walkable community based on TDR and Smart Growth principles. The implementation of interconnected roads within a grid block structure, will further support the emergence of safe, pedestrian and bicycle friendly neighborhoods. The circulation system for Kings Landing; thus, includes interconnected sidewalks and shared use paths, bicycle lanes and pedestrian friendly intersections at strategic locations to promote automobile independence throughout the Center and into the environs. Likewise, the Land Use Plan will minimize conflicts on US 322 and promote the appropriate densities and mixed uses necessary to ensure the regional center's success.

Kings Landing will integrate land use and transportation development to encourage and support alternative travel modes, in particular walking, bicycling, and transit. This will be accomplished in the following ways:

- Developing a "Main Street" along Pancoast Road east and west of Kings Highway to serve local shopping and service needs of future residents;
- Locating most residences in Kings Landing within half a mile the new Main Street, making walk trips to the Main Street destinations reasonable;
- Providing high quality east-west walking corridors, bicycle lanes and/or multi-purpose paths both north and south of US 322; Encouraging walking trips to schools, shopping, recreation and civic nodes;
- Constructing streets with cross-sections that include comfortable sidewalks, multi-purpose paths, on-road bicycle lanes, shade trees and other amenities for pedestrians and bicyclists;
- Providing frequent and safe methods of crossing arterial roads and collector streets so that walking routes do not become prohibitively long and hazardous;
- Require the provision of bicycle racks and all weather storage.

GOODS MOVEMENT

While the movement of through truck traffic will be a complex and difficult challenge, Kings Landing, like all communities, will also have to assure that trucks have convenient access for loading and unloading. The proposed Zoning Regulations and Design Standards for the Kings Landing establish performance standards regarding the provision of adequate loading zones. Developers will be required to identify their loading requirements and demonstrate that those requirements can be met without using adjacent streets and without being visible to neighboring properties. Developers are encouraged to develop shared loading areas so that the total space required for vehicle loading can be minimized. Most of Woolwich New Town will be served by alleys and will have parking lots, when permitted, in rear yard areas. This arrangement will facilitate the provision of loading areas in the rear of buildings. Residential areas served by alleys will have all services such as refuse pick-up occur in the rear yard, reducing congestion on streets.

ENCOURAGING TRANSIT

- Evaluating markets for transit service along US 322 between Glassboro and Delaware County, PA;
- Provide a park and ride facility for regional transit services.

The preferred method of providing a park-ride facility is to incorporate it into the plan for big box retail, so that the commuter bus parking demand could be shared with the retail development. Alternatively, it could be incorporated into the hotel/office development site, so that use could benefit from the transit service. A similar park-ride area making use of retail parking lots could be considered west of Locke Avenue in the CC zone.

ENCOURAGING WALKING & BIKING

INTERSECTION IMPROVEMENTS

Since mid-block capacity will be adequate until half of the commercial development is occupied, the focus of improvements initially should be placed on providing additional capacity at intersections and designing these intersections in a fashion that allows pedestrians to safely and easily cross the highway.

Techniques for controlling or eliminating left turns from the state highway could increase the capacity available at intersections. The provision of median refuge islands that can protect and harbor pedestrians crossing the highway will also help make intersections function better.

Additional evenly spaced roundabouts or signalized intersections within Kings Landing will:

- Permit implementation of an efficient vehicle progression system that can control vehicle speeds to a moderate pace;
- Provide a porous system that offers motorists multiple opportunities to cross the highway, thereby reducing demand at individual intersections;
- Provide pedestrians more opportunities to safely cross the road;
- Allow signalized mid-block crosswalks at strategic locations;
- Improve the utility of parallel east-west collector roads for local traffic by increasing the connectivity of the total grid system.

Gateways to Woolwich Regional Center should be provided at the following locations:

- At the eastern gateway - intersection of US 322 with relocated Pancoast Road;
- At the western gateway – intersection of US 322 with Locke Avenue and Oak Grove Road.
- At the northern gateway - intersection of Kings Highway and Asbury Station Road

Gateways could consist of any of the following treatments:

- A pronounced widening of the median with sculpted landscaping to create a sense of arrival;
- A "monumental" roundabout with an interior landscaped circular island.

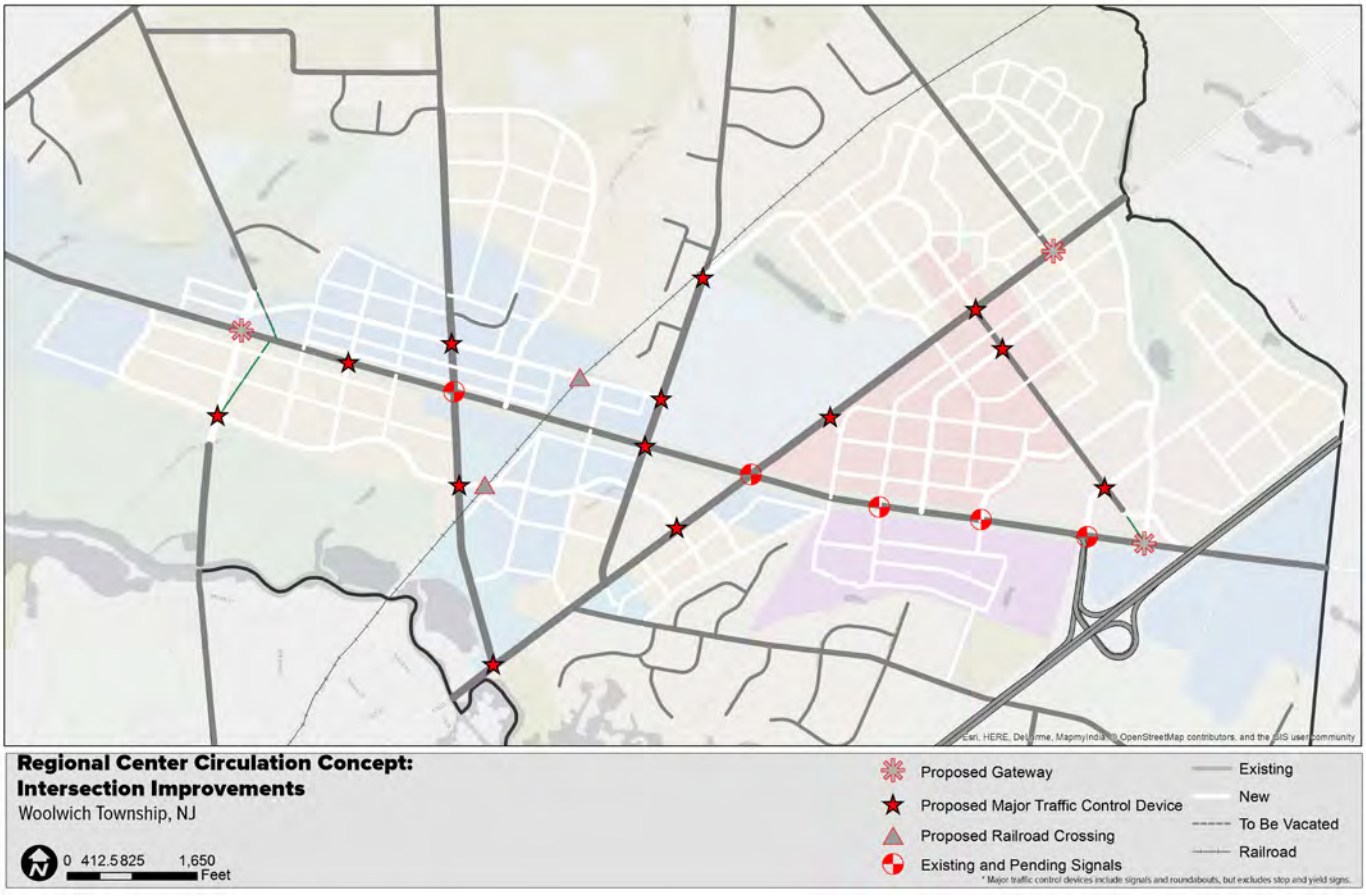
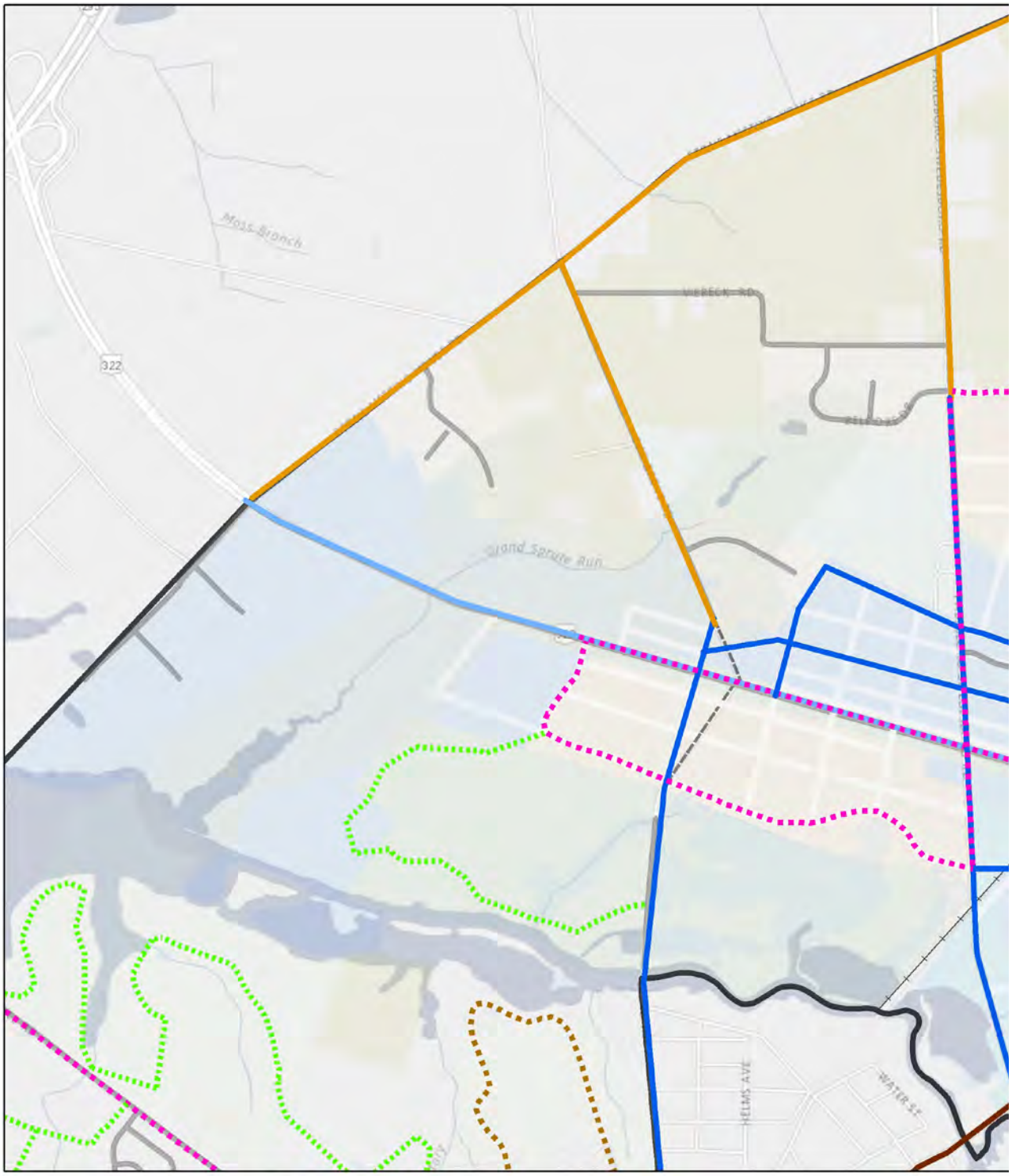
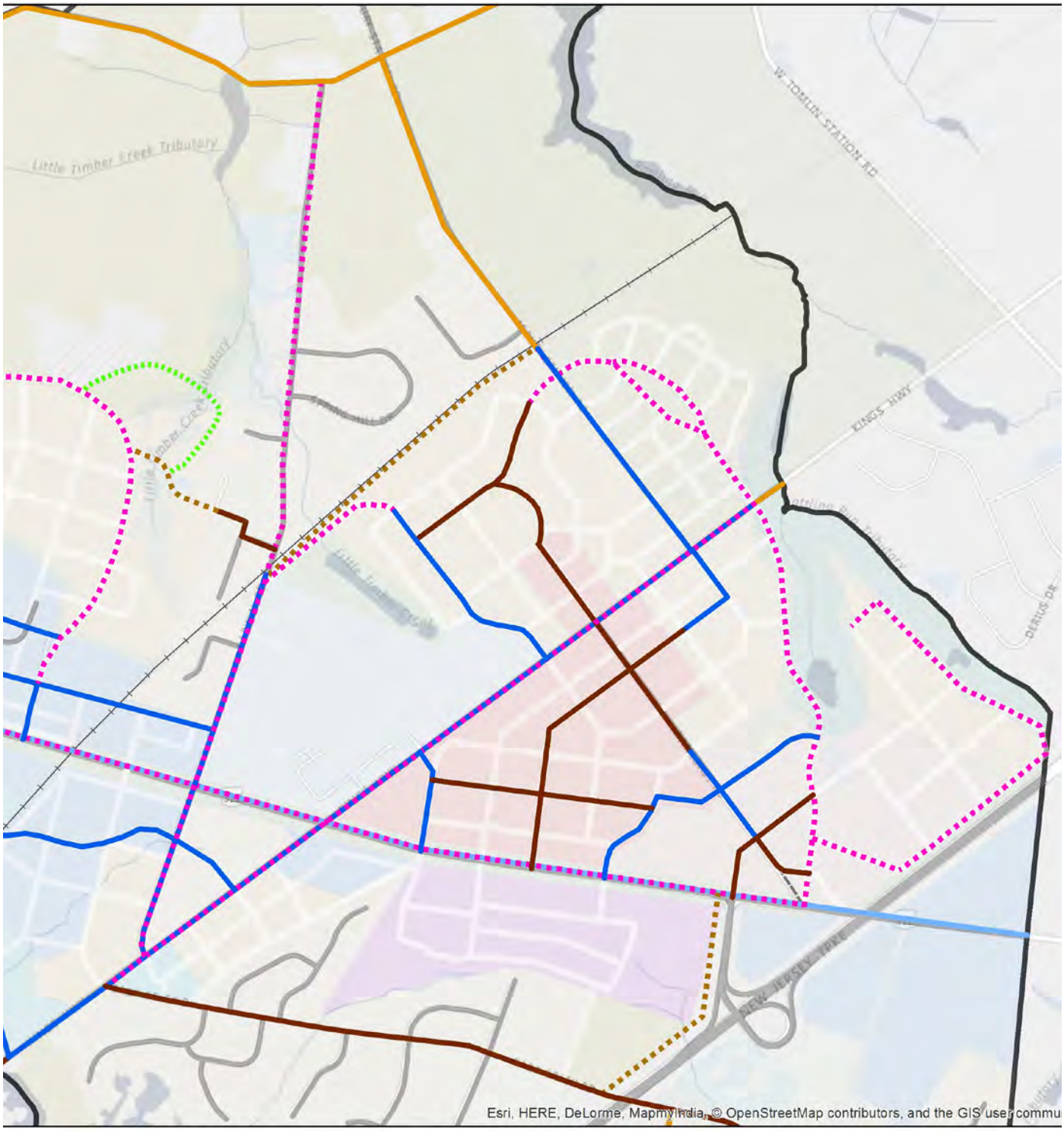


Figure 15 Kings Landing Intersection Improvements



Regional Center Circulation Concept:
Bicycle & Trail Network
Woolwich Township, NJ


Little Timber Creek Tributary
W TOMLIN STATION RD
KINGS HWY
DERUS DR
NEW JERSEY TPKE
Esri, HERE, DeLorme, MapmyIndia, © OpenStreetMap contributors, and the GIS user commu
Existing
New
To Be Vacated
Railroad
Existing Path
Walking Trail
Shared Use Path (Road Adjacent)
Shared Use Path (Off-Road)
Buffered Bike Lanes
Bike Lane
Shared Lane Markings
Paved Shoulder

WALKABILITY

Trips of less than half a mile -2,640 feet – a ten minute walk – can be easily made by walking. If a community is designed to encourage such walking trips, many residents will choose to walk more frequently, reducing reliance on cars for short trips.

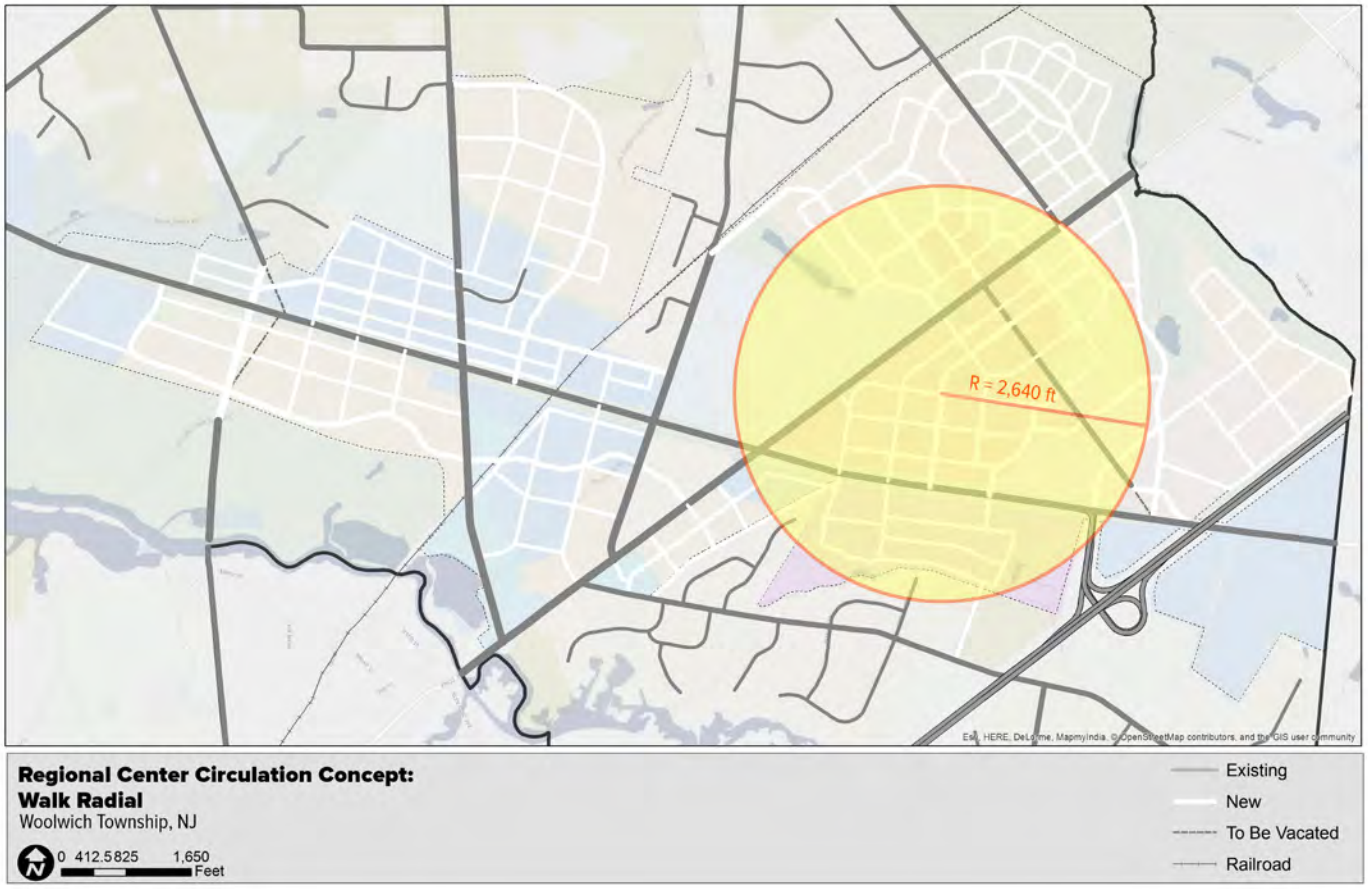


Figure 16. Kings Landing Walk Radial

Bicycle & Trails Network Highlights

A Shared Use Path (SUP) network will be incorporated into Kings Landing and connect to surrounding neighborhoods in order to provide off-road connections between residential areas and schools, parks and other key destinations:

- Route 322 ("The Boulevard") in Kings Landing Regional Center
- Kings Highway from Kings Landing Northern Gateway to Back Creek Road
- Garwin Road from Hendrickson Mill Road to Kings Highway
- Swedesboro-Paulsboro Road from Belfiore Drive to new street in Kings Landing north of Raccoon Creek
- Along various new internal "parkway" streets within Kings Landing
-

A network bike lanes (buffered and non-buffered) and shared lane markings of will be incorporated into Kings Landing and connect to surrounding neighborhoods in order to better accommodate cyclists:

- Entire length of Route 322
- Kings Highway from Kings Landing Northern Gateway to the Raccoon Creek
- Swedesboro-Paulsboro Road from Belfiore Drive to Kings Highway
- Garwin Road from the northern railroad crossing to Kings Highway
- Locke Avenue from just north of Route 322 to Swedesboro border
- Along various new internal streets within Kings Landing

BICYCLE & PEDESTRIAN IMPROVEMENTS

Woolwich Township has identified locations for enhanced pedestrian crossings within the Township. The map has two categories (1) enhancements at major traffic control devices (signals or roundabouts) and (2) enhancements at general locations (un-signalized intersections and mid-block crossings). These locations were determined based on the analysis of existing conditions, site observations, plans for future growth areas, and public input.

Enhancements at Major Traffic Control Devices

Addressing deficient conditions at signalized intersections is an important component of improving bicycle and pedestrian safety. Integration of roundabouts or traffic signal upgrades are recommended at the locations shown in Figure 17. Upgrades should include high-visibility painted crosswalks and ADA-compatible curb ramps; and at signals, include countdown pedestrian signal heads, and No Turn on Red (R10-11 in MUTCD) signage at each of the four intersection legs. The No Turn on Red signage recommendation, per MUTCD, is based on the potential for pedestrian conflicts with right-turn-on-red maneuvers.

Enhancements at General Locations

A multitude of treatments can be used to improve safety at un-signalized crossing locations. These measures include high-visibility crosswalk striping, In-Street Pedestrian Crossing signs (R1-6a), Pedestrian Warning Signs (W11-2), textured crosswalks, curb extensions, median refuge islands, and Rectangular Rapid Flashing Beacons (RRFBs). At locations with higher vehicle speeds/volumes and/or multiple lanes in each direction, a higher level of control is desired to stop vehicles and provide additional protection for pedestrians. Types of intersection control include Pedestrian Hybrid Beacons (PHBs), pedestrian-actuated traffic signals, and full traffic signals. Each location should be evaluated to determine the appropriate treatment. At locations with traffic signal, the township should request the entity with jurisdiction (State or County) to initiate an engineering study to determine if warrants specified in the Manual of Uniform Traffic Control Devices (MUTCD) can be met.

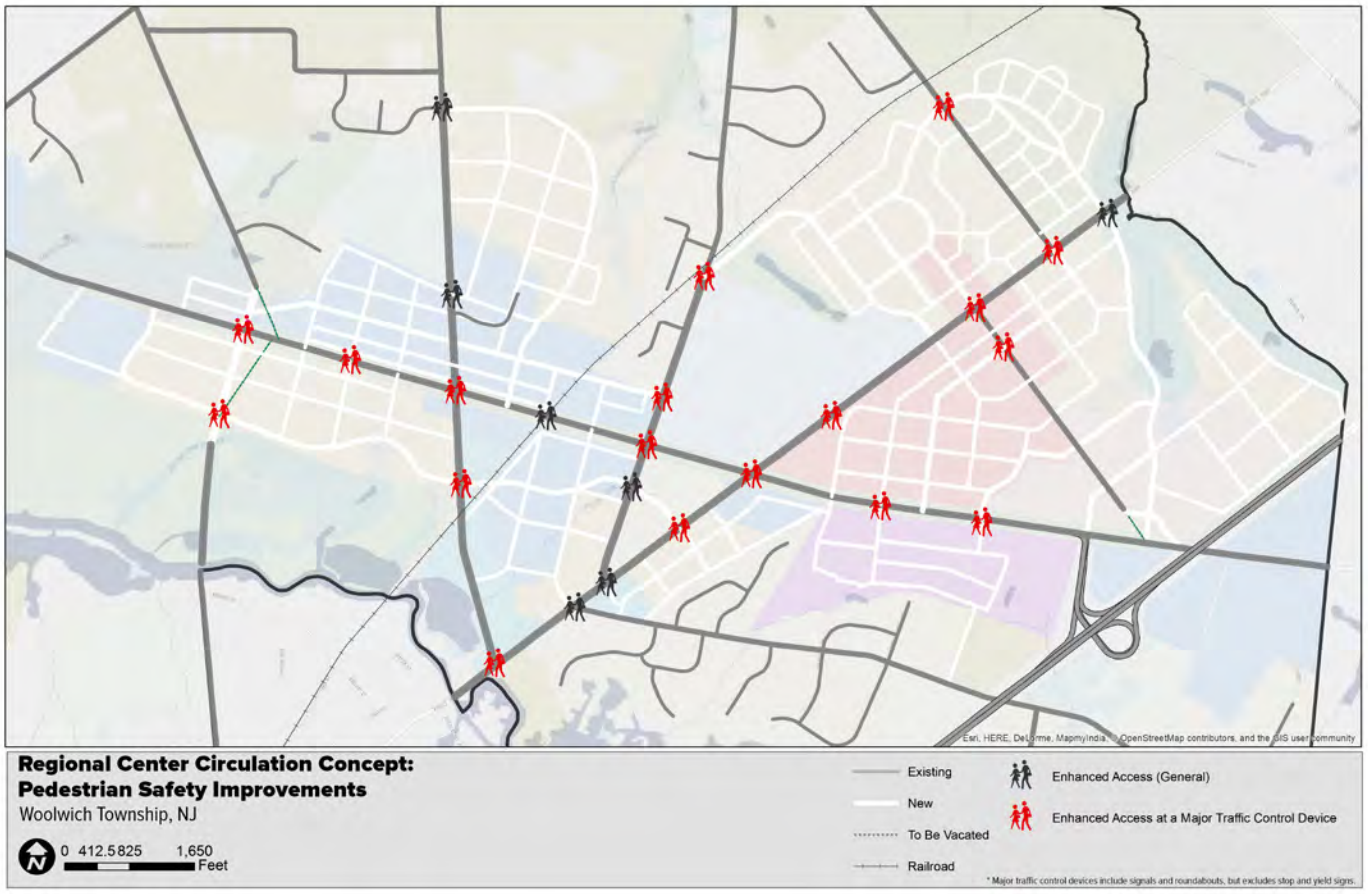


Figure 17. Kings Landing Intersection Improvements

AUBURN ROAD VILLAGE CIRCULATION CONCEPTS

Located in the southern half of Woolwich, the proposed Auburn Road Village was authorized by the Township by the transfer of development rights (TDR) from identified agriculturally based sending zones to identified growth or receiving zones in the Township.

OVERALL ROAD NETWORK

The Village site is served by the following county highways that provide convenient connections to most travel destinations, as depicted in Table 11.

CR 551	A secondary highway that extends from Carney's Point in Salem County to the City of Camden. From Swedesboro north to Woodbury, CR 551 is known as Kings Highway and follows the alignment of the colonial King's Highway. South of Swedesboro CR 551 follows Auburn Road. Gloucester County classifies all of CR 551 as a minor arterial. NJDOT has classified CR 551 south of US 322 as an urban collector road or as a major collector road in areas designated as rural.
CR 620	Center Square Road (also known as Old Ferry Road) runs east-west between Logan Township and CR 551. Just east of CR 551, at the intersection with Woodstown Road, CR 620 turns right and follows the route of the colonial Kings Highway. The Center Square Road portion of CR 620 is classified by Gloucester County as a minor arterial. The Kings Highway section is classified as a collector road. NJDOT has classified the Center Square Road as an urban collector road and the Kings Highway portion as a major rural collector. A portion of Center Square Road in Logan Township just east of I-295 is divided with two lane roadways in each direction. All of the road in Woolwich is two-lane.
CR 602	Oldman's Creek Road is a rural road that both Gloucester County and NJDOT have classified as a rural local road. NJDOT calls the road the Pedricktown-Harrisonville Road, demonstrating the connecting function that the rural road serves.

Table 11. Auburn Road Village major circulation routes

AUBURN ROAD

Traffic volumes on Auburn Road in the future will be substantially less than its capacity as a two-lane road. At the intersection of the main access road to the Village, a roundabout is recommended to better accommodate the turning traffic, while also providing pedestrians with a better crossing. Access to loading bays and parking lots for the commercial zone shall be provided via the internal street system rather than additional access points on Auburn Road. Auburn Road should be widened to provide two 10-foot travel lanes and a 10-foot center median, two 8-foot buffered bike lanes, two 7-foot areas for on street parking, as well at least18-feet on either side of the road to accommodate a 12-foot shared use path and buffer areas. Right-of-way of 48' from the center line of the existing roadway should be dedicated to Gloucester County.

CENTER SQUARE ROAD

Traffic volumes on Center Square Road will be substantially less than its capacity as a two-lane road in the future. No improvement requirements to this road would result from the development of the Auburn Road Receiving Zone. However, as part of previous analysis (2008 Woolwich Master Plan), traffic capacity was evaluated at the intersections of Center Square Road with Auburn Road and King's Highway. That analysis indicated that one lane roundabouts at each intersection would provide excellent level of service, resulting in minimal delays on all entry legs. Average delays during peak travel periods would be between five and ten seconds. The Center Square-Kings Highway roundabout has already been installed, and their is another in the planning phase for the Auburn Road and High Hill Road intersection. The Center Square-Auburn Road intersection is currently a traffic signal, that should be considered for similar roundabout treatment in the future.

CONNECTIONS TO THE FOUR SEASONS DEVELOPMENT

A key element of the conceptual design for Auburn Road Receiving Zone is a street connection into the Weatherby development. The connection consists of a north-south street that intersects Amesbury Boulevard and extends the local connector street system already assumed for the Four Seasons. This roadway allows traffic from the receiving zone to travel directly to Center Square Road, thereby bypassing the intersection of Auburn Road with Center Square Road.

The aforementioned connection provides additional benefits in that it serves as an alternate route for students from Auburn Road Village to walk or bike to the Governor Stratton School without having to travel on Auburn Road. Similarly, such a connection will allow residents of the Four Seasons development to travel directly to the commercial area in Auburn Road Village. Without a connection, these residents must first drive onto Auburn Road and then turn back off of the roadway. In this scenario, a trip to the retail area requires four turning movements onto and off of the county road if no local connection is provided; with a local connection, no trips onto the county road are required.

This connection is important in creating a future residential village that is integrally linked together rather than a set of developments that are isolated from each other.

Because the connection of the local connector roadway to Amesbury Boulevard increases the amount of longer distance trips on that roadway, additional traffic calming measures are suggested on that roadway. It is recognized that Amesbury Boulevard lies within a gated age-restricted community. This connection is still seen as ideal, and should be pursued. Should this connection not occur, the other bicycle and pedestrian and intersection improvement recommendations for the area become even more pivotal in providing safe circulation.

TRAFFIC IMPROVEMENTS

Auburn Road

- Subject to County approval, provide 94' right-of-way to accommodate center median, through lanes, bike lanes, parking and shared use paths.
- Provide roundabouts in lieu of traffic signals at Auburn Road Village access road, and major intersections.
- Prohibit driveways from the receiving zone onto Auburn Road.

Center Square Road

- Provide a roundabout in lieu of a traffic signal at the intersections with Auburn Road.

Amesbury Boulevard

- Provide landscaped roundabouts to calm traffic at Somerfield Road
- Provide a chicane or similar speed reduction device at crossing over tributary to Oldmans Creek.

TRANSPORTATION & LAND USE

Envisioned as a small village or hamlet, Auburn Road Village is projected to yield the following amount of development provided that sufficient development rights are transferred into the zone:

RESIDENTIAL DEVELOPMENT

Single family units	130
Twin units	162
Townhouses	210

COMMERCIAL DEVELOPMENT

Square feet	50,000

This level of development will create a large hamlet or small village having a population of roughly 1,147 people. As proposed, an integrated and hierarchical street pattern is proposed that would have a main local connector street constructed as a divided parkway intersecting Auburn Road, approximately one mile south of Center Square Road.

DEVELOPMENT STREETS

The conceptual hierarchical street network is appropriate for the proposed residential village that will be created in Auburn Road Village.

- Blocks will be short, yet interconnected.
- The local connector streets will include circular intersections and curvilinear alignments.
- Appropriate roundabouts and roadway alignments have been employed to control traffic speeds as needed for a residential village.
- Residential access streets will include narrow cartways and alley access to garages.

A north-south minor local connector street crosses the main access road at a small roundabout intersection. This, and at least two other residential access streets, are proposed to extend into the Four Seasons development and intersect Amesbury Boulevard, which is the principal collector road for that development. Amesbury Boulevard intersects Center Square Road opposite Frederick Boulevard, also a residential collector street that continues north through the Weatherby development to High Hill Road.

ENCOURAGING WALKING & BIKING

Most blocks are short yet interconnected. Appropriate roundabouts and roadway alignments have been employed to control traffic speeds as needed for a residential village.

- On-street parking on most streets;
- A block structure based on the most flexible community design configuration yet devised – The GRID;
- Provide mid-block pedestrian crossing to link the two sides of the commercial development, using the median as a pedestrian refuge.
- A comprehensive pedestrian circulation system that includes interconnected sidewalks and paths, bicycle lanes and pedestrian friendly intersections at strategic locations to promote automobile independence throughout the Village and into the environs.

INTERSECTION IMPROVEMENTS

Roundabouts with 100' diameter inside circles, heavily landscaped, and with a relatively narrow circular roadway (17') are recommended at the following intersections:

- Receiving zone access road and Auburn Road
- Two locations along Receiving zone access road, as depicted in Figure 19.
- Somerfield Road -- the first four way intersection south of Center Square Road;
- The local connector street that serves the southwest portion of the Four Seasons development;
- The proposed local connector street extending through Auburn Road Village.
- In addition, consider providing a chicane or other speed control device at the crossing of the Indian Brook tributary to Oldmans Creek.

BICYCLE & TRAILS NETWORK

A Shared Use Path (SUP) and Bicycle network will be completed in Woolwich Township in order to connections residential areas to schools, parks and other key destinations:

- A proposed shared use path links Beckett Golf Club west to Charles Harker School, proposed Auburn Village and Township Line Road. This trail continues south along Oldmans Creek and terminates at the Township owned parcel off of Meadow Lark Drive. This trail should be taken into consideration as plans for Auburn Village move forward. This trail should connect to the "central green space" proposed as part of the village plan.
- Provide a shared use path and buffered bike lanes on both sides of Auburn Road.
- Provide buffered bike lanes on the local connector road running through Auburn Road Village.

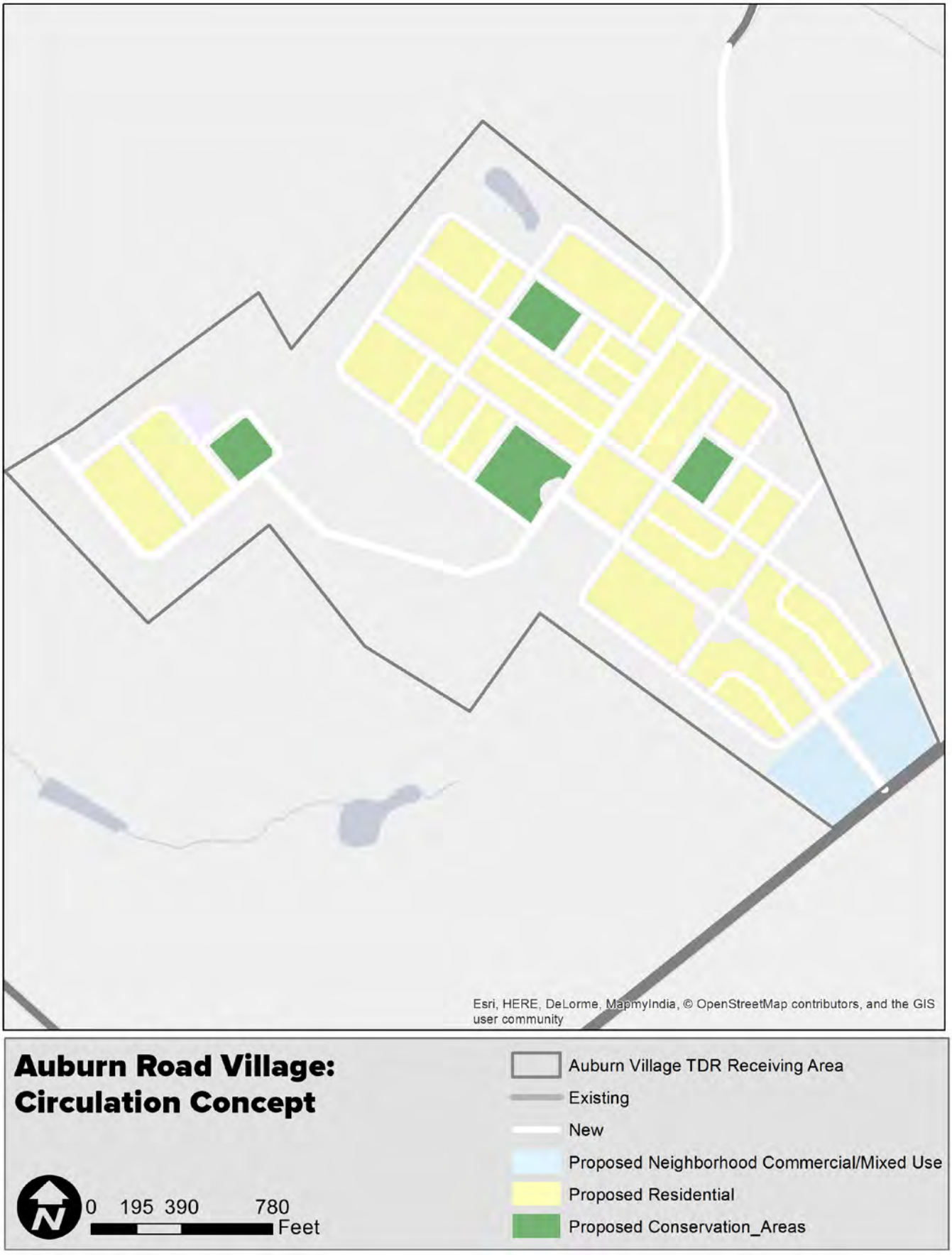


Figure 18. Auburn Road Village Circulation Concept

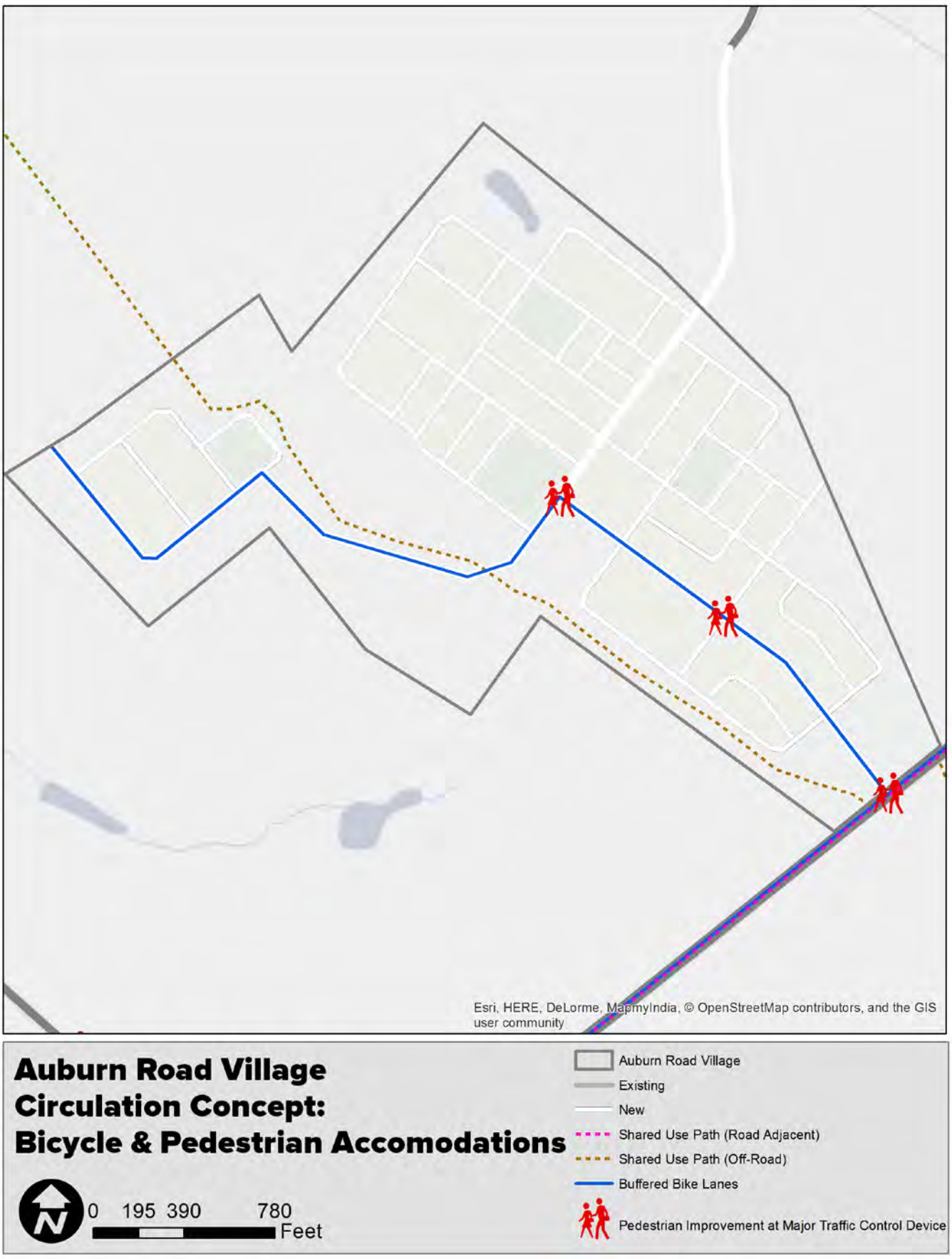


Figure 19. Auburn Road Vilage Bicycle and Pedestrian Accomodations

STREET DESIGN REGULATING PLAN

Contents

CONNECTION & INTEGRATION

The core aims of the circulation plan are connecting places and integrating different travel modes. In short, the plan encourages the development of a network of interconnected streets that work to disperse traffic, while simultaneously connecting and integrating places within Woolwich. The street network is incorporated as an integral part of community design, where multi-modal and pedestrian-friendly streets support the development of vibrant, walkable neighborhoods.

STREET DESIGN PRINCIPLES

This Plan Element encourages the development of a network of interconnecting streets that work to disperse traffic while connecting and integrating neighborhoods with the fabric of the environs. Equally as important, this Plan Element encourages the development of a network of sidewalks and bicycle lanes, and will also be integrated with the township's Bicycle and Trail Network in order to provide an attractive and safe mode of travel for pedestrians and cyclists.

It is the intent of this Plan is to build streets that are integral components of community design. Streets shall be designed to complement neighborhoods and commercial centers and shall be pedestrian in scale. Streets are encouraged to be designed with on-street parking. All streets shall be landscaped. In an effort to protect this investment, Woolwich Township views streets as an important public space; and therefore, has developed a set of principles that permit this space to be used by both cars and people. These principles are as follows:

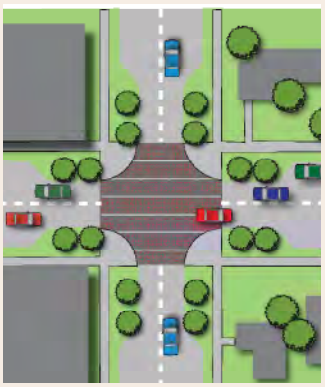
- Streets shall interconnect within a development and with adjoining development. Street stubs should be provided with development adjacent to open land to provide for future connections per the Street Regulating Plan.
- Streets shall be designed as public space and shall be scaled to the pedestrian.
- Streets shall be bordered by sidewalks or shared use paths on both sides per this plan.
- Streets shall be designed with street trees planted in a manner appropriate to their function. On a per block basis, street tree species shall adhere to the Open Space Plan Element. Commercial streets shall have trees that complement the face of the buildings and that shade the sidewalk. Residential streets shall provide for an appropriate canopy to shade both the street and sidewalk, and serve as a visual buffer between the street and the home.
- Wherever possible, street locations should account for difficult topographical conditions and paralleling excessive contours to avoid excessive cuts and fills, and the destruction of significant trees and vegetation outside of street-rights-of-way on adjacent lands.
- All streets shall permit public access, whether by easement or by public dedication. Closed or gated streets are prohibited.
- All streets shall permit on-street parking, unless otherwise noted.
- All on-street parking provided shall be parallel, unless otherwise noted. Curb or angle parking outside permitted areas may be permitted upon approval of the Joint Land Use Board.
- The use of traffic calming devises such as raised intersections, landscaping bulb-outs, refuge islands, and neighborhood circles are encouraged as alternatives to conventional traffic control measures.
- Streets shall provide and support opportunities for transit through the creation of pull-outs for bus service and bus shelter locations with adequate lighting.
- Streets shall incorporate green street principles whereby traffic islands, medians and buffer areas shall be converted into green spaces filled with trees, shrubs and ground cover in to capture stormwater.
- All streets shall have raised reflective pavement markers to identify fire hydrant locations.
- Boulevard and collector street design concepts will be used to assure that arterial roads passing through the Regional Center can achieve the above design principles while serving the higher traffic volumes that these roads must attract. In order to respect the context of the Regional Center, roundabouts and gateways will be provided to augment other forms of traffic control along arterial roadways.

All new streets shall be classified in accordance with the street typology hierarchy detailed in this Plan Element. Minor variations and exceptions to street principles and typologies may be permitted with approval of the Township Planner or its designee. Such exceptions include variations to the pavement width, tree planting areas, street grade, and centerline radii due to environmental, topographical or other extraordinary constraints, so long as the ultimate design is generally in accordance with the principles above. Major variations must be put forth to the Joint Land Use Board for consideration at the time of development application. Right-of-way widths should be preserved for continuity.

TRAFFIC CALMING

Traffic calming refers to a combination of roadway devices that can slow traffic and enhance the quality of the street for all roadway users, including users of abutting properties. Traffic calming devices slow vehicles by introducing horizontal or vertical deflections that have a very low design speed. Traffic calming can also consist of measures that limit traffic volumes through the use of traffic diversion devices. Selection of the most appropriate traffic calming device at a specific location depends upon the context of the street in question – the volume of traffic, the function of the street and the nature of surrounding land uses.

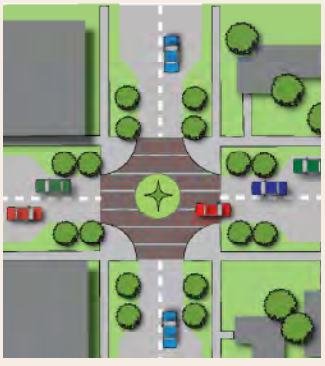
Traffic control devices (e.g. roundabouts, center island narrowing and refuges, signalized traffic circle) can make traffic on main roads both calmer and safer even though they are not traffic calming devices. These devices are very important in helping pedestrians cross more heavily traveled roadways such as county highways or US 322 without inconveniencing through traffic.



Speed Table

Roundabouts

Center Islands Narrowing Refuges



Combined Measures

Speed Tables or Raised Intersections: Similar to a raised pedestrian crossing except that the entire intersection area is elevated, including all crosswalk areas.

Roundabouts: Roundabouts are circular intersections that:

- Require vehicles to travel counter-clockwise around an interior circular island
- Require drivers entering the circle to yield to vehicles already in the circle and
- Provide "splitter" islands on roadway approaches to separate entering and exiting traffic and to provide refuge for crossing pedestrians

Like neighborhood circles, roundabouts introduce horizontal deflections to reduce vehicle speeds and require drivers to be prepared to yield to pedestrians and other drivers. They have been demonstrated to result in substantially fewer pedestrian and vehicle crashes compared to traffic signals or stop signs and reduce the severity of crashes that do occur.

Signalized Traffic Circle: Circular intersection with a larger interior circle that functions like an urban park. Traffic signals control entry and exit from the circle and are coordinated with the adjoining signal network to allow for coordinated traffic flow. Pedestrian signals also stop traffic within the circulating roadway to permit people to walk to and through the interior circle. Because of their design characteristics, they are not roundabouts. However, they can be highly effective at managing traffic conflicts at major urban intersections.

Center Islands Narrowing and Refuges: Short raised islands at crosswalks that provide pedestrians with a refuge so that they can cross a street in two separate movements. A variety of design techniques can be used when providing refuge islands to enhance pedestrian and vehicular safety. Raised medians on local collector streets can soften the visual character of a residential collector or minor arterial street. Medians can also be introduced and then removed from block to block to introduce horizontal deflections similar to a chicane.

Neighborhood Traffic Circle and/or Raised Pedestrian Crossing: Similar to a speed hump, with 4 inch defections in roadway, but incorporating a level platform for use by pedestrians and marked as a crosswalk. A raised pedestrian crossing helps to assure that drivers are operating at a speed that will allow them to yield to pedestrians seeking to cross the road. The raised crossing can also make pedestrians more conspicuous. Small circular intersections that force drivers to travel at slow speed around a central island. On low volume residential streets, neighborhood traffic circles may be designed to permit vehicles to turn left in front of the traffic circle rather than passing counter-clockwise around the circle. Many neighborhood circles have landscaped center islands that define the island and also interrupt the continuous view of straight streets, making the streets appear to be shorter.

BICYCLE & PEDESTRIAN FACILITY TREATMENTS
SIGNALIZED INTERSECTION

High-Visibility (HV) Crosswalks

POTENTIAL TREATMENTS

- High-Visibility (HV) Crosswalks
- Pedestrian Warning Signs
- Countdown Pedestrian Signal Heads
- Curb Extensions
- Pedestrian Push Buttons (PPBs)

Pedestrian Push Buttons (PPBs)

High-Visibility (HV) Crosswalks

UNSIGNALIZED CROSSINGS

High-Visibility Crosswalks

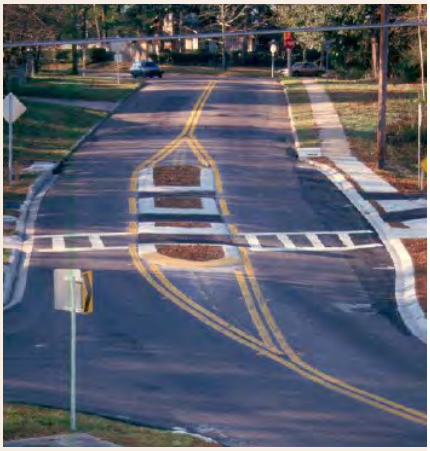
Rectangular Rapid Flashing Beacon (RRFB)

Pedestrian Hybrid Beacon (PHB)

POTENTIAL TREATMENTS

- High-visibility Crosswalks
- Pedestrian Warning Signs
- In-Street Pedestrian Crossing Signs
- Median Refuge Islands
- Rectangular Rapid Flashing Beacons (RRFBs)
- Pedestrian Hybrid Beacons

In-Street Pedestrian Crossing Sign



Median Refuge Island

BICYCLE & PEDESTRIAN FACILITY TREATMENTS
SHARED LANES

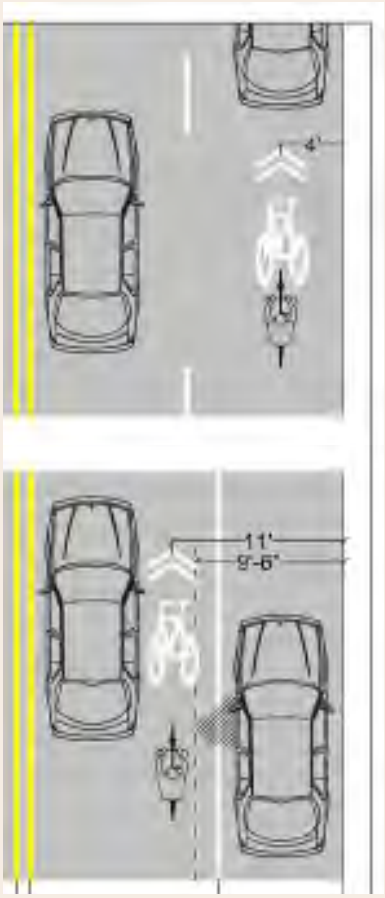
Shared Lane Markings

Local Roads

TYPICAL CHARACTERISTICS

- Speed limit of 35 mph or less
- May be marked or not marked
- Bike warning signs

Bike Warning Signage



Shared Lane Markings

BIKE LANES & PAVED SHOULDERS

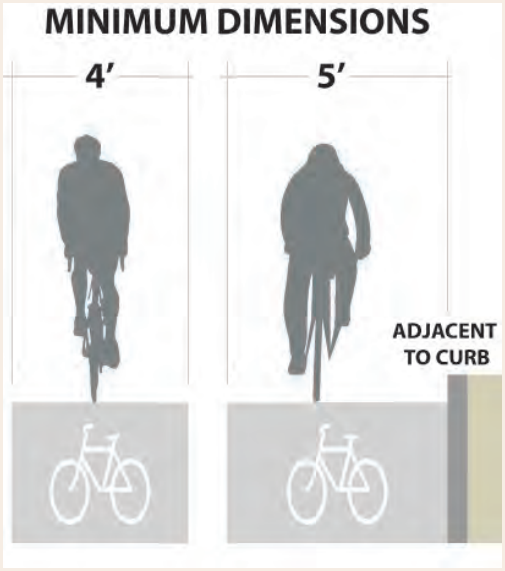
Shared Lane Markings

Paved Shoulders

TYPICAL CHARACTERISTICS

- Reserve roadway space for bicycles
- 4' minimum width (5' if curb present)
- Bicycle friendly drainage grates required

Bike Warning Signage



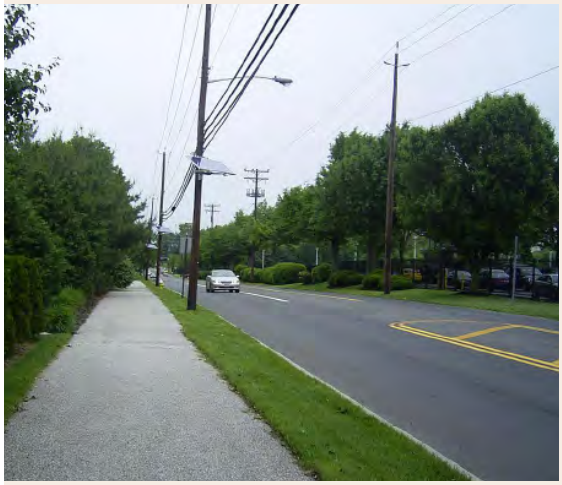
BICYCLE & PEDESTRIAN FACILITY TREATMENTS
BIKE LANE TREATMENTS

Buffered Bike Lanes

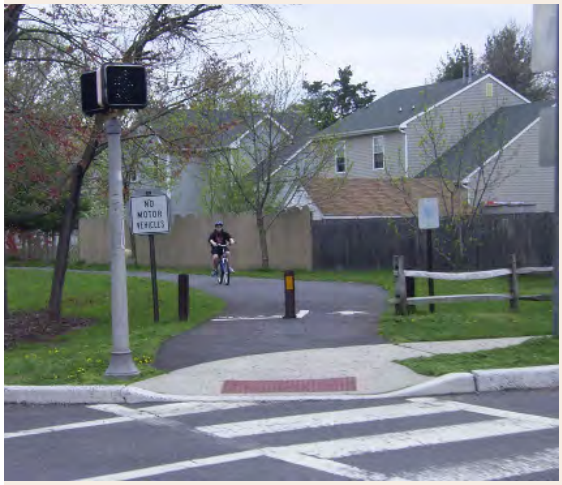
Separated Bike Lanes

SHARED USE PATHS

Commercial Setting



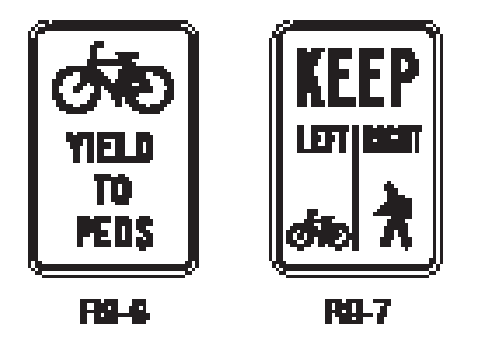
Residential Setting



Intersections

TYPICAL CHARACTERISTICS

- 10’ minimum width (12’ preferred)
- Good facility for inexperienced cyclists
- Intersection/road crossing design critical



Shared Bike/Pedestrian Signage

Trail Crossing Sign

GREEN STREETS

INCORPORATING LOW IMPACT DEVELOPMENT TECHNIQUES

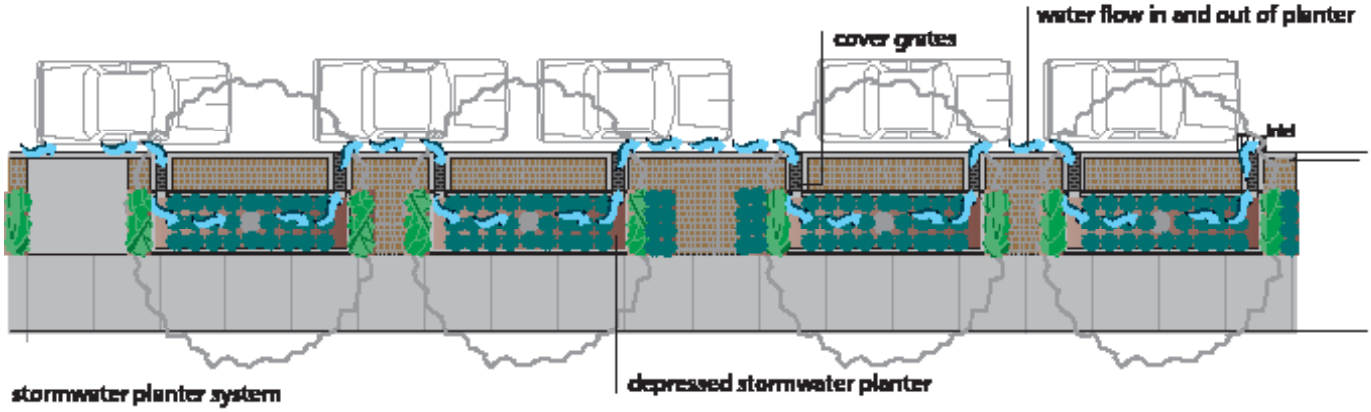
Conventional stormwater management, as past experience has shown, is fl awed. Storage and attenuation of peak flows through a detention basin are not adequate to ensure the health and functionality of our waterways. Conventional methodology allows larger volumes of runoff to enter out streams resulting in flooding, erosion and degradation of its ecological function. Low impact development allows for greater development potential with less environmental impacts through the use of smarter designs and advanced technologies that achieve a better balance between conservation, growth, ecosystem protection, public health and quality of life.

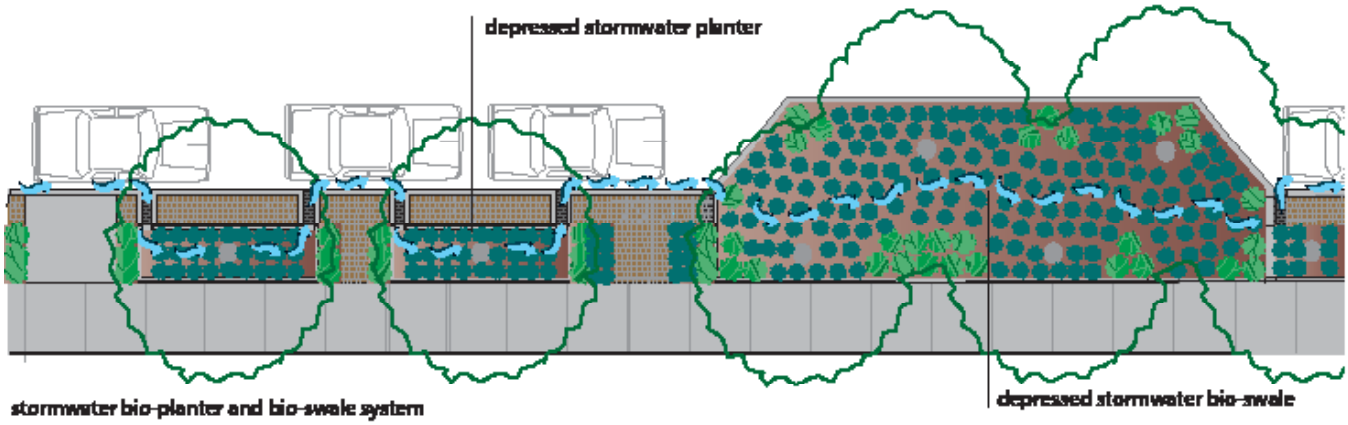
Low impact development is an innovative stormwater management approach whose basic principle is modeled after nature. Rainfall is managed at the source using uniformly distributed, decentralized micro-swale control. The primary purpose of a natural drainage system approach is to maintain a site's pre-develoment watershed and ecological functions by incorporating design techniques that infiltrate filter, store, evaporate and detain runoff close to its source. Techniques are based on the premise that stormwater is a resource to be beneficially used rather than a waste product to be disposed of.

GREEN STREETS

Elements of the circulation system such as streetscapes, sidewalks and medians are to be integrated into a low impact development approach. Specifically, they would be incorporated into a Green Streets strategy, whereby green spaces with trees and plants would complement the street network, to ensure a more natural , lower impact drainage system.

- Stormwater planters can be implemented intermittently as shown to provide conveyance, recharge and water quality benefits.
- Bioretention swales/basins can be implemented within bump outs, medians and along public street edge where width permits to provide conveyance, recharge and water quality benefits.
- Permeable pavers can be utilized within parking lanes, alleys and pedestrian walkways effectively to reduce impervious runoff and provide recharge and water quality benefits.


water flow in and out of planter
cover grates
inlet
stormwater planter system
depressed stormwater planter


depressed stormwater planter
stormwater bio-planter and bio-swale system
depressed stormwater bio-swale

COMPLETE STREETS TYPOLOGY REGULATING PLAN

Contents

OVERVIEW

A series of unique street and transportation corridor typologies – or "types" – have been specifically developed for the Woolwich Township Circulation Plan. These street and corridor types offer guidance on how Complete Streets elements can improve the mobility of various users based on local context.

USING CONTEXT TO ESTABLISH STREET & TRANSPORTATION CORRIDOR TYPES

The various streets and transportation corridors of Woolwich Township support a variety of needs, including long-distance travel between towns and places, local trips for running errands or getting children to school, and for walking and bicycling to recreational activities. A system for categorizing transportation corridors by a particular type, such as the transect in Figure 20, helps to articulate the vision for a street and surrounding uses, including the street's main function, activities, and users, which then informs how the street should be designed, operated and maintained. The designation of a particular corridor type is determined through evaluation of its context.

Assigning a street type to a particular roadway corridor augments the traditional functional classification system for roads defined by the U. S. Department of Transportation. This system categorizes roads based on how they relate to the movement of motor vehicles, creating a hierarchy that ranges from streets designed primarily for travel mobility (arterials) to those that are primarily designed to provide access to local uses (local or residential streets). Designating street types enables communities to further define streets and other transportation corridors by relating them not only to motor vehicles, but to other modes and users.

Identifying the street type is an important strategy to implementing Complete Streets because it defines how different modes and users may or may not be active within that corridor. It also helps to ensure that a consistent approach is used when corridors are evaluated to determine which modes of travel may warrant accommodation.

TOWNSHIP

Despite its recent rapid growth, Woolwich Township still mainly consists of agricultural areas and open spaces. Likewise, most recent housing has been low-density suburban developments. Thus, for most of the Township, street types that provide access to local uses will be appropriate

The street design typologies will primarily serve as guiding principles for existing street retrofits by the municipality, county or state. The Township Street Regulating Plan also establishes the desired cross section of new streets by type. The Plan as presented is a requirement of new development.

Kings Landing Regional Center

The Regional Center is planned for higher-density mixed use residential and commercial areas. Accordingly, street types that best support the emergence of walkable, compact neighborhoods will be implemented there. Another priority is retaining US 322 as a regional truck corridor - requiring a street design type that accommodates heavy volumes of truck traffic, yet also mitigating negative impacts on adjacent areas.

The Kings Landing Street Regulating Plan establishes

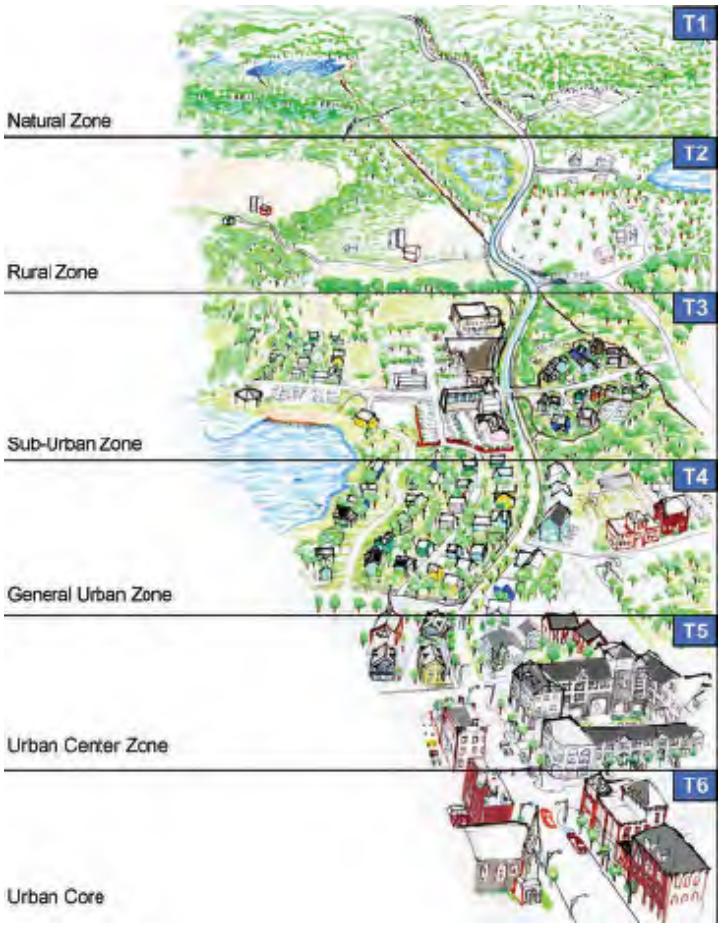


Figure 20. Rural Transect

the location and desired cross section of street types that will ensure the success of the Regional Center as a walkable, mixed-use district. The Plan, as presented, is a requirement of new development.

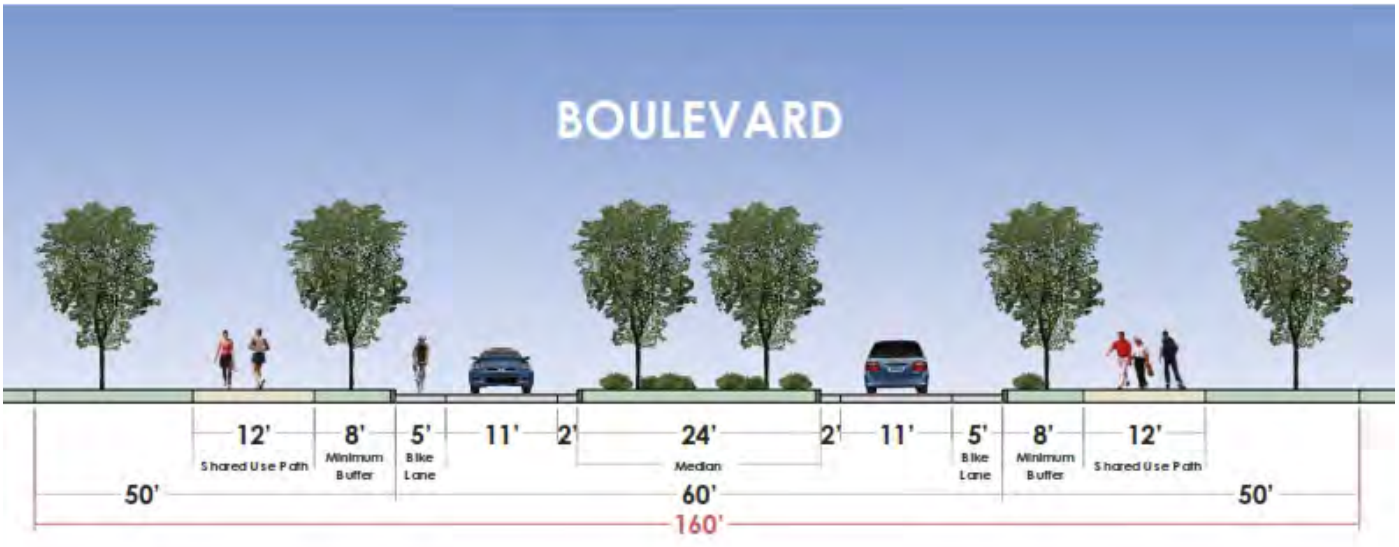
AUBURN REGIONAL VILLAGE

Auburn Road Village is a secondary receiving zone. It is a smaller scale community compared to the Regional Center, but designed at similar densities that will afford many of the that will afford many of the same benefits. The Auburn Road Village Street Regulating Plan will establish the location and desired cross section of new street design types that will enable the establishment of Auburn Road Village as a vibrant, walkable hamlet. The Plan, as presented, is a requirement of new development.

STREET REGULATING PLAN

The typologies and desired typical cross sections depicted in this Plan are required for new streets or existing street up-grades associated with any new development. Minor variations and exceptions to street principles and typologies may be permitted with approval of the Township Planner or its designee. Such exceptions include variations to the pavement width, tree planting areas, street grade, and centerline radii due to environmental, topographical or other extraordinary constraints, so long as the ultimate design is generally in accordance with the principles above. Major variations must be put forth to the Joint Land Use Board for consideration at the time of development application.

STREET REGULATING PLAN



The Blouevard encompasses the regional center portion of Route 322. It facilitates moderate to high speed regional trips, as well as serves local trips and circulation. As Route 322 is located between entrances of the New Jersey Turnpike and Route 295, the Boulevard serves freight truck traffic as well. Land use is primarily light industrial/commercial/ retail featuring restaurants, gas stations, and large retailers (aka "big box" stores). The posted speed is 45 MPH, but speeds may exceed that as drivers transition to and from the Highway. Traffic should be calmed to better accomodate pedestrian crossings in high demand areas.

Priority and Secondary Users

Priority User: Motor vehicles, including trucks
Secondary User: Transit and Bicycle
Other Users: Pedestrians for fitness, errands and social connections

Speed

Target Operating Speed: 40 MPH
Traffic Tolerance: High

Geometry

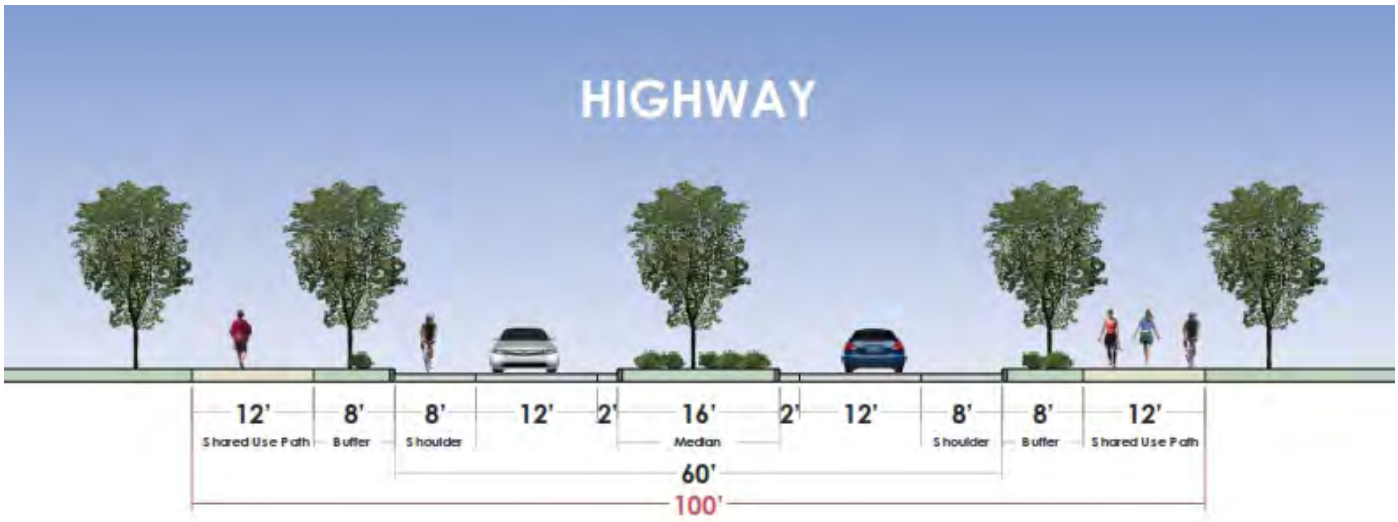
Number of Through Lanes: 2
Lane Width: 11 foot
Median: 24 foot
On Street Parking: No
Driveways: Driveway curb cuts are prohibited

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Bike Lane and Shared Use Path
Bicycle Facility Dimension: 5 foot bike lane in shoulder, and 12 foot Shared Use Path within the 50 foot buffer area and separated at least 8 feet from the cartway
Pedestrian Facility Type: Shared Use Path
Pedestrian Facility Dimension: 12 foot Shared Use Path within the 50 foot buffer area and separated at least 8 feet from the cartway
Transit Accoommodations: Pull-off and shelter provided

Context Enhancements

Overlays: None
Gateway Treatment: Yes
Street Trees and Vegetation: Planted median; vegetated swales to capture stormwater in median and buffer area as appropriate, shade trees along shared use path
Furniture: Recycling/trash receptacles and benches along shared use path and at transit stops as needed
Illumination: Pedestrian-scaled along shared use path, and as needed



The Highway encompasses the portion of Route 322 outside the regional center. It facilitates moderate to high speed regional trips, as well as serves local trips and circulation. As Route 322 is located between entrances of the New Jersey Turnpike and Route 295, the Boulevard serves freight truck traffic as well. Land use is primarily light industrial/commercial/ retail featuring restaurants, gas stations, and large retailers (aka "big box" stores). The posted speed is 45 MPH, but speeds may exceed that as drivers transition to and from the Boulevard.

Priority and Secondary Users

Priority User: Motor vehicles, including trucks
Secondary User: Bicycle
Other Users: None

Speed

Target Operating Speed: 45MPH
Traffic Tolerance: High

Geometry

Number of Through Lanes: 2
Lane Width: 12 foot
Median: 16 foot
On Street Parking: No
Driveways: Driveway curb cuts are prohibited

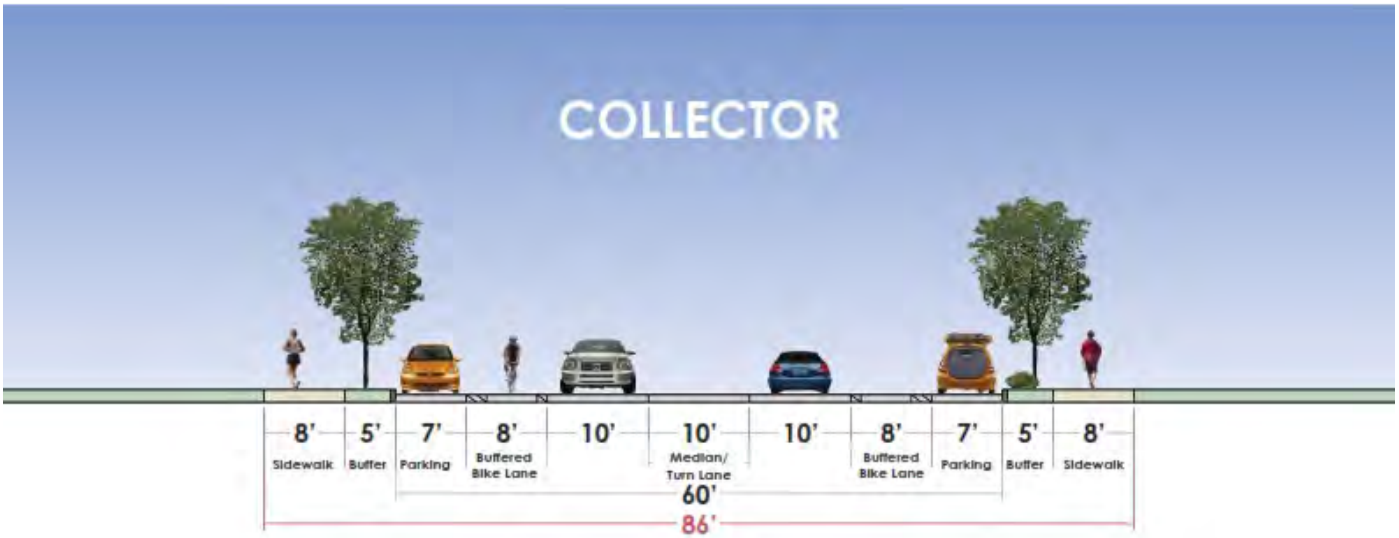
Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Bike Lane and Shared Use Path
Bicycle Facility Dimension: 5 foot bike lane in shoulder, and 12 foot Shared Use Path separated at least 8 feet from the cartway. The shared use path will transition to an 8 foor bike lane in the shoulder within 200 feet of the municipal boundary.
Pedestrian Facility Type: Shared Use Path
Pedestrian Facility Dimension: 12 foot Shared Use Path separated at least 8 feet from the cartway
Transit Accoommodations: None provided

Context Enhancements

Overlays: None
Gateway Treatment: No
Street Trees and Vegetation: Planted median; vegetated swales to capture stormwater in median and buffer area as appropriate, shade trees along shared use path
Furniture: Along shared use path as needed
Illumination: Pedestrian-scaled along shared use path, and as needed

STREET REGULATING PLAN



Collectors facilitate regional trips, while serving local land uses.

Sidewalks on both sides of the street along with buffered bike lanes are recommended walking and bicycling facility for this type street. Shared use paths are also recommended in bicycle and pedestrian overlay areas due the proximity and connection to destinations such as schools, shopping, recreation and/or civic insitutions. Safe, comfortable, accessible, and convenient transit stops are important along this corridor type as retail employees and consumers may be reliant on public transportation. Excess street capacity and complete intersections may be addressed by such retrofitting treatments as rightsizing and modern roundabouts. Additional traffic calming may be achieved with the use of transition zones (aka gateways).

Priority and Secondary Users

Priority User: Motor vehicles
Secondary User: Bicycles and pedestrians
Other Users: Transit

Speed

Target Operating Speed: 35 MPH
Traffic Tolerance: Medium

Geometry

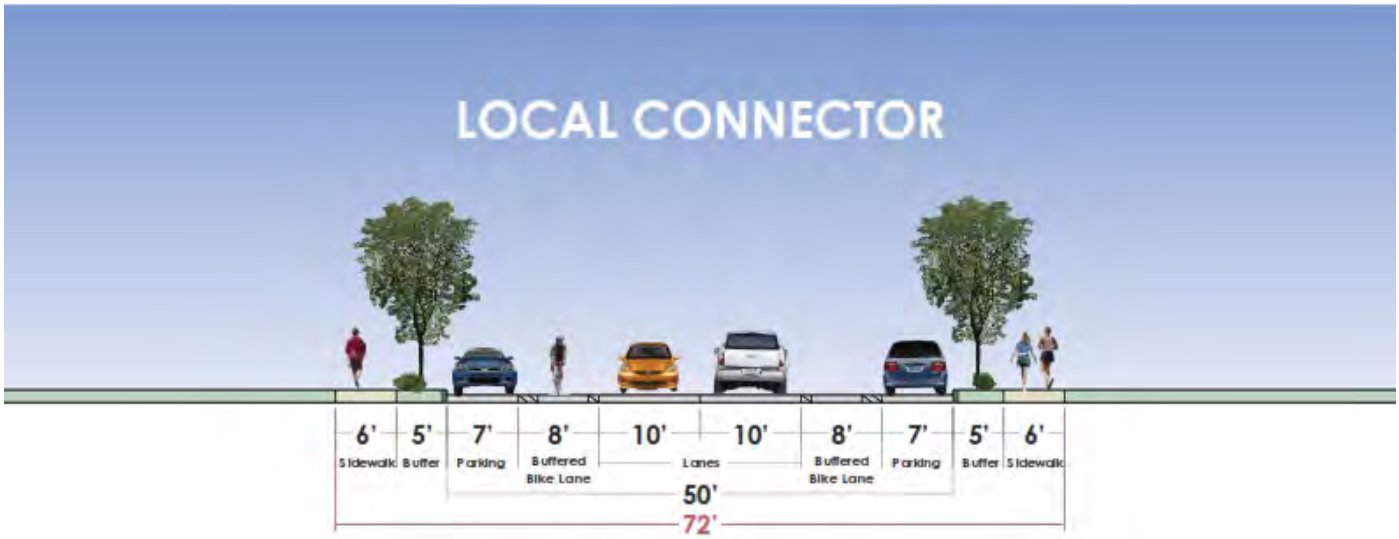
Number of Through Lanes: 2
Lane Width: 10 foot
Median: 10 foot
On Street Parking: Yes
Driveways: Driveway curb cuts are prohibited

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Buffered Bike Lane
Bicycle Facility Dimension: 8 foot buffered bike lane either between on-street parking and travel lane, or between curb and on-street parking
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 8 foot sidewalk with a minimum 5 foot buffer to the curb
Transit Accoommodations: Pull-off and shelter provided

Context Enhancements

Overlays: Bicycle and Pedestrain Safety
Gateway Treatment: Yes, on Kings Highway in the regional center
Street Trees and Vegetation: Planted median; vegetated swales to capture stormwater in median and buffer area as appropriate, shade trees
Furniture: Recycling/trash receptacles, benches, bicycle parking, public art
Illumination: Pedestrian-scaled as needed, particularly in areas with commercial, school, and civic destinations



Local Connectors facilitate connections between regional roads, while serving local land uses.

Sidewalks on both sides of the street along with buffered bike lanes are recommended walking and bicycling facility for this type street. Shared use paths are also recommended in bicycle and pedestrian overlay areas due the proximity and connection to destinations such as schools, shopping, recreation and/or civic insitutions. Complete intersections may be addressed by such retrofitting treatments as rightsizing and modern roundabouts.

Priority and Secondary Users

Priority User: Motor vehicles, bicycles and pedestrians
Secondary User: None
Other Users: None

Speed

Target Operating Speed: 25 MPH
Traffic Tolerance: Medium

Geometry

Number of Through Lanes: 2
Lane Width: 10 foot
On Street Parking: Yes
Driveways: Driveway curb cuts are allowed only where access to a local street or alley is not available

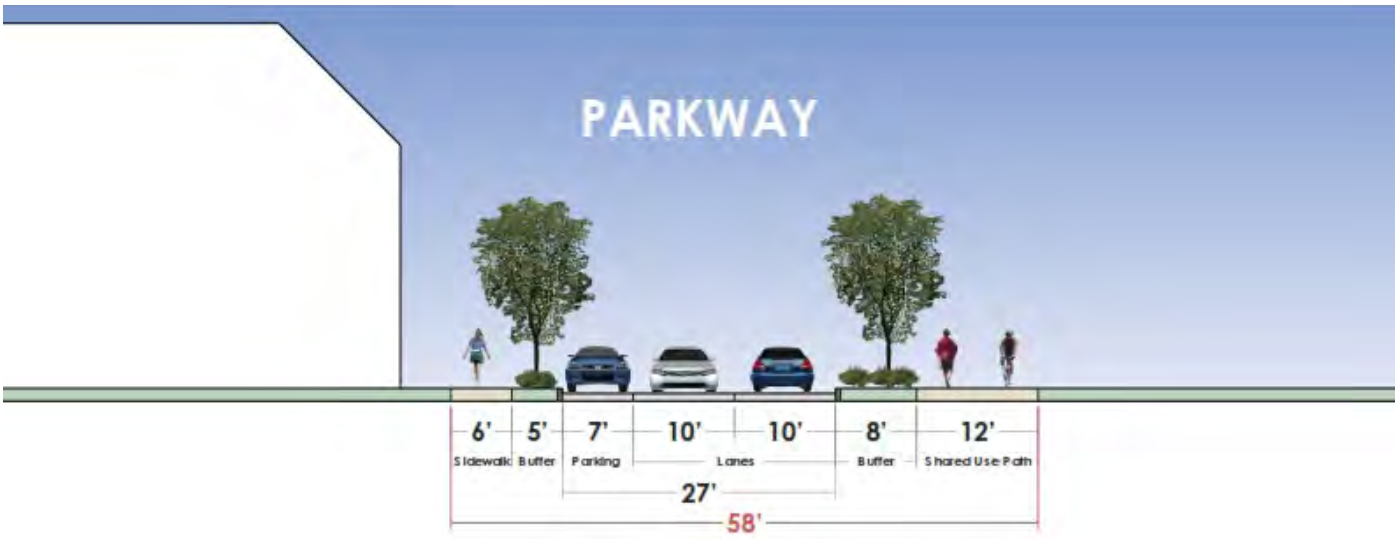
Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Buffered Bike Lane
Bicycle Facility Dimension: 8 foot buffered bike lane either between on-street parking and travel lane, or between curb and on-street parking
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 6 foot sidewalk with a minimum 5 foot buffer to the curb

Context Enhancements

Overlays: Bicycle and Pedestrain Safety
Street Trees and Vegetation: Shade trees
Furniture: Recycling/trash receptacles, benches, bicycle parking
Illumination: Pedestrian-scaled as needed, particularly in areas with commercial, school, and civic destinations

STREET REGULATING PLAN



Parkways are a special street that encorporate a green corridor to establish a park-like aesthetic. They provide main access to and connectivity within residential areas.

Buildings are allowed only on one side of the street, and driveways are prohibited. A sidewalks on the building side of of the street, and a shared use path on the green corridor side are the recommended walking and bicycling facility for this type street.

Priority and Secondary Users

Priority User: Pedestrians and bicycles
Secondary User: Vehicles
Other Users: None

Speed

Target Operating Speed: 20 MPH
Traffic Tolerance: Low

Geometry

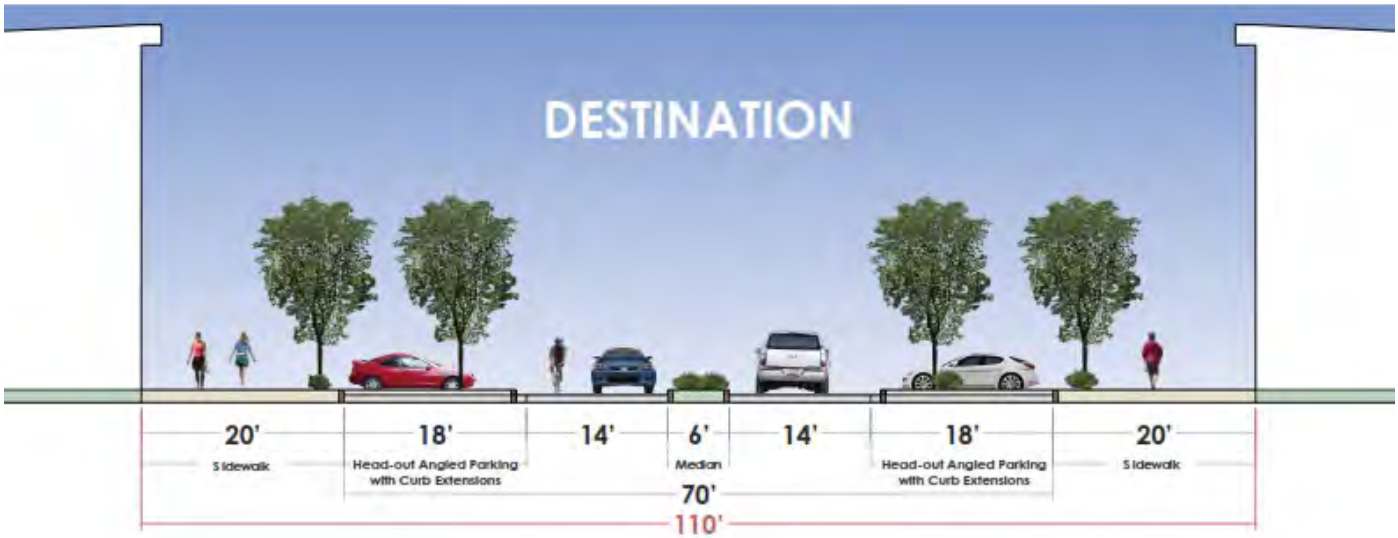
Number of Through Lanes: 2
Lane Width: 10 foot
On Street Parking: Yes, only on building side of street
Driveways: Driveway curb cuts are prohibited

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Shared use path
Bicycle Facility Dimension: 12 foot shared use path in green corridor with a minimum 8 foot buffer to the curb
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 6 foot sidewalk with a minimum 5 foot buffer to the curb on the building side of the street.

Context Enhancements

Street Trees and Vegetation: Vegetated swales to capture stormwater in green corridor buffer area as appropriate, shade trees
Furniture: Recycling/trash receptacles, benches, bicycle parking
Illumination: Pedestrian-scaled as needed



The Destination street is a special street that serves the commercial core of the center.

Buildings front the street to provide a welcoming pedestrian environment featuring wide sidewalks, shade trees, pedestrian-scale lighting, wayfinding, benches, and other unique features. Sidewalks serve pedestrians, as well as commercial tenants for seating and other commercial activities. On-street parking and planting/utility zones (for street trees, benches, lighting standards, and bicycle parking) enhance pedestrian comfort by providing additional separation from motor vehicles.

The Destination Street is where most trade-offs occur between motor vehicle mobility and pedestrian activity. The posted speed limit is 25-30 mph, but speeds are often lower due to turnover of on-street parking, mid-block pedestrian crossings, the presence of bicycles, and the induced traffic calming of a well-designed, attractive corridor. Bicycles mix with traffic where speeds are low enough, and there is not sufficient space for a separated facility.

Priority and Secondary Users

Priority User: Pedestrians
Secondary User: Motor vehicles
Other Users: Bicycles and transit

Speed

Target Operating Speed: 15 MPH
Traffic Tolerance: Low

Geometry

Number of Through Lanes: 2
Lane Width: 14 foot
Median: 6 foot
On Street Parking: Yes, 18 feet to accommodate back-in angled parking
Driveways: Driveway curb cuts are prohibited

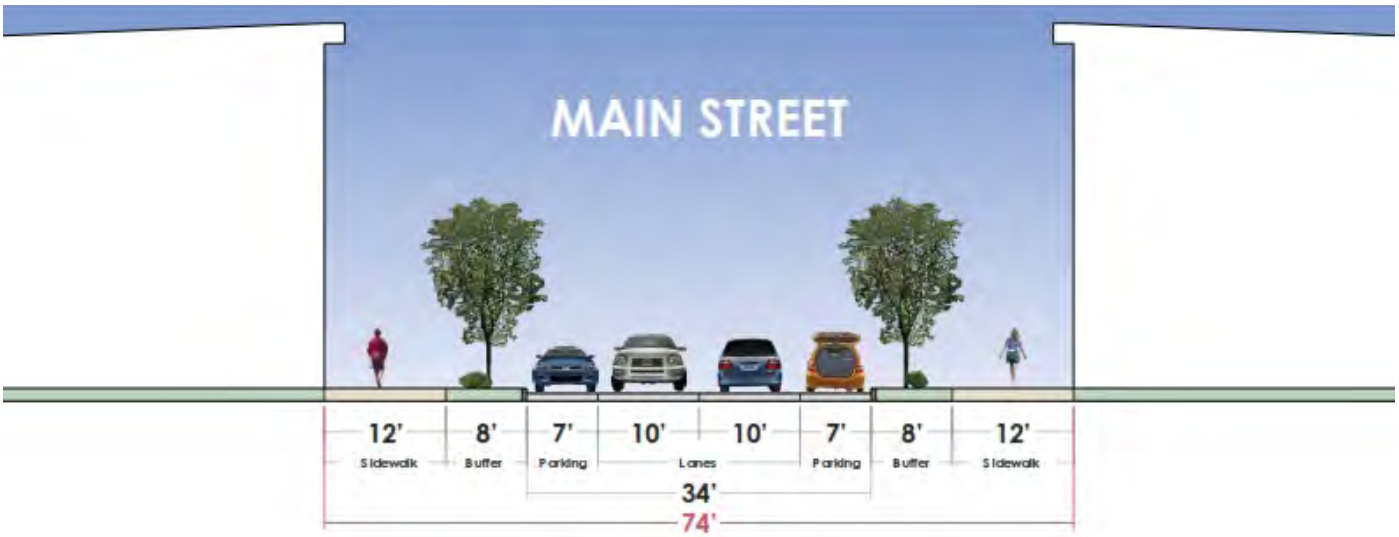
Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Shared lane markings
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 20 foot sidewalk
Transit Accoommodations: Pull-off and shelter provided

Context Enhancements

Street Trees and Vegetation: Planted median; vegetated swales to capture stormwater in median, shade trees
Furniture: Outdoor dining, recycling/trash receptacles, benches, bicycle parking, public art
Illumination: Pedestrian-scaled

STREET REGULATING PLAN



Main Street is the commercial, social, and governmental heart of town. It is the location of civic buildings and mixed-use commercial/restaurants/residential buildingd. Buildings front the street to provide a welcoming pedestrian environment featuring wide sidewalks, shade trees, pedestrian-scale lighting, wayfinding, points of interest, benches, and other unique features. On-street parking and planting/utility zones (for street trees, benches, lighting standards, and bicycle parking) enhance pedestrian comfort by providing additional separation from motor vehicles.

Main Street is where most trade-offs occur between motor vehicle mobility and pedestrian activity. The posted speed limit is 25-30 mph, but speeds are often lower due to turnover of on-street parking, mid-block pedestrian crossings, the presence of bicycles, and the induced traffic calming of a well-designed, attractive corridor. Bicycles mix with traffic where speeds are low enough, and there is not sufficient space for a separated facility.

Priority and Secondary Users

Priority User: Pedestrians
Secondary User: Motor vehicles
Other Users: Bicycles

Speed

Target Operating Speed: 15 MPH
Traffic Tolerance: Low

Geometry

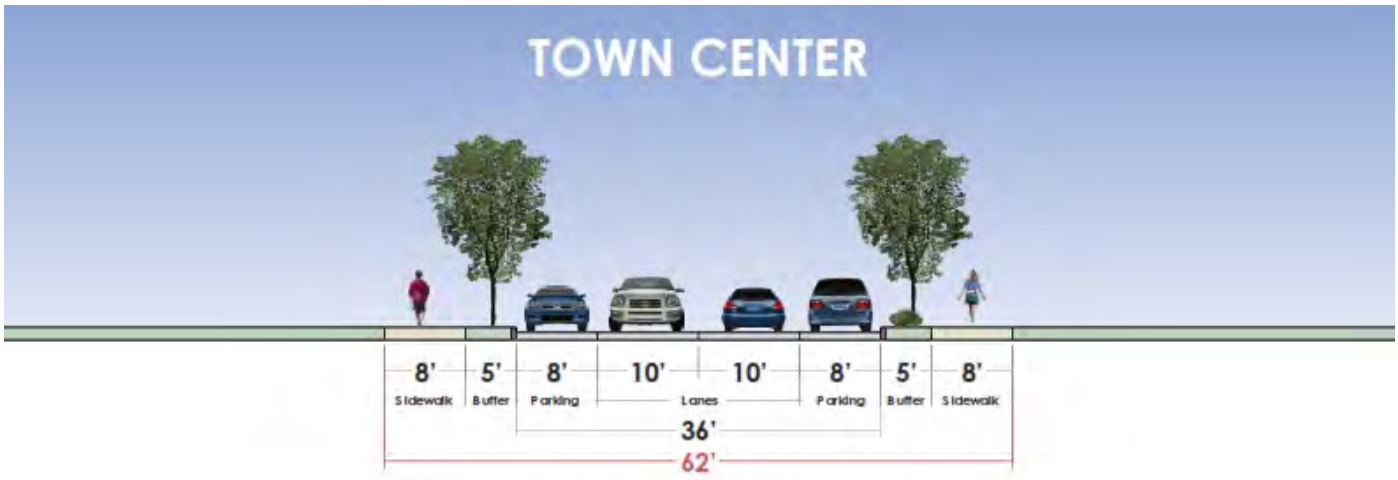
Number of Through Lanes: 2
Lane Width: 10 foot
On Street Parking: Yes
Driveways: Driveway curb cuts are prohibited

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Shared lane markings
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 12 foot sidewalk with a minimum 8 foot buffer to the curb

Context Enhancements

Street Trees and Vegetation: Vegetated swales to capture stormwater in buffer, shade trees
Furniture: Outdoor dining, recycling/trash receptacles, benches, bicycle parking, public art
Illumination: Pedestrian-scaled



The Town Center streets include the first ring of residential development outside the commercial areas.

These streets are wide enough to permit on street parking and two-way traffic. The posted speed limit is 25 mph, but speeds are often lower due to short blocks and a grid pattern. Travel speeds should be low enough to be a forgiving environment for pedestrians. Bicyclists of all ages and abilities should feel comfortable sharing the road with motor vehicles. Intersections may be STOP sign controlled.

The streets may feature sidewalks on both sides of the street, pedestrian-scale lighting, and a tree canopy. Neighborhoods may include civic buildings and parks.

Priority and Secondary Users

Priority User: Pedestrians and bicycles
Secondary User: Motor vehicles
Other Users: None

Speed

Target Operating Speed: 15 MPH
Traffic Tolerance: Low

Geometry

Number of Through Lanes: 2
Lane Width: 10 foot
On Street Parking: Yes
Driveways: Driveway curb cuts are allowed only where access to a local street or alley is not available

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Shared lane markings
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 8 foot sidewalk with a minimum 5 foot buffer to the curb

Context Enhancements

Street Trees and Vegetation: Shade trees
Furniture: Bicycle parking, benches
Illumination: Pedestrian-scaled as necessary

STREET REGULATING PLAN

The Local Street serves local access, and not intended to serve through traffic. These streets are wide enough to permit on street parking and two-way traffic. Sidewalks are used to facilitate walking and bicycling. The land use is low to moderate density residential and may include a neighborhood school and/or park.

Priority and Secondary Users

Priority User: Pedestrians and bicycles
Secondary User: Motor vehicles
Other Users: None

Speed

Target Operating Speed: 20 MPH
Traffic Tolerance: Low

Geometry

Number of Through Lanes: Yield street, narrow cartway, no centerline
Lane Width: 30 foot cartway
On Street Parking: Yes, no striping
Driveways: Driveway curb cuts are allowed

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: No formal facilities
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 6 foot sidewalk with a minimum 5 foot buffer to the curb

Context Enhancements

Street Trees and Vegetation: Shade trees
Illumination: Pedestrian-scaled as necessary

The Local Street Without Parking serves local access, and not intended to serve through traffic. These streets are wide enough to permit two-way traffic without on street parking. Sidewalks are used to facilitate walking and bicycling. The land use is low to moderate density commercial, and may serve as a transition to residential neighborhoods.

Priority and Secondary Users

Priority User: Motor vehicles
Secondary User: Pedestrians and bicycles
Other Users: None

Speed

Target Operating Speed: 20 MPH
Traffic Tolerance: Low

Geometry

Number of Through Lanes: Yield street, narrow cartway, no centerline
Lane Width: 24 foot cartway
On Street Parking: No
Driveways: Driveway curb cuts are allowed

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: No formal facilities
Pedestrian Facility Type: Sidewalk
Pedestrian Facility Dimension: 6 foot sidewalk with a minimum 5 foot buffer to the curb

Context Enhancements

Street Trees and Vegetation: Shade trees
Furniture: Bicycle parking
Illumination: Pedestrian-scaled as necessary

STREET REGULATING PLAN

An Alley is an extremely small street, generally lasting only a few blocks, with the purpose to create an intimate residential environment where through traffic is discouraged.

Priority and Secondary Users

Priority User: Pedestrians and bicycles
Secondary User: Motor vehicles
Other Users: Children at play, pets

Speed

Target Operating Speed: 10 MPH
Traffic Tolerance: Low

Geometry

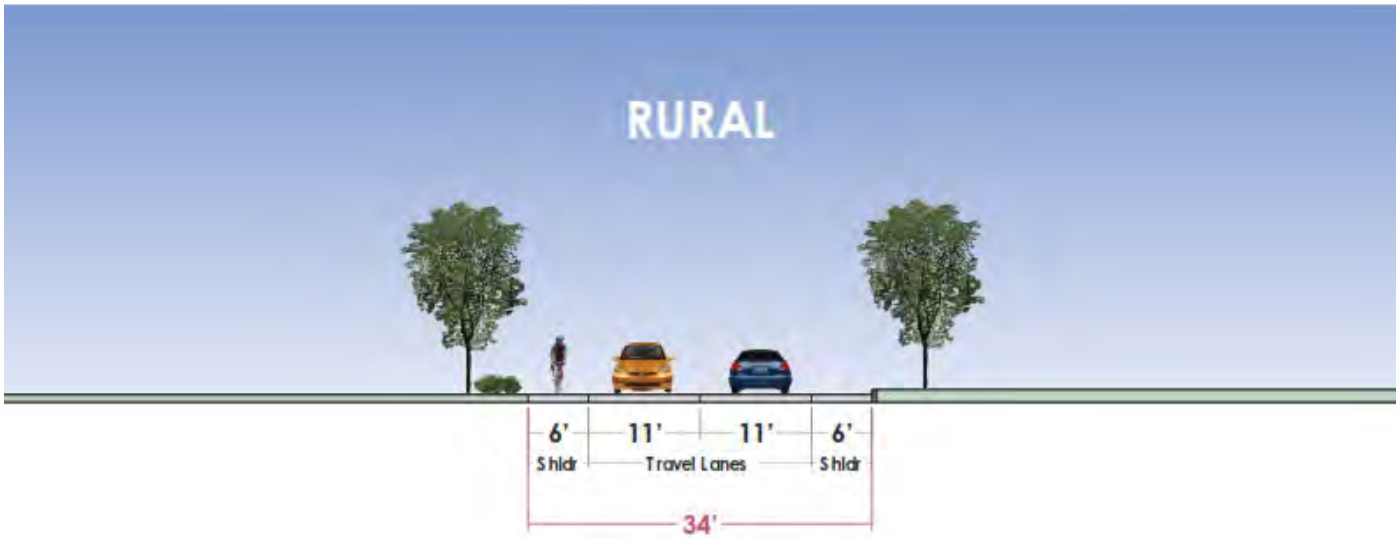
Number of Through Lanes: One way street, narrow cartway, no centerline
Lane Width: 8-12 foot cartway
On Street Parking: No
Driveways: Driveway curb cuts are allowed

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: No formal facilities
Pedestrian Facility Type: No formal facilities

Context Enhancements

Street Trees and Vegetation: Shade trees



The Rural street facilitates moderate to high speed travel functioning primarily serving local trips. Land use may be agricultural, low-density residential, light industrial, open space, or schools.

The posted speed limit is 35-45 mph, but speeds are often lower due to limited sight distances and narrow lanes. These roads may be favored by recreational bicyclists who want to be challenged by the terrain, who are interested in taking the scenic route, or who are looking for low stress alternatives to other parts of the circulation system.

Walking and bicycle accommodations may be met by using shoulders with widths sufficient to provide comfortable and safe separation from traffic. Shared use paths are recommended in bicycle and pedestrian overlay areas due the proximity and connection to destinations such as schools, recreation and/or civic institutions. Where constrained right-of-way does not allow for a shoulder or shared use path, traffic calming measures must be introduced to slow motor vehicles to allow for safe passage of bicyclists.

Priority and Secondary Users

Priority User: Motor vehicles

Secondary User: Commercial or agriculture vehicles, bicycles

Other Users: Walking for fitness or travel to school

Speed

Target Operating Speed: 40 MPH

Traffic Tolerance: Medium

Geometry

Number of Through Lanes: 2

Lane Width: 11-12 foot

On Street Parking: Depending on context

Driveways: Driveway curb cuts are allowed

Bicycle and Pedestrian Accommodations

Bicycle Facility Type: Minimum 4 foot shoulder, 12 foot Shared Use Path with a minimum 8 foot buffer to the cartway in Bicycle and Pedestrian Overlay area

Pedestrian Facility Type: Minimum 4 foot shoulder, 12 foot Shared Use Path with a minimum 8 foot buffer to the cartway in Bicycle and Pedestrian Overlay area

Context Enhancements

Overlays: Bicycle and Pedestrian Safety

Street Trees and Vegetation: Shade trees along shared use path as necessary

Furniture: Bicycle parking, benches along shared use path as necessary

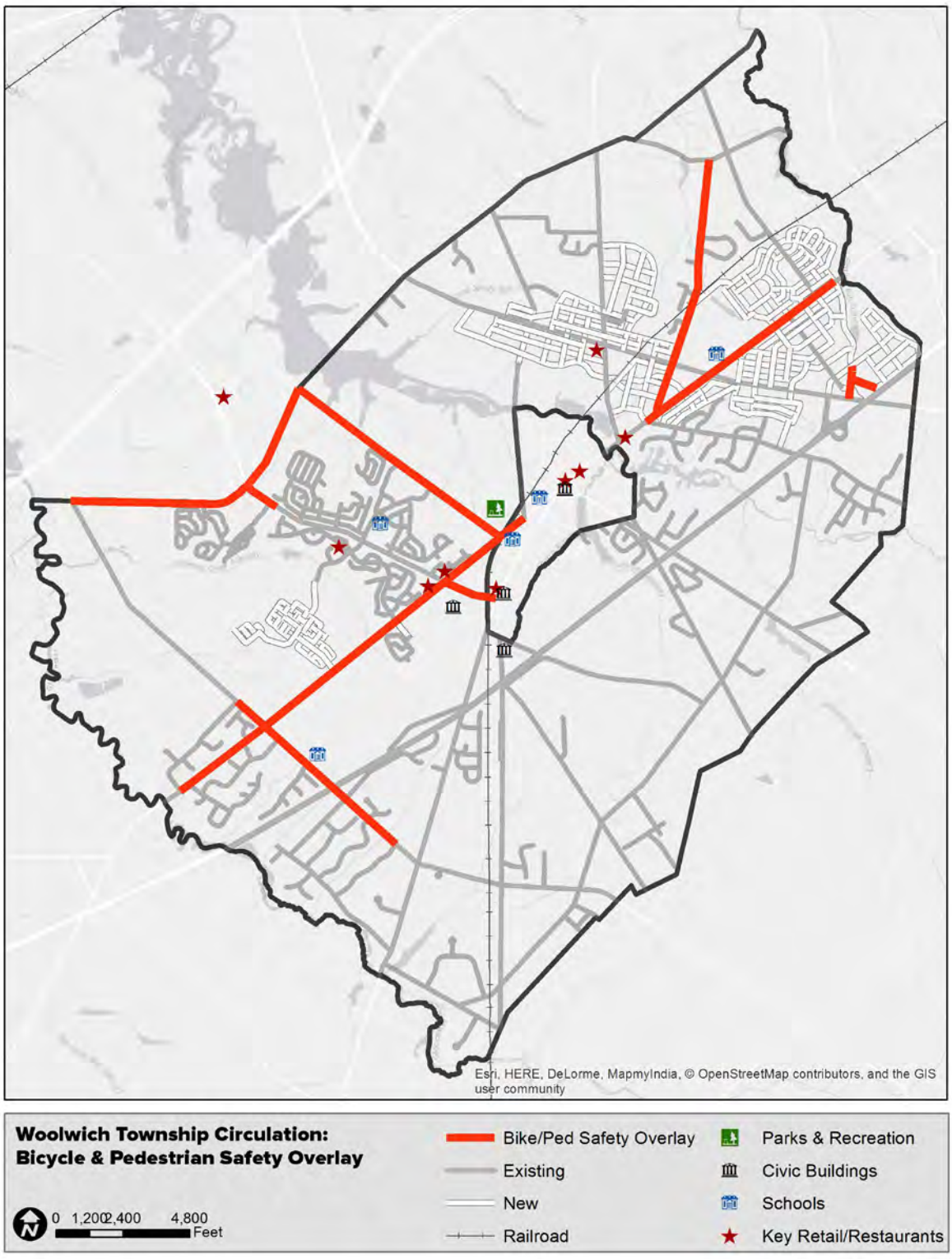
Illumination: As necessary

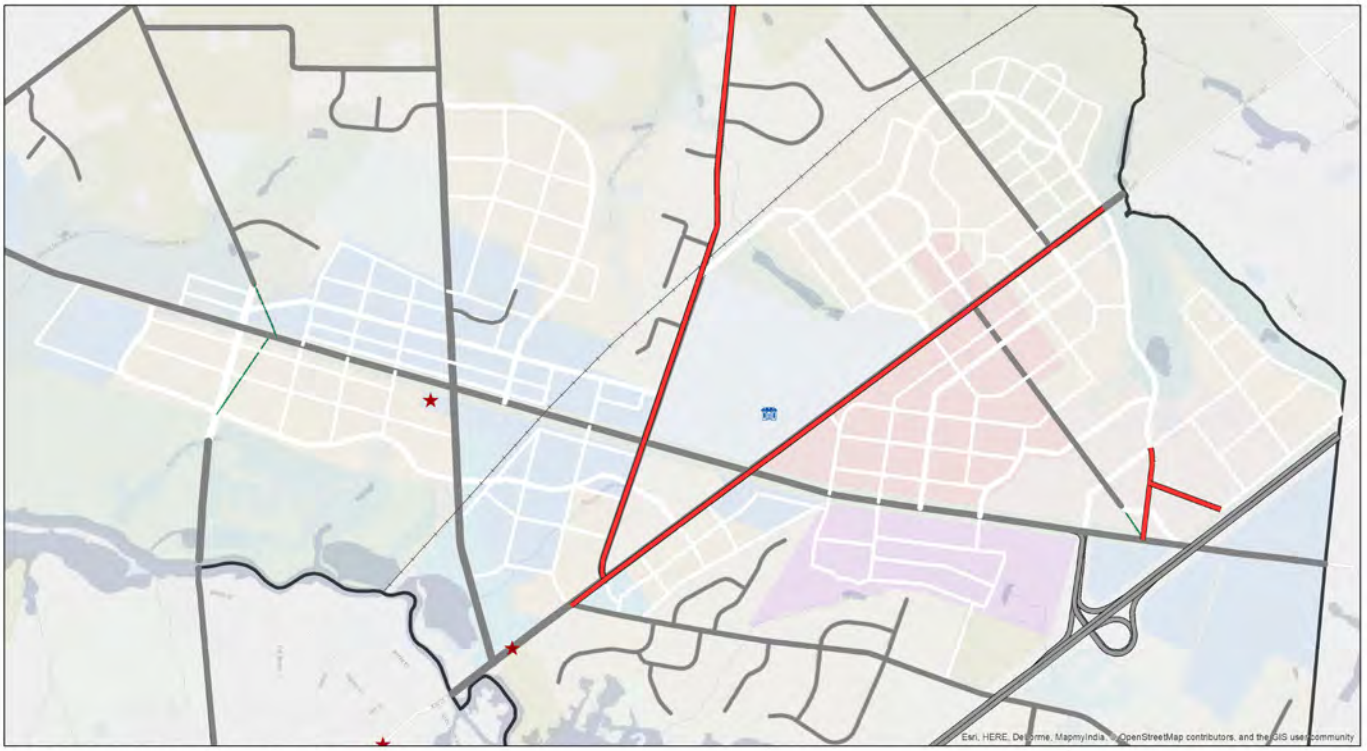
STREET REGULATING PLAN

Bicycle & Pedestrian Safety Overlay

Where appropriate, the Township has designated stretches of roadway that require additional accommodation for bicycle and pedestrian safety to due the proximity and connection to destinations such as schools, shopping, recreation and/or civic institutions.

This overlay provides for a 12 foot shared use path on both sides of the roadway with a minimum 8 foot buffer to the cartway. This bicycle/pedestrian accommodation shall be an additional accommodation above and beyond any already prescribed by the underlying street typology.



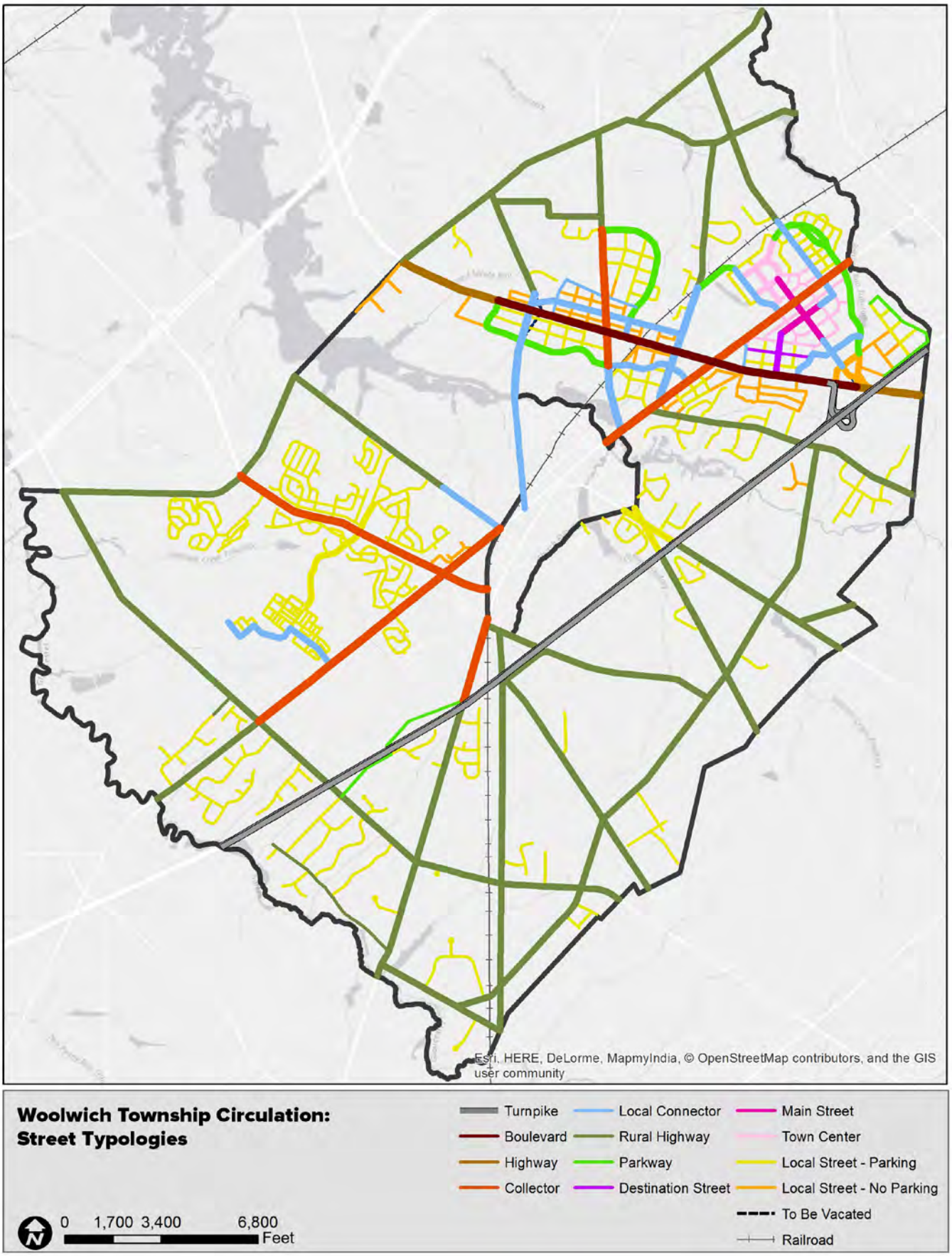


Regional Center Circulation Concept:
Bicycle & Pedestrian Safety Overlay
Woolwich Township, NJ

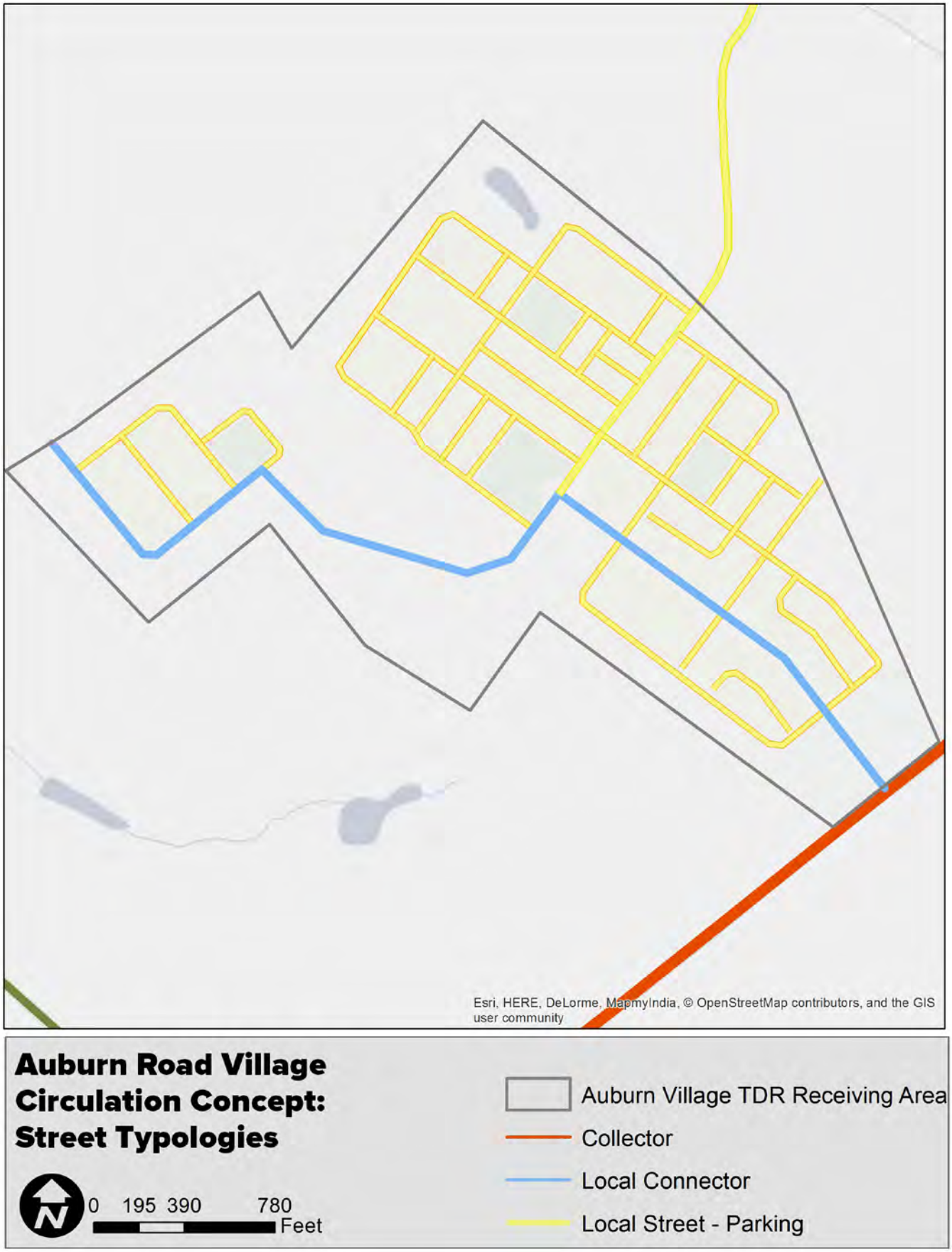
0 412.5825 1,650
Feet

Existing
New
To Be Vacated
Railroad
Bike/Ped Safety Overlay
Schools
Key Retail/Restaurant

STREET REGULATING PLAN: WOOLWICH TOWNSHIP



STREET REGULATING PLAN: AUBURN ROAD VILLAGE



STREET REGULATING PLAN: REGIONAL CENTER (AKA KINGS LANDING)

DESIGN PRINCIPLES

- **Driveway curb cuts are prohibited on Route 322, Kings Highway, Paulsboro-Swedesboro Road, Locke Avenue and Pancoast Road in an effort to minimize conflicts and to maximize roadway capacity.**
- **Gateway elements along Route 322 and Kings Highway are required to signal to motorists a sense of arrival to Woolwich Regional Center.**
- **A parallel roadway system along Route 322 is required to provide access to properties without the need of curb cuts onto the state highway.**
- **A Boulevard cross section for Route 322 is provided to reinforce the sense of PLACE and to provide safe refuse for pedestrian crossings.**
- **The Land Use Plan is designed to minimize conflicts on Route 322 – thus a street grid network has been established for commercial and residential uses so as to minimize local use of Route 322.**
- **On-street parking is permitted on most streets.**
- **A block structure based on the most flexible community design configuration is required.**
- **All streets must be built as shown except for "local streets". Local streets are conceptually shown and may be oriented north/south or east/west on a case by case basis during the site plan/subdivision plan process as needed to break up the block structure established by local streets and collectors.**
- **Curb cuts are prohibited unless noted otherwise in the Zoning Regulations and Design Standards. Accordingly unless otherwise noted, all service, parking and vehicle access is through rear alleys. Alley locations are to be determined at site plan/subdivision.**
- **Physical connections to Swedesboro to promote positive synergies between the Borough and Regional Center.**
- **A comprehensive pedestrian circulation system that includes interconnected sidewalks and paths, bicycle lanes and pedestrian friendly intersections at strategic locations to promote automobile independence throughout Kings Landing and into the environs.**

ROUTE 322 - THE BOULEVARD

Route 322 will continue to function as an important principal arterial highway in the future, serving county and statewide travel patterns. A substantial volume of trucks will seek to use the road, both to travel through Woolwich Regional Center and to bring supplies to businesses in Swedesboro and Regional Center. As a result, it will be strategically important to assure that appropriate facilities are provided to serve both local and through traffic. At the same time, Route 322 will divide the Regional Center and could become a barrier between development areas north and south of the Center.

A classic boulevard cross-section is recommended along the corridor, with two directional service roads provided north and south of the state highway. These service roads would function as local streets, providing access to abutting properties. The service roads should be designed to terminate prior to meeting major signalized cross streets in order to reduce conflicts near major traffic control devices, and to keep traffic flow on the service roads local. A boulevard parkway would extend the length of Kings Landing, including an east-west multi-use trail/walkway.

RIGHTSIZING THE BOULEVARD

The New Jersey Department of Transportation (NJDOT) is currently reviewing two projects along the Route 322 corridor in Woolwich Township. The first project is a NJDOT initiative to improve traffic conditions at Route 322 and Kings Highway by enlarging the signalized intersection to accommodate turning lanes. The second initiative relates to the access permit application by Wolfson Development, whereby the NJDOT is requiring the developer to install a 5-lane cross-section with two through lanes in each direction, as well as a center turning lane. Both of these initiatives are in conflict with Woolwich Township's vision for a Boulevard along Route 322 that prioritizes bicycle and pedestrian users. Following national trends, Woolwich Township expects Route 322 to be ultimately be rightsized to a 2-lane boulevard that incorporates street networks, roundabouts, and other traffic calming to most effectively accommodate both vehicular and non-vehicular users of the roadway.

KINGS HIGHWAY

Kings Highway provides an important linkage between the Kingsway Regional School complex and Swedesboro. It also functions as the front door to the school and will provide an important access for the residential development to the north and the mixed use development on the east side of Kings Highway. Because of its arterial function, it is appropriate to improve the roadway over time so that it can continue to serve the important function of linking town and village centers that have long existed along the ancient roadway. The stretch of Kings Highway between Asbury Station Road and Swedesboro needs to be designed so that it will create a transition between the more open roadway to the north and the urban context of Kings Landing and Swedesboro.

RACCOON CREEK BRIDGE

The Kings Highway bridge over Raccoon Creek must serve a concentrated flow of traffic. North of the creek, Paulsboro-Swedesboro Road and Garwin Road join Kings Highway. South of the creek, Kings Highway, Auburn Road and other county roads bring traffic to the bridge. A critical issue will be to efficiently manage the concentrated flow of traffic across Raccoon Creek between the intersection of Swedesboro-Paulsboro Road to the north and the intersection of Franklintown Road to the south. Roundabouts at the intersection of Kings Highway with Paulsboro Road north of the bridge and Glen Echo Avenue south of the bridge would enhance traffic flow and safety and would result in the least delay. In the future one of two options will be necessary.

Another option is to widen the bridge to provide a two lane cross-section with a center median and improved pedestrian walkways. Alternatively, consideration could be given to constructing one or more additional crossings of Raccoon Creek to allow some traffic to bypass this bottleneck.

MAIN STREET

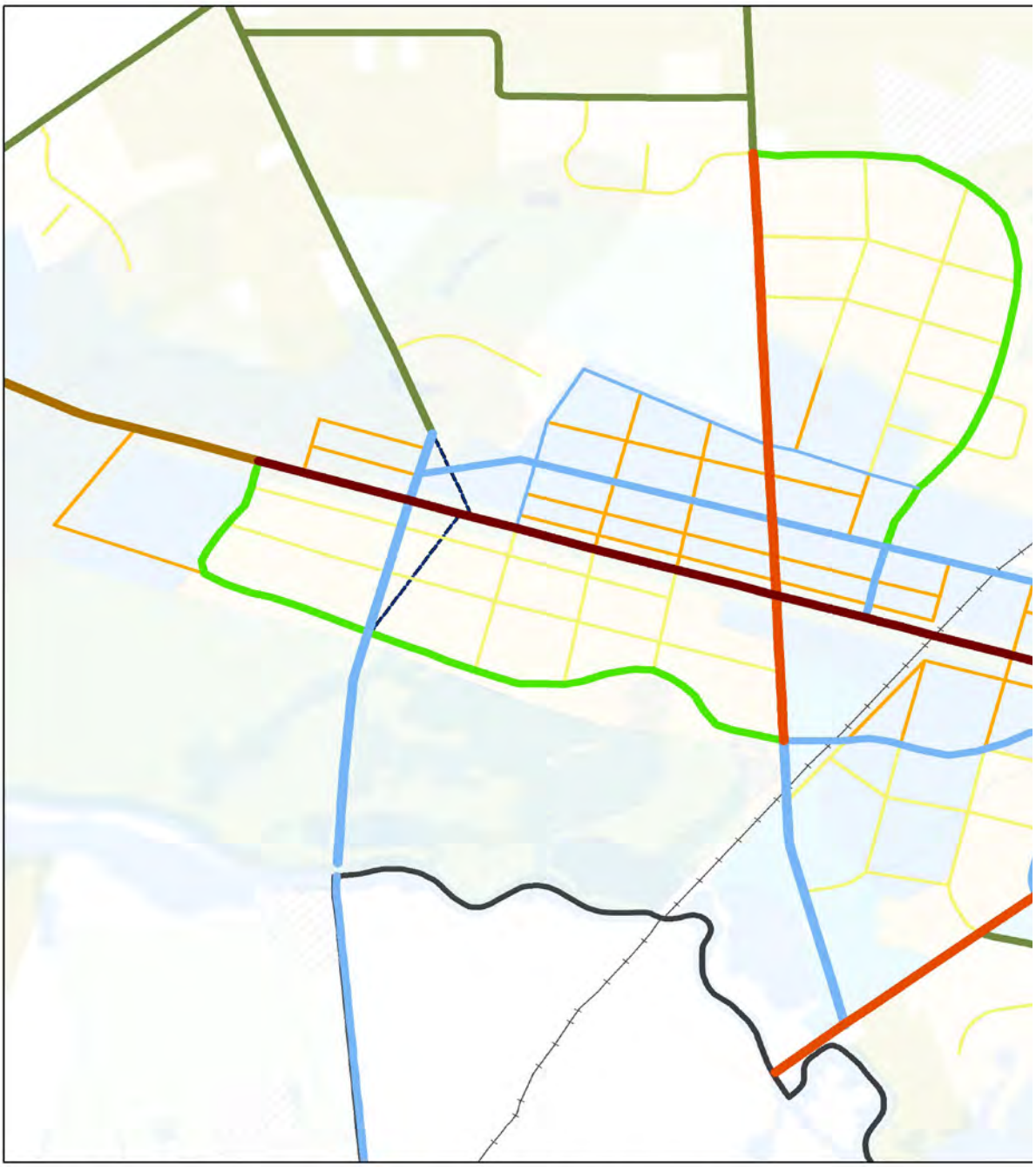
Located along Pancoast Road, east and west of Kings Highway, the proposed Main Street is intended to function as the primary mixed-use commercial corridor for Kings Landing. Projected traffic volumes for the road are consistent with the volumes on typical Main Streets in town centers. The road will be able to support on-street parking in its commercial core. Roundabouts with ample pedestrian and bicycle accommodation are desired at all major intersections with Main Street. Opportunities for pedestrians to safely cross the street should be provided frequently – at least every 400 feet, preferably more frequently.

LOCAL CONNECTOR ROADS

A key function of the Kings Landing roadway network will be collector streets running east-west and parallel to Route 322. These roads will be used primarily by residents and persons with business in the center. But they will also serve as a relief route for some of the through routes and particularly for drivers who must transition from a north-south roadway to an east-west roadway.

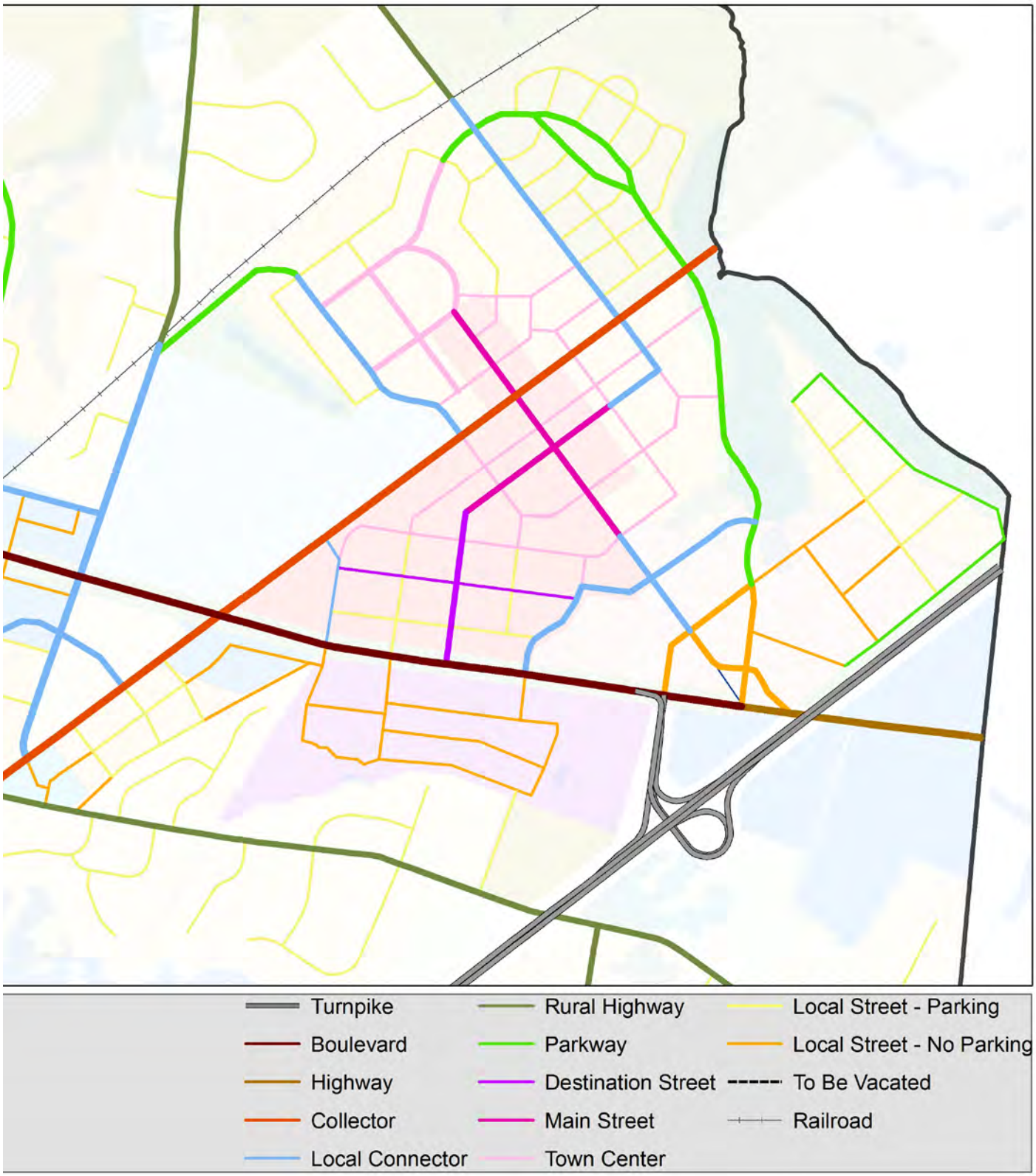
The roads do not necessarily have to provide a continuous east-west alignment so long as the ability to travel from one end of Kings Landing to the opposite end is reasonably convenient. Indeed, some friction is desirable to assure that through-drivers on Route 322 do not divert to these other roads to avoid traffic signals or other constraints. The connector roads, with less traffic on them, will be important pedestrian corridors and will provide residents with a calmer environment for bicycle travel.

STREET REGULATING PLAN: REGIONAL CENTER (AKA KINGS LANDING)



Regional Center Circulation Concept:
Street Typologies
Woolwich Township, NJ

0 412.5825 1,650
Feet


Turnpike
Boulevard
Highway
Collector
Local Connector
Rural Highway
Parkway
Destination Street
Main Street
Town Center
Local Street - Parking
Local Street - No Parking
To Be Vacated
Railroad

IMPLEMENTATION

IMPROVEMENT	TOWNSHIP	
1. ROADWAY IMPROVEMENTS		
1a. Retrofit street typology cross sections to existing roads at time of new development construction, or road reconstruction, resurfacing, or re-striping	As depicted in *Woolwich Township Circulation Concept: Street Typologies* map: • Boulevard: Route 322 • Highway: Route 322' • Collector: Auburn Road, Central Square Road, Kings Highway, Paulsboro-Swedesboro Road • Local Connector: Asbury Station Road, Garwin Road, High Hill Road, Locke Avenue, Pancoast Road • Parkway: Rainey Road • Main Street: Pancoast Road • Bicycle and Pedestrian Overlay: Auburn Road, Central Square Road, Garwin Road, High Hill Road, Kings Highway, Oldmans Creek Road	
1b. Implement street typology cross sections to new roads at time of construction	As depicted in *Woolwich Township Circulation Concept: Street Typologies* map	
1c. Realign roadways and vacate unnecessary segments		
1d. Install raised reflective pavement markers to identify fire hydrant locations to existing and new roads at time of new development construction, or road reconstruction or resurfacing	All roads at time of new development construction, or road reconstruction or resurfacing	
2. INTERSECTION AND PEDESTRIAN SAFETY IMPROVEMENTS		
2a. Install roundabouts to calm traffic and improve flow while better accommodating cyclists and pedestrians	As depicted in the *Woolwich Township Circulation Concept: Intersection Improvements* map: • Along Center Square Road at Auburn Road, Amesbury Road, and Township Line Road intersections • Along Auburn Road at High Hill Road, Center Square Road, entrance to Auburn Road Village, and Oldmans Creek Road intersections	
2b. Install improved pedestrian crossings	At locations depicted in the *Woolwich Township Circulation Concept: Pedestrian Safety Improvements* map	
2c: Install Gateway treatments		
2d: Install railroad crossings		

	REGIONAL CENTER (KINGS LANDING)	Auburn Road Village
	As depicted in *Regional Center Circulation Concept: Street Typologies* map: • Boulevard: Route 322 • Highway: Route 322 • Collector: Kings Highway, Paulsboro-Swedesboro Road • Local Connector: Asbury Station Road, Garwin Road, Locke Avenue, Pancoast Road • Main Street: Pancoast Road • Bicycle and Pedestrian Overlay: Garwin Road, Kings Highway	As depicted in *Auburn Road Village Circulation Concept: Street Typologies* map: • Collector: Auburn Road
	As depicted in *Regional Center Circulation Concept: Street Typologies* map	As depicted in *Auburn Road Village Circulation Concept: Street Typologies* map: • Construct new Local Street connection between Auburn Road Village and Four Seasons to the north • Provide stub road for future Local Connector connection between Auburn Road Village and new development to the west
	As depicted in Regional Center Circulation Concept map: • Align Locke Avenue to cross Route 322 at a 90 degree angle, and vacate existing segments as depicted in Regional Center Circulation Concept map • Realign Pancoast Road per NJDOT recommendations and vacate existing segment as depicted in Regional Center Circulation Concept map	
	All roads at time of new development construction, or road reconstruction or resurfacing	All roads at time of new development construction, or road reconstruction or resurfacing
	As depicted on the *Regional Center Circulation Concept: Intersection Improvements* map: • Along Route 322, Kings Highway, Swedesboro-Paulsboro Road, Garwin Road, Locke Avenue and Pancoast Road • At Amesbury Road and Somerfield Road intersection	As depicted on the *Auburn Road Village Circulation Concept: Intersection Improvements* map: • At Auburn Road and Auburn Road Village access road intersection • Along the Auburn Road Village access road
	At locations depicted in the *Woolwich Township Circulation Concept: Pedestrian Safety Improvements* map	At locations depicted in the *Woolwich Township Circulation Concept: Pedestrian Safety Improvements* map
	As depicted on the *Regional Center Circulation Concept: Intersection Improvements* map: • Eastern Gateway - intersection of US 322 with relocated Pancoast Road • Western Gateway – intersection of US 322 with Locke Avenue and Oak Grove Road • Northern Gateway - intersection of Kings Highway and Asbury Station Road	
	At locations depicted in the *Woolwich Township Circulation Concept: Pedestrian Safety Improvements* map	

IMPLEMENTATION

IMPROVEMENT	TOWNSHIP	
3. BICYCLE AND TRAILS NETWORK		
3a. Construct the Walking Trail Network	As depicted on the *Woolwich Township Circulation Concept: Bicycle & Trail Network* map	
3b. Construct the Bicycle Facility Network	As depicted on the *Woolwich Township Circulation Concept: Bicycle & Trail Network* map	
3c. Construct the Shared Use Path (SUP) network	As depicted on the *Woolwich Township Circulation Concept: Bicycle & Trail Network* map: • Entire length of High Hill Road to connect residents in Weatherby to the Gloucester County Park/Recreation area, and across Auburn Road to the Walter H. Hill School • Township Line Road from Oldmans Creek Road up to, and connecting to, the shared use path along Township Line Road • Auburn Road from Swedesboro border to Meadowlark Drive • Oldmans Creek Road from Meadowlark Drive to Hunter's Run connecting existing residential neighborhoods to General Charles G. Harker School • Along Kings Highway from Swedesboro border, then continuing along Rainey Road, and ultimately connecting to the SUP along Oldmans Creek Road • Complete the SUP on either end of Center Square Road to Township Line Road and Kings Highway	
4. ENCOURAGING TRANSIT		
	• Work with NJ Transit to increase the frequency of bus service to Philadelphia through Woodbury • Work with NJ Transit to establish subscription express bus service to Philadelphia and perhaps New York City using the New Jersey Turnpike • Reserve flexibility in the use of the right-of-way of the Salem Secondary to allow future passenger rail service if NJ Transit and the Federal Transit Administration determine at some point in the future that such use is feasible"	

	REGIONAL CENTER (KINGS LANDING)	Auburn Road Village
	As depicted on the *Regional Center Circulation Concept: Bicycle & Trail Network* map	
	As depicted on the *Regional Center Circulation Concept: Bicycle & Trail Network* map • Entire length of Route 322 • Kings Highway from Kings Landing Northern Gateway to the Raccoon Creek • Swedesboro-Paulsboro Road from Belfiore Drive to Kings Highway • Garwin Road from the northern railroad crossing to Kings Highway • Locke Avenue from just north of Route 322 to Swedesboro border • Along various new internal streets within Kings Landing	At locations depicted in the *Auburn Road Village Circulation Concept: Pedestrian Safety Improvements* map • Buffered bike lane along Auburn Road Village access road"
	As depicted on the R*egional Center Circulation Concept: Bicycle & Trail Network* map: • Route 322 ("The Boulevard") in Kings Landing Regional Center • Kings Highway from Kings Landing Northern Gateway to Back Creek Road • Garwin Road from Hendrickson Mill Road to Kings Highway • Swedesboro-Paulsboro Road from Belfiore Drive to new street in Kings Landing north of Raccoon Creek • Along various new internal "parkway" streets within Kings Landing"	At locations depicted in the *Auburn Road Village Circulation Concept: Pedestrian Safety Improvements* map: • Off-road shared use path through western area of Auburn Road Village • Road-adjacent shared use path along Auburn Road
	• Evaluate markets for transit service along US 322 between Glassboro and Delaware County, PA • Provide a park and ride facility for regional transit services	

IMPLEMENTATION

FUNDING CIRCULATION NETWORK IMPROVEMENTS

TRANSPORTATION DEVELOPMENT DISTRICTS (TDD)

TDD's are authorized under NJSA 27:1c-1. A TDD identifies transportation infrastructure improvements needed within the district to support anticipated development. A transportation improvement plan is written with input from representatives from government and the private sector. A fee structure is then generated to help pay for the improvements. The fees must be related to the increased traffic growth attributable to the development.

AUTHORITY UNDER REDEVELOPMENT LAW

Municipalities that designate a redevelopment area "Local Redevelopment and Housing Law", (NJSA.40A:12A-1 et seq.) may provide tax abatements and collect Payment in Lieu of Taxes (PILOTs), to fund infrastructure improvements in the redevelopment area. Further, the municipality may leverage anticipated PILOTs to issue bind financing for said infrastructure projects.

NEW JERSEY DEPARTMENT OF TRANSPORTATION (NJDOT) ADMINISTERED FUNDING PROGRAMS

The Municipal Aid Program and County Aid Program, provide funding for capital transportation projects. Applications are accepted annually, and funds are distributed based on legislatively determined formula. Applications are submitted online to the NJDOT through SAGE (System for Administering Grants Electronically).

The Local Aid Infrastructure Fund (LAIF), subject to annual appropriation, to address emergencies and regional needs, as well as pedestrian safety and bikeway projects. Applications are submitted online to the NJDOT through SAGE (System for Administering Grants Electronically).

The Bikeway Grant Program provides funds to counties and municipalities to promote bicycling as an alternate mode of transportation in New Jersey. A primary objective of the Bikeway Grant Program is to support the State's goal of constructing 1,000 new miles of dedicated bike paths (facilities that are physically separated from motorized vehicular traffic by an open space or barrier either within the highway right of way or within an independent right of way). In an effort to establish regionally connected bicycle networks, this program is available to every municipality and county throughout New Jersey. Although priority will be given to construction of new bike paths, the proposed construction or delineation of any new bicycle facility will be considered. Applications are submitted online to the NJDOT through SAGE.

The Local Bridges, Future Needs Program provides funds for the improvement of county jurisdiction bridges. As part of its Statewide Capital Investment Strategy, the NJDOT is focusing on preventive maintenance, rehabilitation and selective replacement of bridges. This program was initiated in recognition of funding needs that goes beyond what is currently available at the local level. Applications are submitted online to the NJDOT through SAGE.

The Transportation Enhancement (TE) Program funds projects are designed to foster more livable communities, preserve and protect environmental and cultural resources and to promote alternative modes of transportation. Funds are available for design, right of way acquisition and construction. Selection of TE projects involves the participation of civic and environmental groups, the transportation community and other government organizations such as the state's Metropolitan Planning Organizations. Applications are submitted online to the NJDOT through SAGE.

The Safe Routes to School Program provides federal-aid highway funds through the NJDOT for infrastructure and non-infrastructure projects. The main objectives of the program are:

- to enable and encourage children in grades K-8, including those with disabilities, to walk and bicycle to school;
- to make bicycling and walking to school a safer and more appealing transportation alternative, thereby encouraging a healthy and active lifestyle from an early age; and,
- to facilitate the planning, development and implementation of projects and activities that will improve safety and reduce traffic, fuel consumption and air pollution in the vicinity of schools.

County, municipal governments, school districts, and schools are eligible to apply to the program. Infrastructure projects include the planning, design, and construction or installation of sidewalks, crosswalks, signals, traffic-calming, and bicycle facilities. Non-infrastructure projects include activities such as public awareness campaigns, walk and bike to school events and training, traffic education and enforcement, and student lessons on bicycle and pedestrian safety, health, and the environment. Applications are submitted online to the NJDOT through SAGE.

The Transportation Alternatives Program (TAP) provides federal funds for community based "non-traditional" projects designed to strengthen the cultural, aesthetic and environmental aspects of the nation's inter-modal system. TAP projects must relate to surface transportation. The program is administered by the New Jersey Department of Transportation (NJDOT), in partnership with the relevant Metropolitan Planning Organization (MPO), which in the case of Woolwich, is the Delaware Valley Regional Planning Commission (DVRPC). Applications are submitted online to the NJDOT through SAGE.

Eligible projects must fall into one the following 7 categories:

- Provisions of facilities for bicycles and pedestrians.

- Scenic or historic highway programs, including the provision of tourist and welcome center facilities as well as scenic turnouts, overlooks, and viewing areas.
- Landscaping and other scenic beautification.
- Historic preservation.
- Rehabilitation of historic transportation buildings, structures and facilities (including historic railroad facilities and canals).
- Preservation of abandoned railway corridors (including the conversion and use thereof for pedestrian and bicycle trails).
- Environmental mitigation to address water pollution due to highway runoff or reduce vehicle- caused wildlife mortality while maintaining habitat connectivity.

DVRPC has elected to focus on and give priority to three of those eligible categories within our region :

- Provisions of facilities for bicycles and pedestrians
- Conversion of abandoned railway corridors to trails
- Stormwater management projects

DELAWARE VALLEY REGIONAL PLANNING COMMISSION (DVRPC) ADMINISTERED FUNDING PROGRAMS

The Regional Trails Program, administered by the DVRPC, with funding from the William Penn Foundation, aims to capitalize upon the region's rich network of "rights-of-ways" by providing funding for targeted, priority trail design, construction and planning projects that will promote a truly connected, regional network of multi-use trails throughout the Greater Philadelphia region. Applications are submitted directly to the DVRPC.

The Congestion Mitigation and Air Quality Improvement Program (CMAQ) seeks to fund transportation projects that will improve air quality and reduce traffic congestion in the DVRPC Region. CMAQ eligible projects will demonstrably reduce air pollution emissions and will help the DVRPC region meet the federal health based air quality standards. Examples of eligible CMAQ projects include pedestrian and bicycle projects, transit improvement programs, congestion reduction and traffic flow improvements, diesel retrofit projects, and funding of transportation demand management programs, among others. Public agencies and public – private partnerships with a public agency sponsor are eligible to apply for the Competitive CMAQ Competitive Program funds. Applications are submitted directly to the DVRPC.

UNITED STATES DEPARTMENT OF TRANSPORTATION (DOT) ADMINISTERED FUNDING PROGRAMS

The Transportation Investment Generating Economic Recovery (TIGER) Discretionary Grant Program funds projects that have significant impact on the Nation, a region, or metropolitan area. Eligible projects include planning, roads, and bicycle/pedestrian improvements. This is a highly competitive federal program where multi-jurisdictional and multi-modal projects are prioritized. Applications are submitted directly to the DOT.

FUNDING MAINTENANCE OF CIRCULATION NETWORK VEGETATION

Woolwich Township currently has an ordinance requiring the equivalent of $3500 per unit for recreation in new developments. Based on this contribution amount, Kings Landing will generate roughly $9 to $11 million dollars for the development and maintenance of its public spaces in the residential areas of the plan. The recreation fee per unit can be used in three ways. The money can be applied for parks built on-site. If a park is located off-site, the money collected will be applied to the construction of it. The third option is for the money to be used for the perpetual maintenance of the public spaces. This money can be placed in a Special Improvement District fund.

Parks and public open spaces, including those in the road right-of-way, provide added value to communities. When making a decision to buy, it has been found that a substantial number of consumers will pay more for a unit on a well maintained open space or park compared to the same unit not on an open space or park. It is recommended that a Special Improvement District should be established to maintain the public spaces within Kings Landing. It functions like a condo association, as it is dedicated money for the maintenance of a specific district; however, the amenities remain public. A Special Improvement District should be established prior to the construction of the first phase of development, with funds added as each phase of Kings Landing is built, so as to provide all residents the full benefits of their community.

SOURCES
EXISTING CONDITIONS

LAND USE

Data was obtained from various sources to document current land use conditions and regulations, including tax parcel data and inventories of natural and regulatory constraints.

SOURCES

- Woolwich-Swedesboro Open Space and Recreation Plan (2015)
- Environmental Resource Inventory for the Township of Woolwich (2004)
- NJ Division of Taxation MOD-IV Tax List Search Plus Tables (2013)
- NJDEP Landscape Project Version 3.1
- NJDEP Natural Heritage Priority Database
- NJDEP Land Use Land Cover dataset (2012)
- New Jersey State Development and Redevelopment Plan (2001)
- New Jersey Flood Hazard Area (FHA) Control Act Rules N.J.A.C. 7:13
- New Jersey Freshwater Wetlands Protection Act N.J.S.A. 13:9B
- Woolwich Township Zoning Code, accessed June 2015

DEMOGRAPHICS

Data was obtained from American Factfinder. Data was collected for Woolwich Township and Swedesboro Borough (though is presented primarily for the Township), Gloucester County and the State of New Jersey.

SOURCES

- American Community Survey 2013 5-year Estimates
- American Community Survey 2009 5-year Estimates
- DVRPC Municipal Level Population Forecasts, 2010-2040

EMPLOYMENT

Data was obtained for Woolwich Township from On-TheMap, an interactive website containing U.S. Census data pertaining to employment. This analysis includes primary jobs only.

SOURCES

- U.S. Census Bureau, Center for Economic Studies, 2011

TRANSPORTATION

Data was obtained from various sources to document existing conditions of transportation and mobility in Woolwich Township. In some cases, data was collected for both Woolwich and Swedesboro.

SOURCES

- Gloucester County Human Service Transportation United We Ride Coordination Plan, Dec 2013
- Rutgers University Transportation Safety Resource Center
- DVRPC Traffic Counts
- DVRPC Bicycle Counts
- DVRPC Freight Finder
- NJDOT Traffic Volume Counts
- New Jersey Turnpike Authority Exit 2 Origin/Destination Counts, provided by Nellia Shakhmina, June 2015
- New Jersey Turnpike Authority April & October 2015 Exit Counts, provided by Susan Michalcyzk and Edward Stominski, March 2016
- Daniel Sandiford, NJ TRANSIT, May 2015
- Emily Costello, DVRPC, May 2015

VISION

The concepts presented in this vision document were informed by literature sources, as well as qualitative information provided by the Woolwich Township Master Plan Reexamination Committee and other key stakeholders.

SOURCES

- ULI Philadelphia Technical Assistance Panel Report (2014)
- Woolwich-Swedesboro Open Space and Recreation Plan (2015)
- Woolwich Township Circulation Plan (2008)

STAKEHOLDERS

- Chesterfield Township representatives
- New Jersey Department of Transportation
- New Jersey State Agriculture Development Committee
- New Jersey Department of Environmental Protection
- Robbinsville Township representatives
- Sharbell Development Corporation
- Wolfson Group
- Woolwich Township Master Plan Reexamination Committee
- Woolwich Township Staff

TRANSPORTATION PLANNING CONCEPTS

The concepts presented in this section was obtained from Woolwich Township's most recent Circulation Plan, as well as data provided by the USDOT.

SOURCES

- Woolwich Township Circulation Plan (2008)
- FHA, USDOT National Person Household Transportation Study (2001)
- Rightsizing Streets Reference, Project for Public Spaces, Accessed April 27, 2016; http://www.pps.org/reference/rightsizing/

CIRCULATION CONCEPTS

The concepts presented in this section were informed by Woolwich Township's most recent Circulation Plan and the Open Space and Recreation Plan, in addition to DVRPC's Connections 2040 plan.

SOURCES

- Woolwich Township Circulation Plan (2008)
- Woolwich-Swedesboro Open Space and Recreation Plan (2015)
- DVRPC Connections 2040: Plan for Greater Philadelphia (2013)

STREET DESIGN REGULATING PLAN

The design concepts presented in this section were informed by Woolwich Township's most recent Circulation Plan and Stormwater Plan.

SOURCES

- Woolwich Township Circulation Plan (2008)
- Woolwich Township Stormwater Plan (2008)

COMPLETE STREETS TYPOLOGY REGULATING PLAN

The concepts presented in this typology plan were informed by literature sources, as well as qualitative information provided by the Woolwich Township Master Plan Reexamination Committee and other key stakeholders.

SOURCES

- Woolwich Township Circulation Plan (2008)

IMPLEMENTATION

SOURCES

- Delaware Valley Regional Planning Commission website, accessed May 2016
- New Jersey Department of Transportation website, accessed May 2016
- United State Department of Transportation website, accessed May 2016
- Woolwich Township Circulation Plan (2008)
- Woolwich Township Public Spaces Plan (2008)