

Final Report

Town of Waxhaw

Pedestrian Plan Update



August 2022



PREPARED FOR



Integrated Mobility Division
N.C. DEPARTMENT OF TRANSPORTATION

PREPARED BY





Credit: Town of Waxhaw



Acknowledgments

Steering Committee

The project team would like to thank the following Steering Committee members for providing guidance throughout the planning process:

Steering Committee

Bill Stewart
Bjorn Hansen
Bret Baronak
Curtis Bridges
Denise Truesdale
Josh Peltz
Kelley Archer
Mark Kincaid
Mike Mulligan
Reagan Young
Riley Young
Terry Vaughn

Town of Waxhaw

Blair Israel
Dena Sabinske
Jeff Wells
Lisa Thompson
Matt Hubert
Theo Ghitea
Todd Matthews

Waxhaw Town Comissioners

Waxhaw Planning Board

NCDOT

John Vine-Hodge
Alex Rotenberry
Dominique Boyd
Stuart Basham
Jerome "Scott" Miller

VHB

Joseph Seymour
Connor Klassen
Lyuba Zuyeva
Nick Masurra
TJ Doane

The Town of Waxhaw dedicates *Sonny Way* to honor "Sonny" James Robert Splawn (September 19, 1951 – February 4, 2023), who served his country as a Green Beret, and served the community of Waxhaw since 2015 in Public Services. He has left this world but his sunny nature remains forever in our hearts.



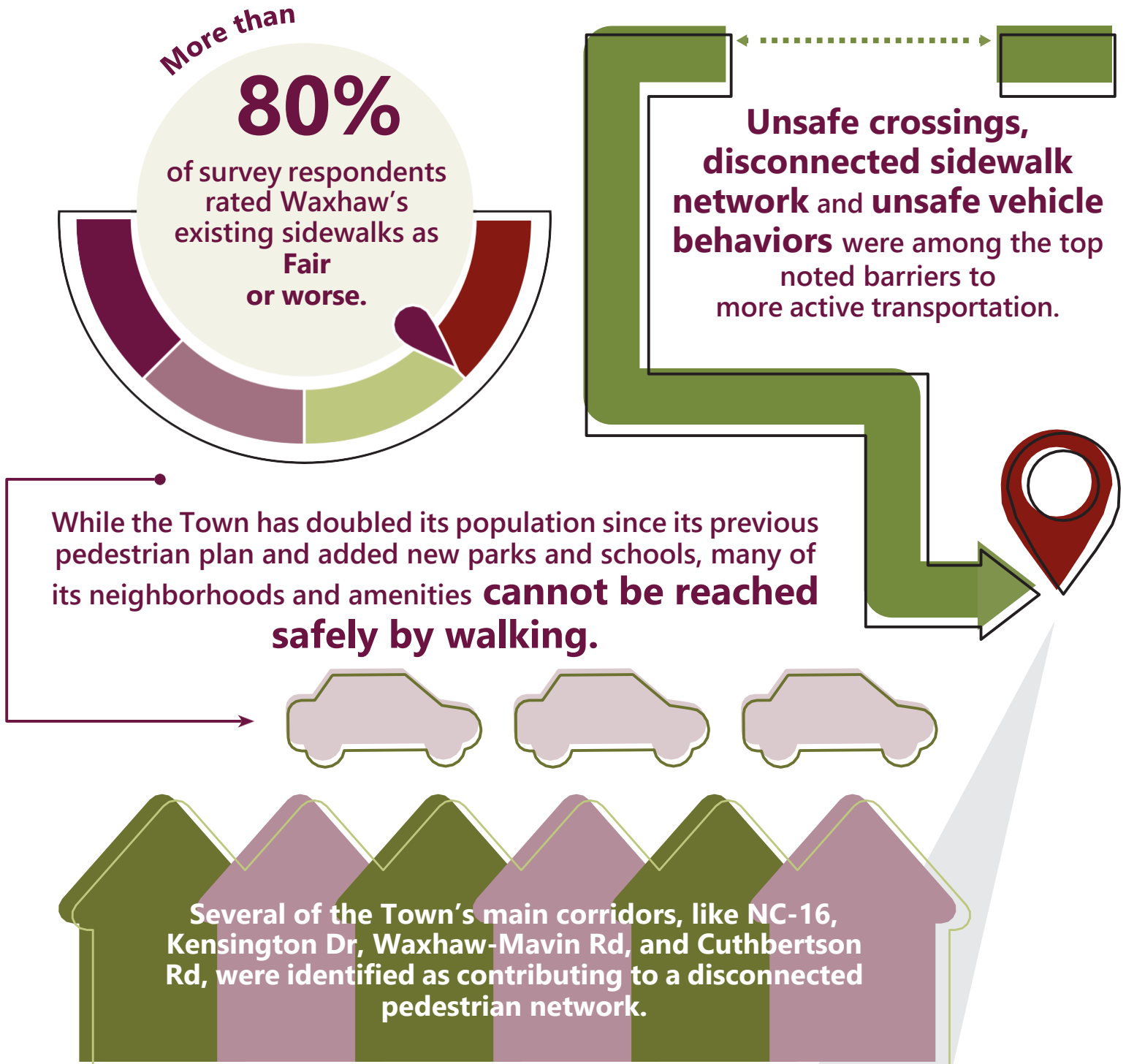
Cover photos and chapter banners credit: Town of Waxhaw

Executive Summary

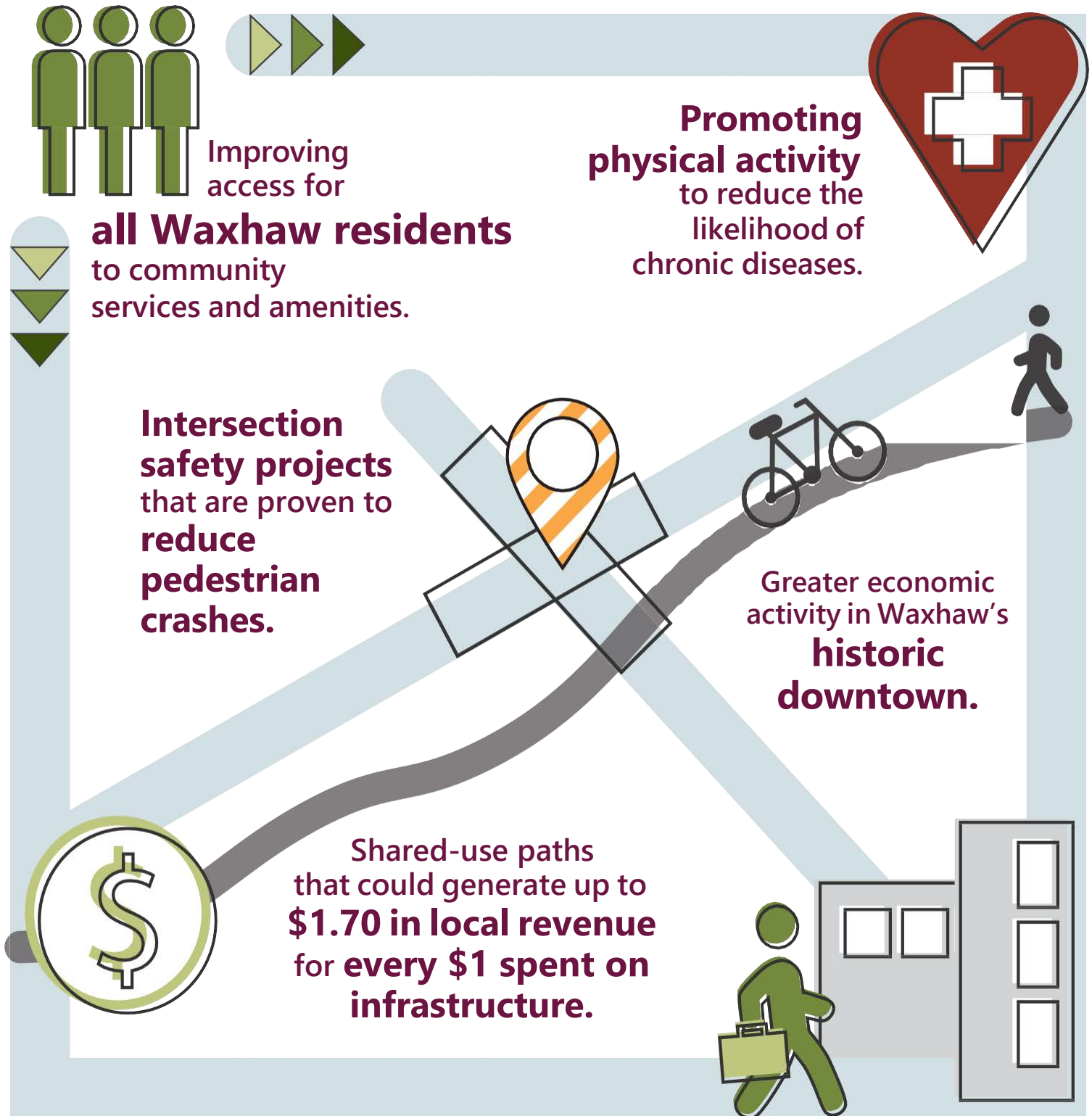
About This Plan

The Town of Waxhaw Pedestrian Master Plan Update (“the Plan”) provides guidance for the Town, North Carolina Department of Transportation (NCDOT), and other stakeholders in developing improvements to its pedestrian infrastructure, programs, and policies. The Plan was developed through extensive public outreach, review of existing conditions, coordination with a dedicated Steering Committee, and consideration of the Town’s vision and goals for making Waxhaw a great place to live, work, shop, and play.

During the planning process, Waxhaw visitors and residents voiced their concerns and hopes for walking throughout the Town and to other destinations in Union County. Barriers towards walking more included:



This Plan recognizes the benefits of implementing infrastructure, policies, and programs to support walking. These benefits include:





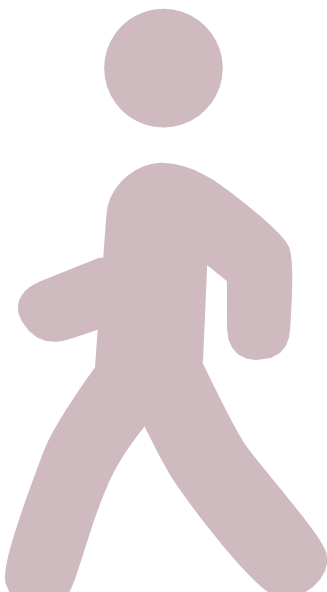
Credit: Town of Waxhaw

Project Recommendations (Top 25 Projects)

The Plan identifies more than 100 projects to improve walking in Waxhaw. These projects have been created through a process that began with identifying the Town's vision and goals, then mapping priority and secondary networks, and creating projects to match the Town's mobility and safety needs. Finally, all projects have been ranked according to criteria developed with the Town that prioritized safety, equity, and connectivity to the Town's resources, among other factors. The Top 25 projects are shown in Figure 1.

The Top 25 projects reflect the Town of Waxhaw's active transportation needs. There are intersection safety projects within the Town's busier signalized intersection, sidewalks for the Town's disconnected core neighborhoods, and shared-use paths (SUPs) that provide safe and attractive routes for visitors and residents to community assets like schools. Together, these projects will support Waxhaw's goal for providing a safer and more enjoyable place to walk.

Criteria, rankings, and estimated planning-level costs are included in Section 3.4 of the Plan. Six projects have been selected for Project Visualizations based on their impact and prominence in the plan. These Project Visualizations feature illustrations and additional details on implementation, and they are shown in Section 3.5.



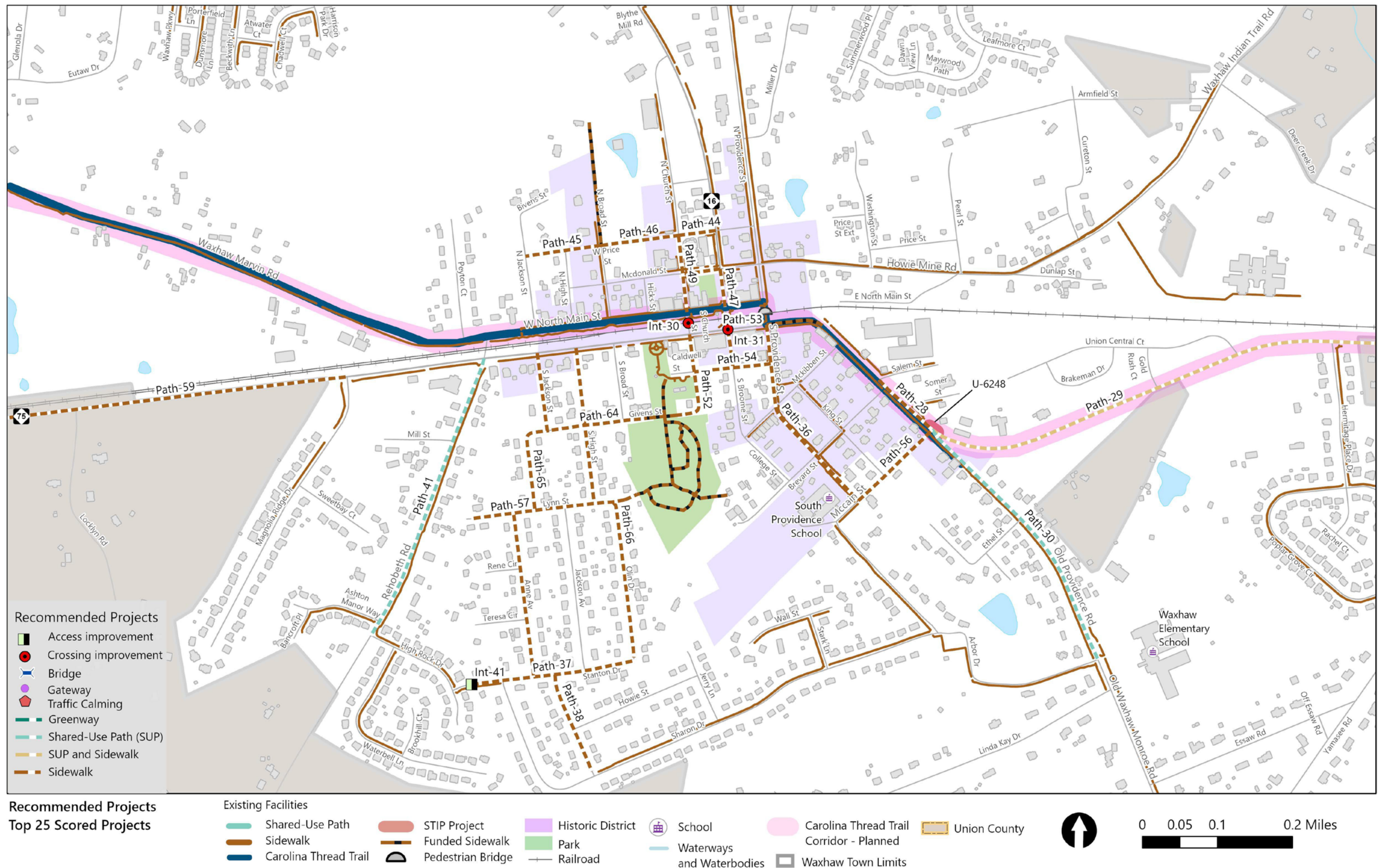


Figure 1 - Top 25 Ranked Project Recommendations.

Implementation

Successful implementation of the Plan will require the cooperation of local and regional partners like the Town of Waxhaw, Union County, Union County Public Schools, and the Charlotte Regional Transportation Planning Organization (CRTPO), as well as state and federal support from NCDOT Division 10, the NCDOT Division of Integrated Mobility, and the Federal Highway Administration (FHWA).

Not all of the Plan's recommendations should be implemented simultaneously. There are certain steps, such as adoption of the plan, that should occur before projects are constructed or new educational programs are conducted. These recommended implementation steps, their champions, frequencies, and other supporting details are identified in Section 5, Implementation.

Implementation Timeline

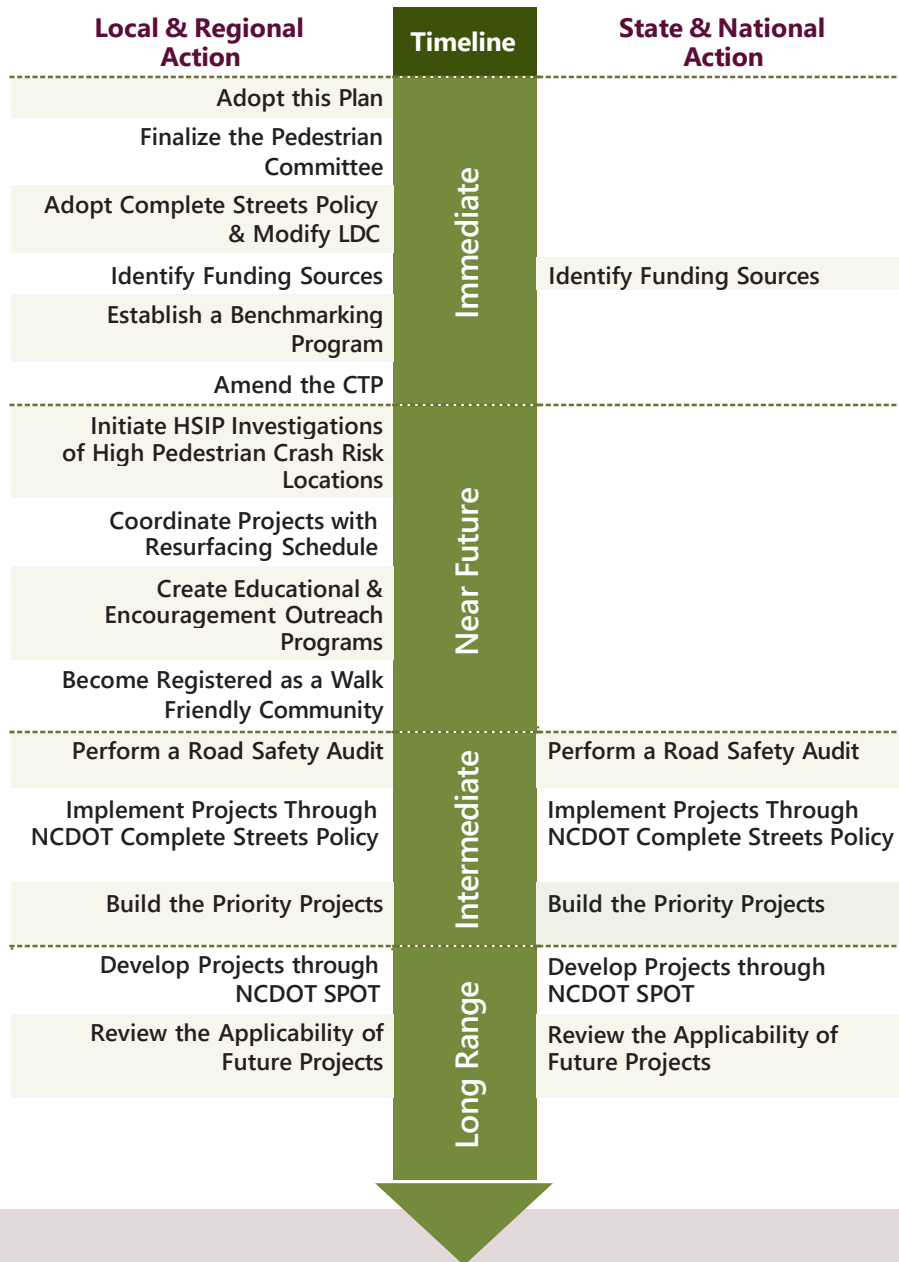


Table of Contents

Acknowledgments	3
Steering Committee	3
Executive Summary	4
About This Plan.....	4
Implementation.....	10
Introduction.....	15
1.1 Project Background.....	16
1.2 Project Goals & Objectives.....	16
1.3 Plan Components.....	18
1.3.1 Why this Plan is Important.....	18
1.3.3 Safety.....	21
1.3.4 Public Health.....	23
1.3.6 Environmental Benefits.....	24
1.4 Planning Process	24
1.4.1 Steering Committee.....	24
1.4.2 Data Collection, Analysis and Documentation.....	24
1.4.3 Plan Development & Public Involvement.....	25
Current Conditions	26
2.1 Local Context	27
2.1.1 Mode Share and Demographics.....	30
2.1.2 Opportunities.....	32
2.1.3 Challenges.....	34
2.1.5 Progress Since 2012 Pedestrian Plan	38
2.2 Public Input	40
2.2.1 Phase I Public Survey Results.....	40
2.2.2 Supplementary Outreach	44
2.2.3 Phase II Public Survey Results.....	45
2.3 Existing Institutional Framework	48
2.4 Related Plans and Initiatives	48
Recommended Facilities	57
3.1 Overview.....	58
3.2 Key Inputs for Recommendations	58
3.3 Priority Corridors	58
3.4 Facility Recommendations.....	59
3.4.1 Evaluation Criteria.....	75
3.4.2 Project Scoring	77
3.5 Project Visualizations	87
Recommended Programs and Policies	100
4.1 Overview	101
4.2 Existing Programs	101
4.3 Program Recommendations and Resources	102
4.3.1 Encouragement Programs.....	102
4.3.2 Education Programs.....	105



4.3.3 Enforcement Programs	106
4.3.4 Evaluation Efforts	108
4.4 Policy Recommendations	109
4.4.1 State Pedestrian Transportation Policy	109
4.4.2 Town of Waxhaw, North Carolina Code of Ordinances	110
4.4.3 Other Plans and Coordination	115
Implementation Plan	119
5.1 Implementation Overview	120
5.2 Organizational Framework for Implementation	120
5.2.1 Role of NCDOT Funding and Programs to Support Implementation	120
NCDOT Spot Safety & Highway Safety Improvement Program (HSIP)	121
NCDOT Resurfacing Projects and Small Project Funding	122
NCDOT Complete Streets Policy	123
NCDOT SPOT Pedestrian Projects	124
5.2.2 Role of MPO, County, and Town	125
5.3 Implementation Action Steps	126
5.3.1 Policy Action Steps	126
5.3.2 Program Action Steps	127
5.3.3 Infrastructure Action Steps	127
5.3.4 Action Item Timeline	129
5.4 Performance Measures	131
5.5 Funding Sources	133
References	135



Figures

Figure 1 - Top 25 Ranked Project Recommendations.	9
Figure 2 - Existing Pedestrian Network	19
Figure 3.1 - Example of Waxhaw Pedestrian Projects: New sidewalk at Main Street Station Development.....	20
Figure 3.2 - Example of Waxhaw Pedestrian Projects: Twelve Mile Creek Greenway.....	20
Figure 4.1 - Example Waxhaw Pedestrian Network Gaps: Uncontrolled crossing to Waxhaw Elementary	21
Figure 4.2 - Example Waxhaw Pedestrian Network Gaps: Barriers between neighborhoods.....	21
Figure 5 - Field Map for Kensington Elementary Site Visit	24
Figure 6 – Online Virtual Meeting #1 and Public Engagement Event #2 at Jammin’ by the Tracks	25
Figure 7 - North Main St - 1900, Waxhaw’s Historic Downtown, Pedestrian Rail Bridge, and Twelve Mile Creek Greenway System, and HC Nesbit Park.....	27
Figure 8 - Existing Traffic Volumes and Posted Speeds.....	29
Figure 9 - Percent of People below the Poverty Level.....	31
Figure 10 - Community Points of Interest	32
Figure 11 – Town of Waxhaw Walk Score.....	33
Figure 12 - Pedestrian Crashes in Waxhaw, 2011-2020.....	35
Figure 13 -Vehicle Speed and Pedestrian Fatality Outcomes.	37
Figure 14 - 2012 Pedestrian Plan Project Status.	39
Figure 15 - Rating of the Existing Waxhaw Sidewalk Network.	40
Figure 16 - Demographics - How Often Do You Walk in Waxhaw?.....	40
Figure 17- Safety Concerns	42
Figure 18 - Barriers to Walking in Waxhaw	43
Figure 19 - Survey Facility Preferences	44
Figure 20 - Phase II Outreach Featuring the In-Person Event and Second Survey.....	45
Figure 21 - Phase II Survey Map Example (Northwest Area)	46
Figure 22 – Waxhaw Area HMIP Projects (2022-2026)	55
Figure 23 - Priority Corridor Network.....	59
Figure 24 - Recommended Projects, Northwest Waxhaw.....	61
Figure 25 - Recommended Projects, Northeast Waxhaw.....	62
Figure 26 – Recommended Projects, Southwest Waxhaw	63
Figure 27 - Recommended Projects, Southeast Waxhaw.....	64
Figure 28 - Recommended Projects, Downtown.....	65
Figure 29 - Top 25 Facility Recommendations.	78
Figure 30 - The Six E’s of Pedestrian Planning.....	101





Tables

Table 1 - Demographics and Mode Share Comparison	29
Table 2 – On-Road Pedestrian Crash Data Summary by Location in Waxhaw (2011-2020)	35
Table 4 – On-Road Pedestrian Crashes by Crash Grouping in Waxhaw (2011-2020)	36
Table 3 – On-Road Pedestrian Crashes by Severity and Lighting Condition in Waxhaw (2011-2020)	36
Table 5 – Definitions of Recommended Improvements	60
Table 6 - Facility Recommendations - Unranked	66
Table 7 - Evaluation Criteria	77
Table 8 - Evaluation Results	79
Table 9 - Recommended Code of Ordinances Updates	112
Table 10 - Six E's Recommendation Overview	116
Table 11 - Plan Implementation Action Timeline	129





Credit: Town of Waxhaw

Introduction

1

The Town of Waxhaw Pedestrian Master Plan Update (“the Plan”) provides guidance for the Town, North Carolina Department of Transportation (NCDOT), and other local and regional stakeholders in developing improvements to its pedestrian infrastructure, programs, and policies. The Plan serves as a decision-making tool to assist leaders in prioritizing, funding, and implementing projects. The Town should update this Plan every five years.



1.1 Project Background

Instituted in 2004, the NCDOT Bicycle and Pedestrian Planning Grant Initiative encourages local communities to develop comprehensive bicycle and pedestrian plans. The program is open to all municipalities, as well as counties with populations of less than 50,000 in North Carolina. NCDOT's Division of Integrated Mobility administers the program, and it has allocated over \$7.5 million to over 230 North Carolina communities as of 2021.

This plan builds upon the Town's 2012 Pedestrian Plan. It is intended to provide a framework for identifying pedestrian needs, both in terms of physical infrastructure and encouragement programs. The opportunities and challenges identified in this plan will match the content standards set by NCDOT's Division of Integrated Mobility regarding the Planning Grant Initiative. The project recommendations outlined in this document will meet the eligibility requirements for inclusion in local Comprehensive Transportation Plans (CTP) and project prioritization.

1.2 Project Goals & Objectives

During its first meeting, the Steering Committee reviewed the Vision from the 2012 Pedestrian Plan and discussed how it should be updated to reflect the Town's growth, values, and strengths. The revised Vision for this Plan is:

"The Waxhaw Pedestrian Plan shall promote and foster the traits that make Waxhaw a great place to live, work, shop, and play so that residents and visitors are well connected to the town's character, history, and unique charm, in a safe and neighborly environment and an active downtown."

Building on this Vision, the Steering Committee reviewed the previous plan's Goals and Objectives and recommended updates and modifications to align with the new outlook. The seven Goals and supporting Objectives include:

Goal 1: Connect the Town through, between, and within its neighborhoods



- *Objective 1.1* – Fill sidewalk gaps between existing sidewalk segments.
- *Objective 1.2* – Implement comparable pedestrian connectivity improvements in all neighborhoods on an annual basis.
- *Objective 1.3* – Provide a continuous pedestrian network that connects all the Town's neighborhoods.
- *Objective 1.4* – Require pedestrian accommodations in all new public and private developments.
- *Objective 1.5* – Proactively and consistently install pedestrian safety improvements at street crossings.
- *Objective 1.6* – Improve community health through increased rates of walking.
- *Objective 1.7* – Continue implementing and updating areas with Americans with Disabilities Act (ADA) improvements such as intersection curb ramps.
- *Objective 1.8* – Implement traffic calming devices (e.g. speed humps, raised crosswalks, curb extensions).
- *Objective 1.9* – Increase pedestrian-focused lighting to improve nighttime visibility and safety.

Goal 2: Make Waxhaw more accessible



- *Objective 2.1* – Improve street connectivity for pedestrians by installing pedestrian facilities like sidewalks and shared-use paths for new public and private development.
- *Objective 2.2* – Retrofit the existing roadway network to remove obstacles to pedestrian connections.
- *Objective 2.3* – Enhance existing crossing locations and identify and improve new locations for safe.



roadway crossings.

- *Objective 2.4* – Include the principles of inclusive design in all pedestrian facilities.
- *Objective 2.5* – Improve the public’s rating of the Waxhaw existing pedestrian network.

Goal 3: Improve walking conditions along the NC-16 corridor



- *Objective 3.1* – Include Complete Streets design principles in public and private development along NC-16.

Goal 4: Showcase Waxhaw’s historic, natural, and cultural sites



- *Objective 4.1* – Coordinate and integrate the development of the Town’s greenway network with blueways, regional trails, and the Town’s existing and planned parks.
- *Objective 4.2* – Prioritize pedestrian connections to the Town’s cultural and historic sites.

Goal 5: Create a safer environment for pedestrians of all ages and abilities



- *Objective 5.1* – Reduce the number of vehicular-pedestrian crashes, especially severe injury and fatal crashes, through safer facilities and increased driver awareness.
- *Objective 5.2* – Emphasize low-stress pedestrian facilities that separate pedestrians from higher speed roads and truck traffic.
- *Objective 5.3* – Increase the number of marked crossings that have visibility enhancements.

Goal 6: Promote healthier lifestyles



- *Objective 6.1* – Increase the percentage of adults who walk to work, shopping, and entertainment.
- *Objective 6.2* – Increase annual walking and active transportation programming for children and adults.
- *Objective 6.3* – Increase the survey percentage of Waxhaw residents and visitors who report walking more than once a week.

Goal 7 Foster activity Downtown and in Future Neighborhood Centers



- *Objective 7.1* – Implement wayfinding to the Downtown and future Neighborhood Centers.
- *Objective 7.2* – Prioritize pedestrian amenities such as benches, sidewalks, lighting, and other features in the Downtown and future Neighborhood Centers.
- *Objective 7.3* – Prioritize sidewalks, crossing improvements, and shared-use paths that connect pedestrians to the Downtown and future Neighborhood Centers.
- *Objective 7.4* – Ensure the pedestrian plan recommendations align with the Town’s adopted Future Land Use Plan.

This Plan prioritizes public involvement in the planning process to identify potential barriers to walking as well as opportunities to connect destinations that are important to the community. Additionally, this Plan builds upon the Town’s existing plans, programs, and ordinances. Using these projects as a foundation for further analysis, this Plan will consolidate the existing work by the County, CRTPO, and the State to continue building a more connected, vibrant, accessible, and inviting Waxhaw.



1.3 Plan Components

This Plan assists the Town in moving from the planning stage into implementation. To do so, it establishes a clear purpose (Section 1), assesses current conditions (Section 2), recommends facility improvements (Section 3), includes program and policy recommendations (Section 4), and outlines a plan for implementation (Section 5). The plan appendices include a summary of facility types and guidelines, potential funding sources, meeting notes and presentations, and public comments received by the project team.

1.3.1 Why this Plan is Important

A walkable community offers residents the choice of active transportation over traditional motorized transportation. Connecting existing facilities, reducing the barriers inhibiting people from walking, and creating a more safe and appealing space for public interaction are the next steps.

Through this Plan and its process, the Town hopes to:

- Remain responsive to the Town's rapid growth, new projects, and plans;
- Develop mobility options for all to walk or roll;
- Provide equitable access for all in the community;
- Establish connectivity between disconnected neighborhoods and resources;
- Support economic development by supporting pedestrian connections to employers and commercial venues.

In addition to the specific goals set forth, there is a spectrum of tangible benefits for a municipality that chooses to prioritize active transportation. These include, but are not limited to, accessibility to local destinations from residential neighborhoods, safer roads for residents as well as students, and a healthier, more active community.



Credit: Town of Waxhaw

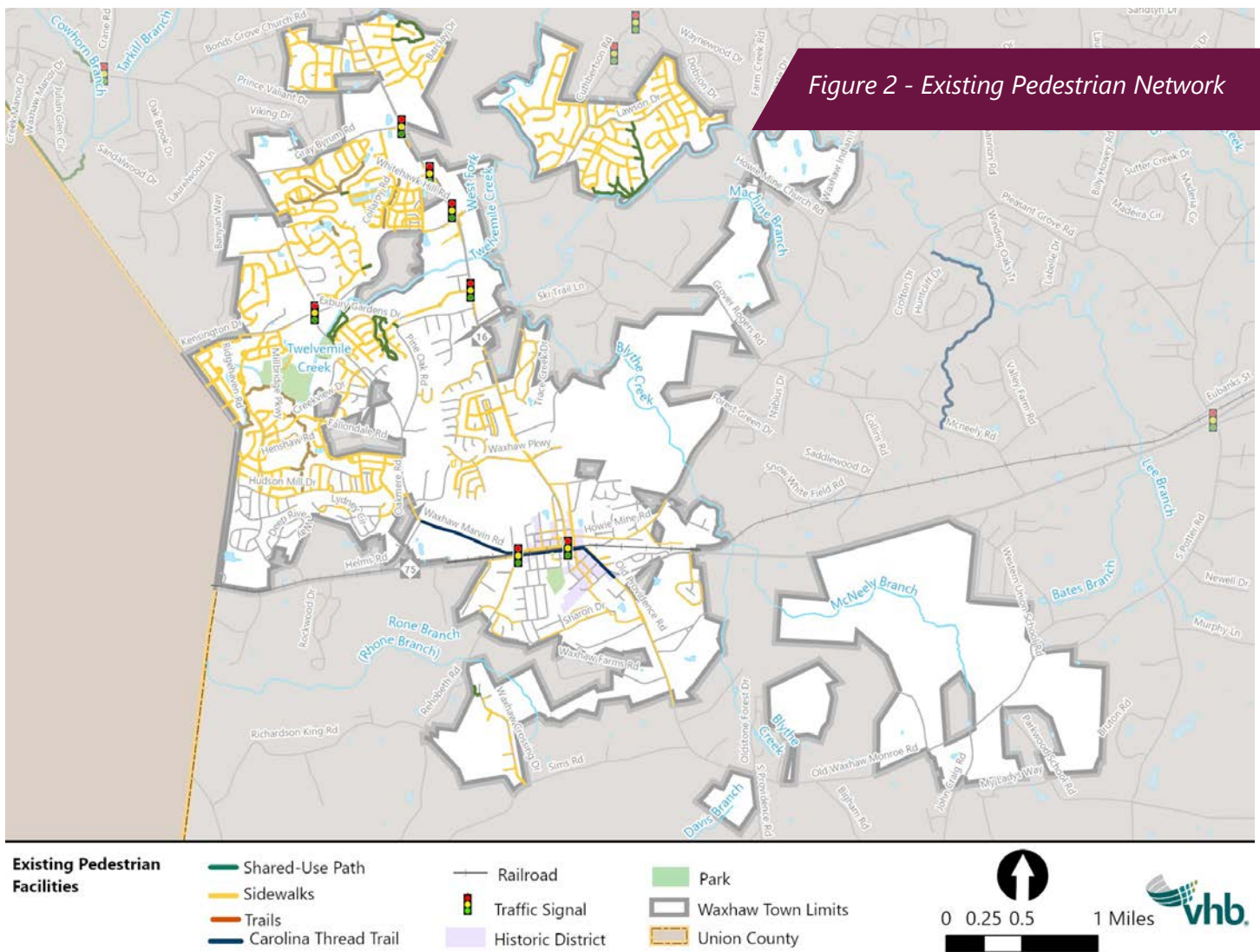


Figure 2 - Existing Pedestrian Network

*Existing facilities as of November 2020

1.3.2 Accessibility

Improving accessibility for residents and visitors of all ages and abilities to local destinations and reducing the dependence on a motor vehicle is a top priority. To do this, many higher-trafficked corridors will require dedicated pedestrian facilities installed along the roadside or along parallel routes, and safety countermeasures installed for safer crossing locations. These will be especially important along NC-16, Cuthbertson Rd, Kensington Rd, and Waxhaw-Marvin Rd. A detailed map of the existing pedestrian and shared-use path (SUP) facilities can be found in Figure 2.

There are significant and distinct infrastructure and development differences between Waxhaw's neighborhoods. The Town's Downtown core is arguably the center of activity for many residents and visitors. The Downtown is bisected by an active railroad line, sidewalks are often on both sides of the roadways in the core, and roads are grided. Moving out from the Downtown, sidewalks are often on one side of the road, are set further back from the roadway, and roadways are more curvilinear. While there is new residential and commercial development in the historic Downtown, much of the Town's recent growth has occurred in residential subdivisions to the north. These new residential neighborhoods have curvilinear roadway networks with cul-de-sacs, sidewalks on one or both sides, and often trail networks within the Home Owner Associations (HOAs) that connect interior streets for pedestrians and bicyclists. They typically lack sidewalk or trail connections to other developments and to community destinations such as schools, parks, and the Downtown.

Commercial developments are concentrated in the Downtown and along the NC-16 (Providence Rd) corridor. The Town also has plans for increasing commercial and office space to diversify the tax base and services in several zones outside of the Downtown. Frequent sidewalk gaps between destinations such as medical facilities, grocery stores, shopping, and restaurants and neighborhoods reduce access for pedestrians without access to a vehicle. Furthermore, the location

of many businesses along NC-16—an arterial roadway scheduled for widening in 2027—and the potential construction of the Waxhaw Parkway may create barriers for crossing pedestrians. The Town's growth in residents and motor vehicle traffic may also necessitate the enhancement of uncontrolled crossings. Waxhaw's expansion and improvement of its pedestrian network is complicated by financial, physical, environmental

constraints for new infrastructure, such as coordination with the County, School District, and HOAs and limited infrastructure funding. An essential aspect of this Plan is providing dedicated corridors for pedestrians to travel from their residences to Downtown, parks, community resources, schools, and convenience stores without the need to walk within the roadway or drive in a vehicle.



Figure 3.1 - Example of Waxhaw Pedestrian Projects: New sidewalk at Main Street Station Development. Credit: Town of Waxhaw



Figure 3.2 - Example of Waxhaw Pedestrian Projects: Twelve Mile Creek Greenway. Credit: VHB

1.3.3 Safety

Across the nation, pedestrian fatalities have increased both in number of fatalities and proportion of all traffic fatalities in recent years. Pedestrian fatalities in the United States rose by 44 percent from 2010 to 2019 and accounted for 17 percent of all traffic fatalities in 2019. Despite the drop of vehicle miles travelled (VMT) due to public health measures to curb the spread of COVID-19 in 2020, pedestrian fatalities remained flat, and the pedestrian fatality rate as a measure of VMT jumped nearly 11 percent. Crash locations and lighting conditions present key safety concerns. In 2018, 74 percent of all pedestrian fatalities occurred at non-intersection locations, and 76 percent occurred during dark conditions. These trends and situations underscore the need for safety improvements to protect these vulnerable users through safety-focused planning, education, and enforcement.

Roadways that lack walkways place pedestrians in potentially unsafe conditions. Likewise, the absence of adequate crossing facilities along certain corridors within Waxhaw may leave pedestrians no option but to cross at unsafe intersections or un-enhanced mid-block locations. Section 2.1.4 presents crashes in Waxhaw between 2011 and 2020. Pedestrian and SUP facilities will provide easier and safer access for Waxhaw residents who are elderly, non-driving, low-income, and who have different mobility abilities.



Figure 4.1 - Example Waxhaw Pedestrian Network Gaps: Uncontrolled crossing to Waxhaw Elementary. Credit: VHB



Figure 4.2 - Example Waxhaw Pedestrian Network Gaps: Barriers between neighborhoods. Credit: Town of Waxhaw

1. <https://crashstats.nhtsa.dot.gov/Api/Public/ViewPublication/813079>



Investments in infrastructure can significantly improve pedestrian safety.² The FHWA reports that the addition of a sidewalk can reduce pedestrian crashes that occur along roadways by 65-89 percent, marking crosswalks with high visibility markings can reduce pedestrian injury crashes by up to 40 percent, and introducing pedestrian refuge islands at crossings can reduce pedestrian crashes by up to 56 percent. The safety benefits reported not only help decrease collisions with motor vehicles, but other types of injuries as well. Many injuries sustained by pedestrians do not involve a motor vehicle.³ Sufficient infrastructure and routine maintenance help reduce many incidents of tripping or falling.

2. <https://safety.fhwa.dot.gov/provencountermeasures/>

3. http://www.pedbikeinfo.org/data/factsheet_crash.cfm



High-visibility crosswalks can reduce pedestrian injury crashes up to

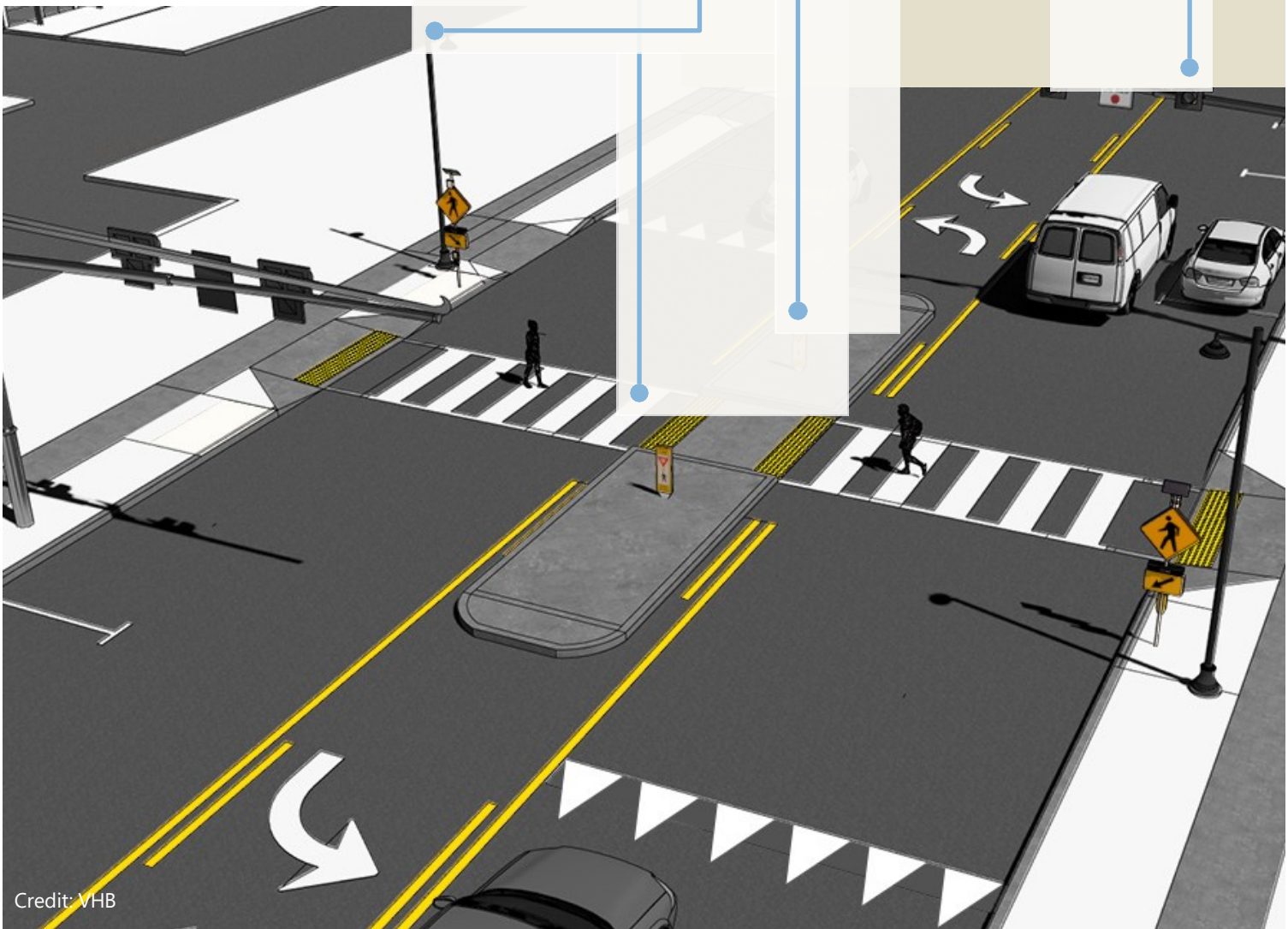
40%

Intersection lighting can reduce pedestrian crashes up to

42%

Yield or stop markings and signs can reduce pedestrian crashes up to

25%



Credit: VHB



1.3.4 Public Health

Choosing to walk for short trips to and from school, local parks, restaurants, retail stores, or even work is one of the best ways to lead a healthier lifestyle. The Centers for Disease Control and Prevention (CDC) recommends 150 minutes of moderate physical activity per week, and infrastructure and encouragement programs can directly support this physical activity goal.⁴ Additionally, a 2010 study found that communities were more likely to achieve that activity goal and have lower incidences of diabetes and obesity if they tended to commute to work by bicycle or on foot.⁵ The FHWA has established a national goal of increasing short walking trips of one mile or less to 30 percent by the year 2025 and outlined supportive policies and initiatives to contribute to improved public health.⁶ Many of these recommendations include infrastructure, program, and policy improvements identified in this plan.

By connecting residences with desired destinations, residents feel empowered to walk to complete daily activities and for recreation. Social interactions between neighbors can be another benefit of walking. The Plan's Steering Committee members emphasized the importance of connecting destinations within the Town to existing parks, schools, regional trails like the Carolina Thread Trail, and proposed greenway and blueway routes along Twelve Mile Creek. Such connections not only contribute to a stronger sense of place, but also help make Waxhaw the charming Town it is.

1.3.5 Economic Impacts

Greater walkability can indirectly increase property values, job creation, economic development, and tourism. The Town emphasized the importance of economic vitality through connection to its Downtown and support of new economic development areas in its Bicycle and Pedestrian Planning Grant application. A 2018 study by NCDOT found that every \$1.00 of shared-use path construction supports \$1.72 annually from local business revenue, sales tax revenue, and benefits related to health and transportation.⁷ A

shared-use path (SUP) is a facility separated from the roadway that may be used by bicyclists, pedestrians, and other non-motorized users, and it is sometimes referred to as a multi-use path or greenway when along a natural feature like a river or stream. The Great Trails State Coalition identified that a one-time public investment of \$26.7 million in paths and trails across just four North Carolina projects has returned \$19.4 million in annual trail related spending at local businesses and \$648,000 in annual sales tax revenue.⁸ The Ecusta rails-to-trails project in Henderson County, North Carolina was estimated to potentially generate \$50 million in total benefit for the local community based on a \$13.4 million project cost.⁹

Investing in active transportation may also have indirect economic benefits of lowering health care costs, improving safety, and reducing congestion, or improving commute times. These benefits stem from lower incidents of chronic disease, reduced injuries from crashes, and fewer vehicle miles driven.¹⁰ For instance, the American Heart Association estimated that every \$1 spent on building bicycle and pedestrian trails could yield \$3 in savings on medical costs.¹¹ Additionally, the installation and maintenance pedestrian and SUP facilities in low-income areas will both increase access to jobs and services for these residents and provide additional revenues for Waxhaw's local merchants and economy. While these are not the most visible results of encouraging active transportation, they are essential in achieving the goal of making Waxhaw a more livable community for residents.

4. <https://www.cdc.gov/physicalactivity/basics/adults/>

5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2937005/>

6. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/strategic_agenda/fhwahep16086.pdf

7. <https://itre.ncsu.edu/focus/bike-ped/SUP-Economic-Impacts/>

8. https://ncsite.org/Annual_Meeting,_SESSION_3C:_THE_COMPLEXITY_OF_TRANSPORTATION_EQUITY presentation, November 18, 2021

9. <https://www.ecustatrail.org/about/economic-impact.html>

10. <https://www.ncdot.gov/bikeped/walkbikenc/pictures/EconomyImpact-Analysis.pdf>

11. http://www.heart.org/idc/groups/heart-public/@wcm/@adv/docu-ments/downloadable/m_ucm_301674.pdf



1.3.6 Environmental Benefits

Choosing an active transportation option rather than using a traditional vehicle will reduce vehicular traffic along roadways and shift capacity to sidewalks or shared-use facilities, making for more efficient use of space in the transportation system. In addition to reduced roadway demand, this shift towards alternative transportation also reduces parking demand. Parking availability is particularly important for Waxhaw's Downtown merchants and visitors, so much so that the Town has developed off-site parking with Downtown shuttles for organized events. Such travel mode shifts also indirectly improve air quality and reduce greenhouse gas emissions. According to the EPA, transportation accounts for roughly a quarter of all greenhouse gas emissions in the United States.¹² By encouraging walking for short trips or bicycling for slightly longer trips, walkable communities can help reduce the number of vehicular miles traveled, and, consequently, vehicular emissions.¹³

1.4 Planning Process

This Plan is the result of direct input from local stakeholders, collection and synthesis of existing conditions data, and public outreach components. Each of these is described in more detail in this section. The project team—composed of the Steering Committee, Town staff, NCDOT, and VHB—deployed a combination of virtual, in-person, and hybrid meeting techniques to complete the plan given public health restrictions in response to COVID-19.

1.4.1 Steering Committee

The project Steering Committee included residents and Town staff, Town police, NCDOT, CRTPO, Carolina Thread Trail, and Union County Public Schools, among other partners. The Steering Committee met four (4) times throughout the planning process to discuss goals and objectives, review existing conditions, formulate draft recommendations, and review the Final Plan.

1.4.2 Data Collection, Analysis and Documentation

Using data collected from previous related projects, available Geographic Information Systems (GIS) data, and historic and recent crash data, the project team documented and mapped existing conditions. This assessment also included field investigations to confirm physical conditions and observe pedestrian and automobile behavior. The findings from the January 2021 field visit at three focus sites are included in the Appendix (Figure 5). The project team presented the existing conditions mapping, as well as preliminary findings and observations, to the Steering Committee in February 2021 and public events in March and April 2021.



Figure 5 - Field Map for Kensington Elementary Site Visit

12. <http://www.epa.gov/ghgemissions/us-greenhouse-gas-inventory-report-1990-2014>

13. Gotchi, T. & Mills, K. (2008). Active transportation for America. Rails-to-Trails Conservancy.



1.4.3 Plan Development & Public Involvement

The planning process began remote with a Kickoff Meeting on February 9, 2021 due to the COVID-19 epidemic. The 25-member Steering Committee was asked to provide initial impressions of the active transportation environment in Waxhaw and what would help this plan be successful. The strong community support for pedestrian network of greenways and paved trails and the Steering Committee's commitment and dedication were identified as essential to the success of this initiative. The initial Steering Committee Meeting was followed by three meetings held in June 2021, August 2021, and February 2022.

In addition to the Steering Committee meetings, there were two rounds of public outreach in April 2021 and August 2021. During the April 2021 outreach, the project team held a virtual public meeting in combination with a widely distributed online survey with over 400 responses. The second public input round was held in-person outdoors at a community concert and included another widely circulated online survey with over 800 responses. Based on these discussions and feedback, the project team determined priorities for future pedestrian improvement projects and supportive programs. The Appendix provides summary documentation of the public comments and themes from these outreach efforts.



Figure 6 – Online Virtual Meeting #1 and Public Engagement Event #2 at Jammin' by the Tracks





Credit: Town of Waxhaw

2

Current Conditions

A comprehensive Pedestrian Master Plan builds upon and enhances the existing network of sidewalks, paths, and roadway crossing infrastructure. An important first step is to accurately document the current conditions as a benchmark for moving forward.



2.1 Local Context

The Town of Waxhaw is a historic and growing community located in Union County, three miles north of the South Carolina state line, and approximately 30 miles from the City of Charlotte, NC. The area was originally settled by the Wysacky Tribe (also referred to as the Waxhaws), and the Town was later established in 1889.¹⁴ When the Town completed its first Pedestrian Plan in 2012, the population stood at nearly 10,000; in mid-2021, the population had grown to nearly 21,000. The Town is served by a network of rural and state highways such as NC-16 and NC-75 that connect the Town to the broader region and South Carolina.

Waxhaw has a wide array of scenic, artistic, historical, recreational, and local attractions that make it an active and healthy place to live and visit. The community has several parks that include amenities such as a skating park, sports fields, children's play equipment, and a growing greenway network. The Town is also building a new Downtown park and is exploring expansion of its current greenway system paired with a blueway

network along Twelve Mile Creek. History enthusiasts can explore the Town's past through the Museum of the Waxhaws, traverse its historic Main Street, and walk over the iconic Downtown rail bridge connecting to the Carolina Thread Trail. Since its creation in 2015, Waxhaw's Parks & Recreation Department has built up its programming to provide sports leagues, arts contests, parades, organized walks, and outdoor concerts to engage Waxhaw's growing population.



14. "History," Town of Waxhaw website, <https://www.waxhaw.com/our-town/history>

Figure 7 - North Main St - 1900 (Top) Waxhaw's Historic Downtown, Pedestrian Rail Bridge, and Twelve Mile Creek Greenway System (Left) and HC Nesbit Park (Right) Credit: Town of Waxhaw



Waxhaw's transportation network is comprised of a combination of historic and new development. The Downtown street network is small compared to the rest of the Town; it is grided with an active railroad running parallel between North and South Main St. As one moves farther outside of the Downtown, the urbanized grid becomes more curvilinear with concentrated planned residential development. Commercial properties are primarily concentrated along North and South Main St, NC-16, and Kensington Dr, with residential areas on local streets one or two blocks off of these routes. The Town's pedestrian network facilitates short walks within neighborhoods and around major destinations like schools, parks, and the Downtown. However, gaps persist between major developments and for residents in the south and southeast portions of Town.

Most of Waxhaw's roadways are locally maintained and have lower vehicle speeds and vehicle volumes compared to the primary corridors that are maintained by NCDOT. Roadway speeds within the Town are

generally 20 MPH to 35 MPH but increase to 45 MPH as one moves outside of the core (Figure 8). NC-16 and NC-75 are the primary roadways that connect the Town to South Carolina in the west, Charlotte to the north, and Monroe to the east. NC-16 (Providence Rd) has the highest vehicle volumes with 20,500 vehicles per day, followed by East South Main St (16,500 vehicles), Old Providence Rd (8,300 vehicles), and NC-75 (Waxhaw Highway, 7,200 vehicles). Vehicle volumes decreased in 2020 due to the COVID-19 pandemic, though had been increasing annually through 2019.



Credit: VHB



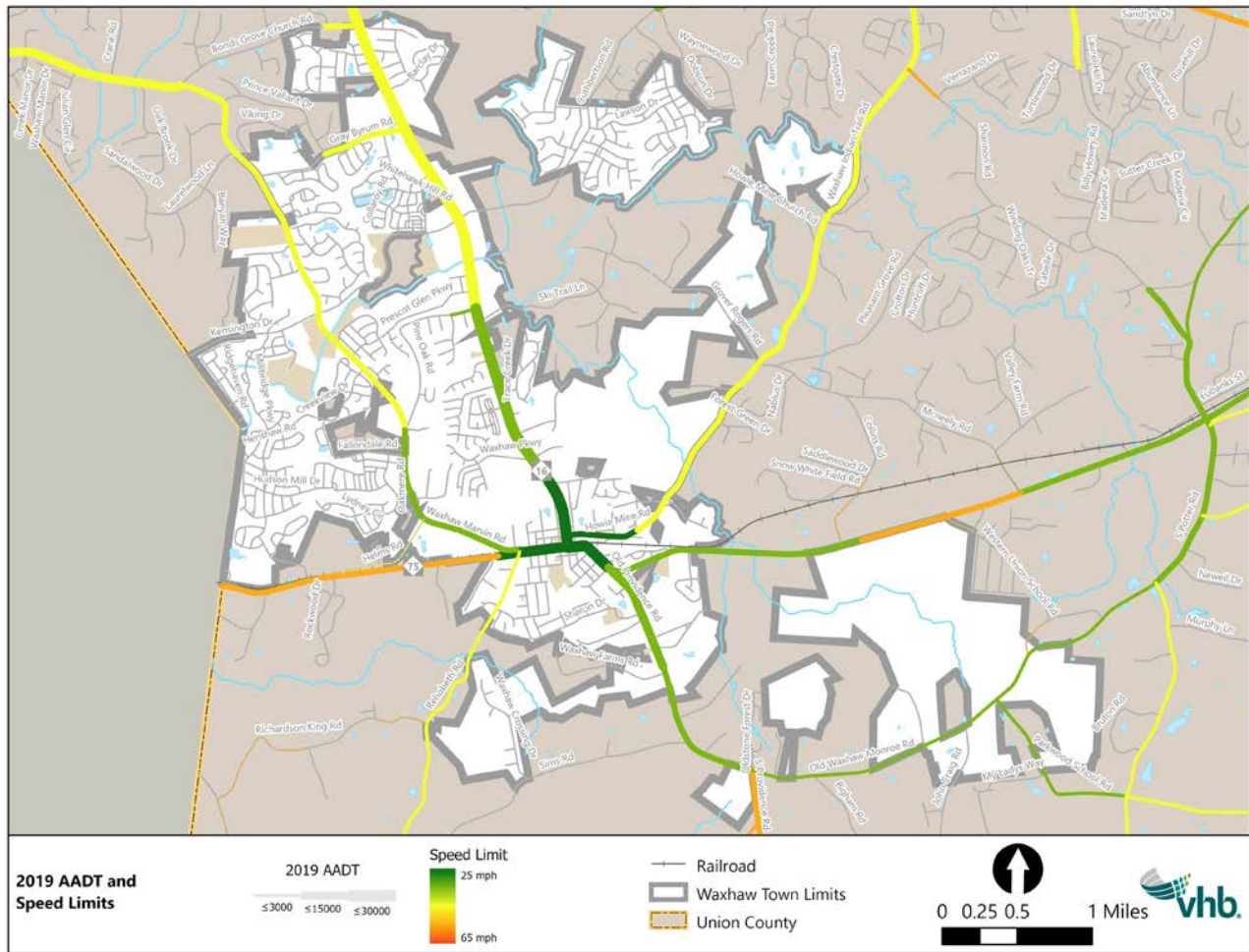


Figure 8 - Existing Traffic Volumes and Posted Speeds

Table 1 - Demographics and Mode Share Comparison

2015-2019 American Community Survey 5-Year Estimates for Income, Age, and Mode Share							
Town/City	Population	Median Household Income (2019 USD)	Median Age	% Zero Vehicle Households	% Walk to Work	% Bike to Work	% Bike to Work
Waxhaw	15,237	111,642	37.3	2%	0.9%	0.0%	0.1%
Albemarle	15,980	44,269	40.2	9%	1.3%	0.0%	0.00%
Clayton	21,681	62,676	34.4	3%	0.7%	0.0%	0.00%
Elizabeth City	17,629	38,917	33.6	14%	4.4%	0.4%	0.40%
Lumberton	20,928	36,935	34.9	12%	0.7%	0.0%	0.00%
Mebane	14,952	64,726	34.7	1%	2.2%	0.0%	0.00%
New Bern	29,895	43,204	40.4	10%	1.9%	0.4%	0.40%
Rocky Mount	54,548	40,633	39.4	11%	1.3%	0.0%	0.00%
Waynesville	9,965	42,796	48.8	10%	2.6%	0.9%	0.90%
North Carolina - Overall	10,264,876	54,602	38.7	6%	1.8%	0.2%	0.2%

*Based on the 2015-2019 ACS 5-Year estimates. The ACS uses sample data to estimate these figures. Only trips to work are considered in ACS survey data.



2.1.1 Mode Share and Demographics

Since local travel and commuting data is typically unavailable, the next best available dataset is the US Census Bureau's American Community Survey (ACS) (Table 1). This dataset is a rolling five-year average, indicating that the latest year in the five-year window would account for only 20 percent of the data.

According to the 2015-2019 ACS 5 Year estimates, an estimated 1% percent of Waxhaw residents walk or bike to work, and an estimated 2% of households do not have access to a car. These levels are generally lower compared to similarly sized North Carolina municipalities. The median income is significantly higher compared to cities and towns of similar populations across the State. These data points may indicate that many residents rely on a vehicle to reach work, whether in the Downtown or in the greater Charlotte metro area. An expanded pedestrian network that connects residents from all neighborhoods to the Downtown and other employment areas could facilitate more walking trips to work.



Waxhaw's demographics indicate a more affluent town than its peers, but opportunities remain to increase its pedestrian connectivity for all residents. The median age of 37.3 is lower than many of its peers and the State overall, and most of the Town's neighborhood areas are above the poverty line. However, areas in the south and southeast have higher concentrations of poverty than the areas to the north and west, which is a risk factor for pedestrian crashes. Figure 9 illustrates the ACS estimates of those individuals living below the 150 percent of the poverty line.

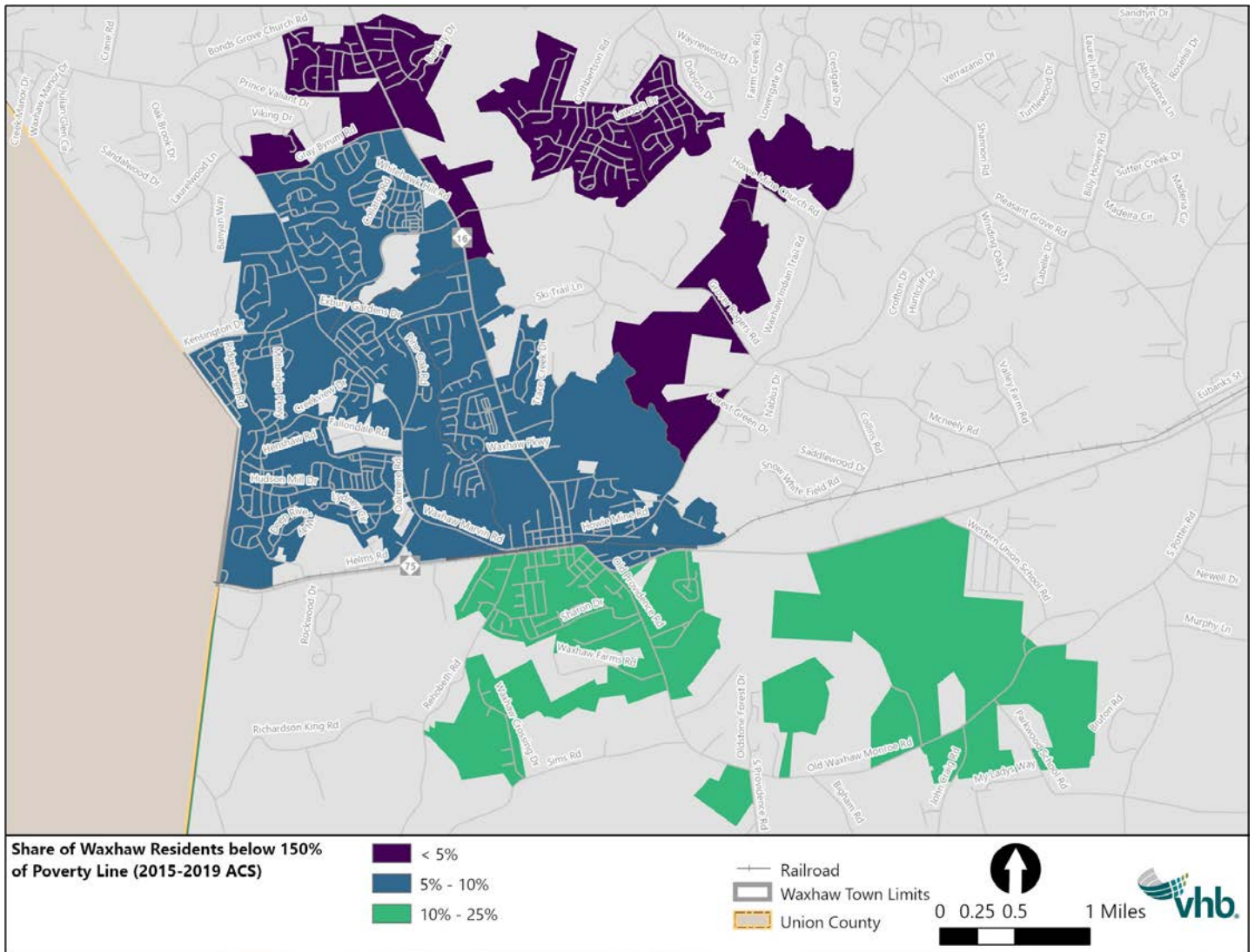
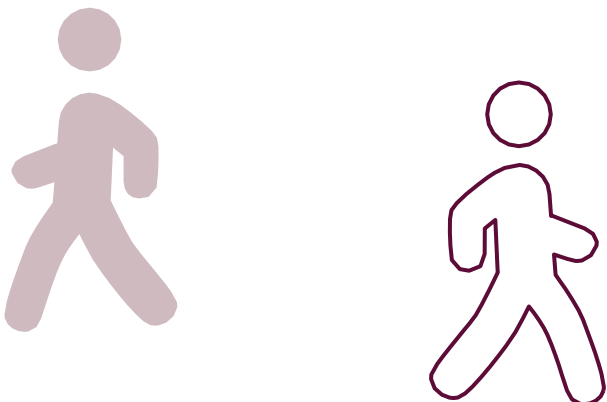


Figure 9 - Percent of People below the Poverty Level



2.1.2 Opportunities

Waxhaw is a growing community with an engaged citizenry that is striving to increase recreation and active transportation opportunities for its residents and visitors, increase visits to the Downtown, and support development outside of the NC-16 corridor. It also benefits from its denser neighborhood developments, sidewalks, and internal trail and park amenities. In addition to its elementary schools and public parks, there are numerous popular destinations located for pedestrians within the Downtown area. However, several noted community destinations are disconnected from the Town's core and neighborhoods. These include the Cureton Town Center, medical facilities, Cuthbertson Middle and High School, and HC Nesbit park. Attractions identified by the Waxhaw community during the first public outreach phase and first Steering Committee meeting included (as seen in Figure 10):

- Cureton Town Center
- HC Nesbit Park
- Town Creek Park
- Waxhaw SK8 Park
- Downtown shopping district
- Novant Health
- Restaurants like Mill on Main and Provisions Waxhaw

These destinations are prime candidates for expanding the Town's existing sidewalk and trail structure.

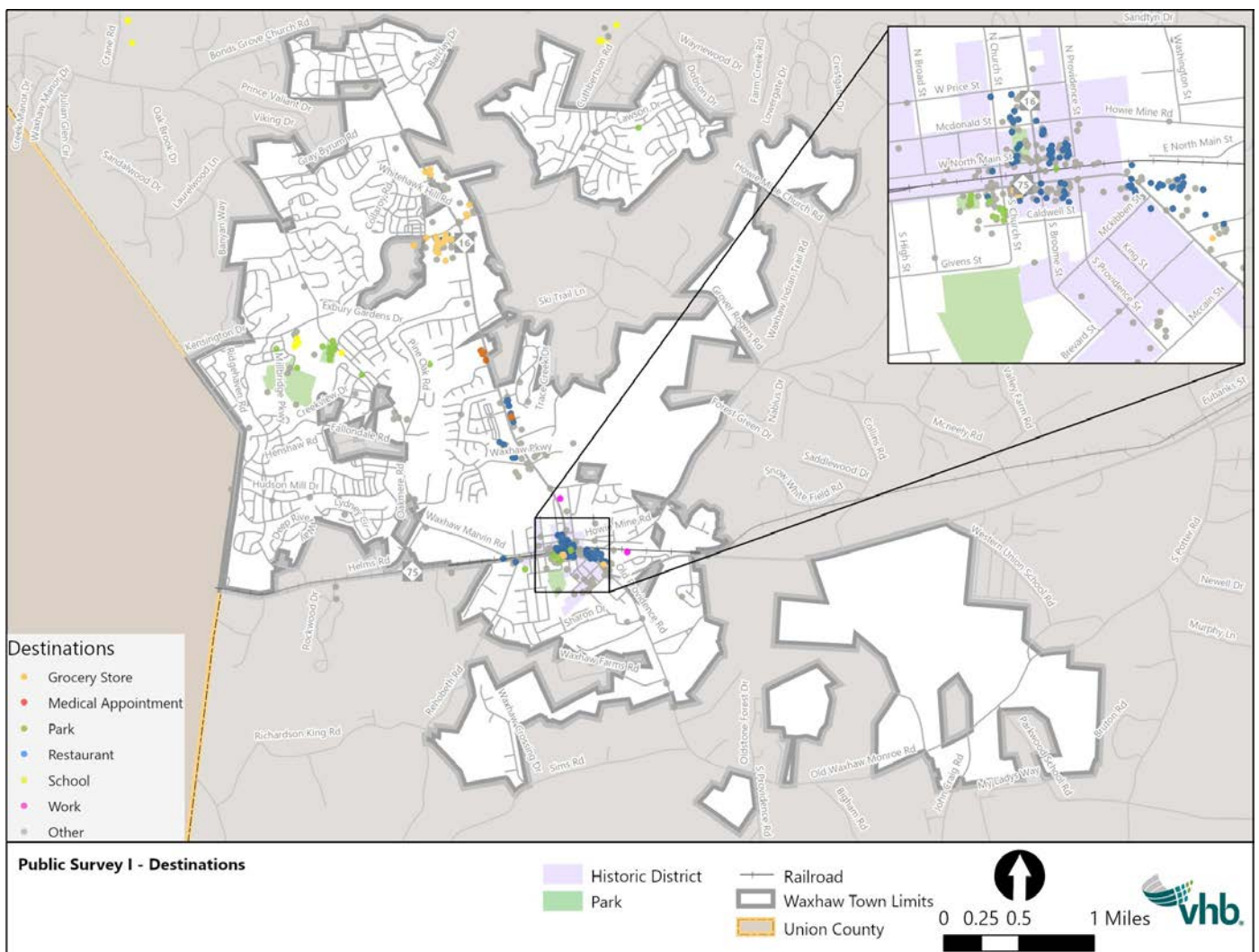


Figure 10 - Community Points of Interest

Existing Sidewalk Network

Waxhaw's dense core and expanding neighborhoods that radiate out from the Downtown provide an opportunity for creating connections between origins and destinations. The dense grid pattern of streets in the Downtown area is more conducive to pedestrian travel than the curvilinear and disconnected street network and block design found in the north and west areas of the Town. Nevertheless, strategic placement of new sidewalks and SUPs—within and outside of the road right-of-way (ROW) can improve connections between the newer residential developments.

Walk Score is an online service that provides measures of walkability and search tools for apartments and retail businesses. Walk Score helps people find walkable places to live (www.walkscore.com). Downtown Waxhaw has a Walk Score of 61, meaning that some errands can be conducted without a vehicle (Figure 11). Other areas of the Town, such as the Cureton Town Center and the Lawson subdivision in the Town's northeast, have much lower scores; the Cureton Town Center score is 41, and the Lawson subdivision score is 1. As one leaves the Downtown core, most errands require a vehicle. These scores indicate that while the Town is currently identified as a car-dependent Town that is somewhat walkable, creating connected pedestrian routes along and separate from its major north-south and east-west roadways presents opportunities to increase Waxhaw's walkability outside of the Downtown core. This sentiment was reiterated during both public outreach phases.

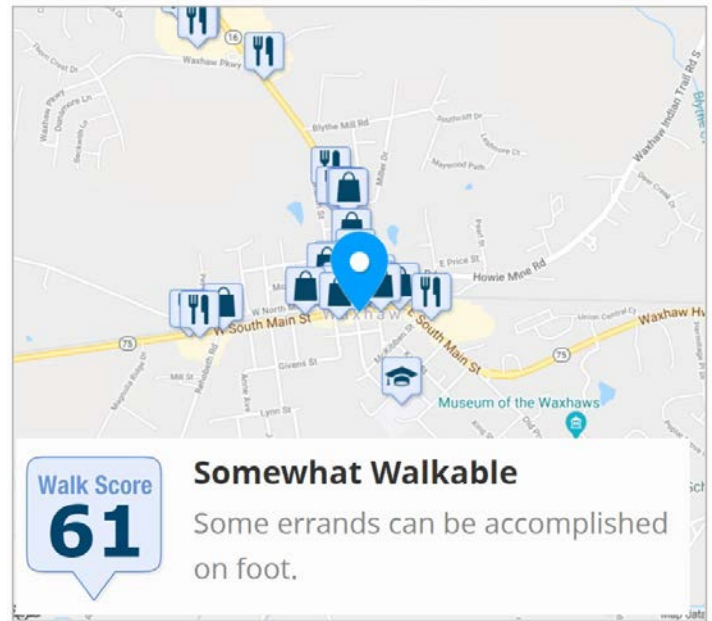


Figure 11 – Town of Waxhaw Walk Score. Credit: Walk Score



2.1.3 Challenges

Waxhaw faces challenges to improving and expanding walking. These challenges include funding availability, limited ROW, coordinating with developers, the County, HOAs, and the School District, and perceptions of crime and personal safety, among others. The Town has a relatively small tax base due to its higher concentration of housing compared to businesses, though it is moving towards diversifying land uses through its revision to its long-range land use plan.

The Town's rapid growth also presents challenges concerning managing residents' expectations of the transportation network. Both rounds of public outreach captured two potentially opposing sentiments from residents: first, that Waxhaw ought to have more amenities such as greenways, SUPs, and sidewalks connecting all parts of Town, and the second, that Waxhaw had grown too quickly and should remain a rural and quiet place. Waxhaw's municipal amenities and schools and proximity to the business center of Charlotte have attracted new residents from within North Carolina and the nation. Addressing the contrasting values of these new residents as well as long-time residents may require focused dialogue on the benefits of pedestrian facilities like greenways and SUPs that can connect neighborhoods, support parks and open spaces, and that Waxhaw's development plan provides options for all residents, whether they prefer more rural large lots, smaller lots, denser lots, or multi-family until living.

Second, the Town's existing roadway transportation network experiences congestion during the morning and evening commute periods. The main commercial corridor, NC-16, is scheduled for construction in 2027 to add travel lanes and a median. The Town has aspirations for the Waxhaw Parkway, an unfunded project that would provide additional connections through a loop road encompassing the Town's core roughly one mile out from the Downtown. These projects are intended to alleviate vehicular congestion and support new commercial and residential development. However, improving pedestrian access through crossing improvements, new

sidewalks, sidewalk infill, and SUPs should be taken into serious consideration with these roadway and future development projects given municipal funding constraints.

2.1.4 Crash Data

The NCDOT Division of Integrated Mobility provided a database of Bicycle and Pedestrian crashes that occurred between 2011 and 2020 for the entire state.¹⁵ This data is maintained by the University of North Carolina's Highway Safety Research Center, which locates crashes and inputs the available data from police department crash reports and supplemental roadway information. However, research indicates that as many as 55 percent of pedestrian and bicycle crashes may go unreported.¹⁶

Figure 12 displays the reported on-road pedestrian crashes in Waxhaw from 2011 through 2020. Parking lot, off-road, and other private vehicle area crashes were excluded from this analysis due to the limits of this Plan's recommendations. During this ten-year timeframe, 16 pedestrians were hit by vehicles: one fatality, seven minor injury, six possible injury, and two no injury crashes. Police crash reports provide additional detail on the circumstances surrounding the crashes. Analyzing the data helps identify contributing factors and common trends in the crashes. These findings inform decision-makers to consider projects that will target specific contributing factors and trends with the goal to reduce the severity and number of crashes in the future as Waxhaw's population and roadway volumes grow. Table 2, Table 3, and Table 4 present key data points for these pedestrian crashes.

15. <https://www.arcgis.com/home/webmap/viewer.html?webmap=b4fc-dc266d054a1ca075b60715f88aef>

16. <https://smartgrowthamerica.org/dangerous-by-design/>



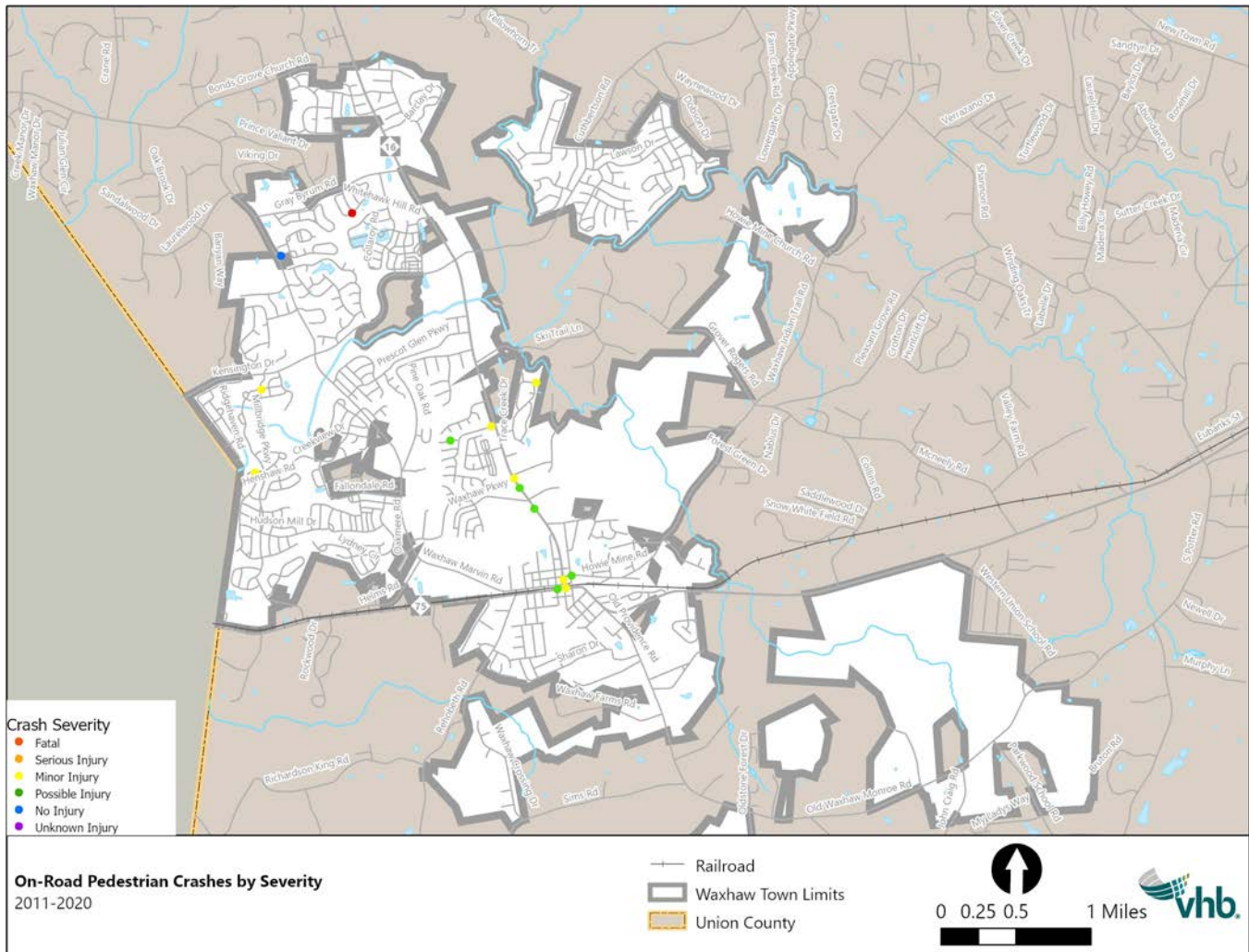


Figure 12 - Pedestrian Crashes in Waxhaw, 2011-2020

Table 2 – On-Road Pedestrian Crash Data Summary by Location in Waxhaw (2011-2020)

Crash Severity	Crash Location			Grand Total	
	Intersection and Intersection-Related	Non-Intersection	On Roadway	Grand Total	(%)
K: Killed	1			1	6%
B: Suspected Minor Injury	3	4		7	44%
C: Possible Injury	3	2	1	6	38%
O: No Injury		1	1	2	13%
Grand Total	7	7	2	16	100%
(%)	44%	44%	13%	100%	



Table 3 – On-Road Pedestrian Crashes by Severity and Lighting Condition in Waxhaw (2011-2020)

Crash Severity	Lighting Condition		Grand Total	(%)
	Dark - Roadway Not Lighted	Daylight		
K: Killed		1	1	6%
B: Suspected Minor Injury	1	6	7	44%
C: Possible Injury		6	6	38%
O: No Injury		2	2	13%
Grand Total	1	15	16	100%
(%)	6%	94%	100%	

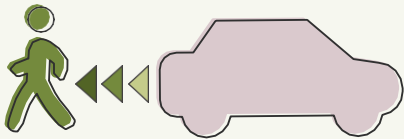
Table 4 – On-Road Pedestrian Crashes by Crash Grouping in Waxhaw (2011-2020)

Crash Type	Crash Type Count	(%)
Unknown	3	19%
Dash / Dart-Out	3	19%
Backing Vehicle	2	13%
Unusual Circumstances	2	13%
Crossing Driveway or Alley	1	6%
Crossing Roadway - Vehicle Not Turning	1	6%
Crossing Roadway - Vehicle Turning	1	6%
Pedestrian in Roadway - Circumstances Unknown	1	6%
Unique Midblock	1	6%
Walking Along Roadway	1	6%
Grand Total	16	100%

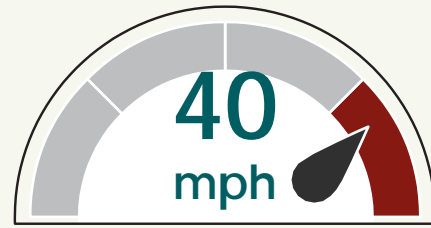




Approximately 50 percent of all reported pedestrian crashes occurred on or within close proximity to NC-16, including a cluster in the Downtown core. Further, most crashes occurred in areas of lower poverty compared to other areas of Waxhaw.

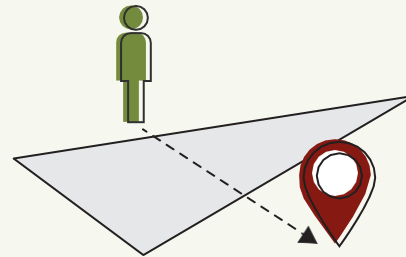


An equal amount of crashes occurred at intersection versus non-intersection (e.g. mid-block) locations. The Town should evaluate opportunities to enhance its non-intersection crossings as vehicle volumes, speeds, and pedestrian activity increase given the higher likelihood of fatal crashes at those locations. The Town should also consider improvements at signalized intersections, such as pedestrian countdown signals overall and Leading Pedestrian Internals (LPI) and protected signal phasing at locations with pronounced turning vehicle conflicts.



Speed is related to injury severity (Figure 13). **62 percent of the Town's crashes occurred on roadways with posted speeds of 25 MPH or less, likely contributing to less severe injury outcomes.**

As the Town's population grows with increased crossings of higher speed roadways, enhanced crossings should be included in roadway designs.



Most crashes (94 percent) occurred during daylight conditions, including most injury crashes. This distribution of crashes is atypical of statewide and national trends and may align with activities and employment that are centered around the standard work day. As Waxhaw diversifies its land uses, it should consider the incorporation of pedestrian-focused street lighting in roadway and new development designs.

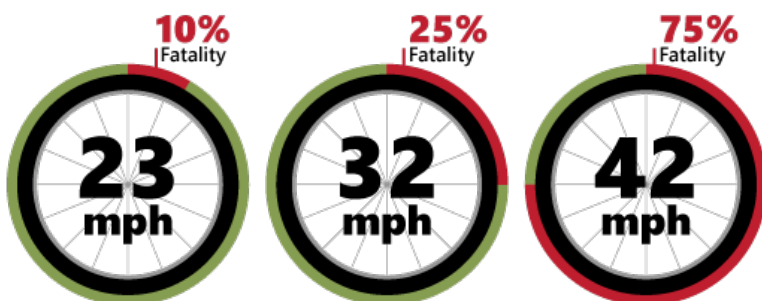


Figure 13 - Relationship Between Vehicle Speed and Pedestrian Fatality Outcomes. Source: Tefft 2011.



2.1.5 Progress Since 2012 Pedestrian Plan

Since the 2012 Waxhaw Comprehensive Pedestrian Plan, numerous pedestrian improvements have been completed or are in progress. The plan listed corridor segments for sidewalk infill improvements, most of which were to be constructed on corridors and segments of roads that had no existing sidewalk or significant sidewalk gaps. The plan identified potential trail, greenway, and multi-use path corridors, which can be connections to parks and greenspace in and around the Town. The plan also listed safety improvements, mostly pertaining to marked crosswalks. An analysis of the projects was conducted against 2021 satellite imagery, field visit documentation, consultation with the Town, and the NDCOT Pedestrian Bicycle Inventory Network database. This analysis supported the updated Plan's development.

The 2012 Pedestrian Plan identified a network of 40 sidewalk, 28 trail, and 32 crossing improvement projects. Figure 14 displays a map of the completion status of those past recommendations; line and dot colors indicate their level of completion. The solid lines indicate the status of sidewalk projects, and the dashed lines indicate the status of greenway and SUP projects from the previous plan. Green indicates that projects are completed, and yellow represents projects that have minimal gaps and over 50 percent of the project being complete. The solid red lines represent projects that have not been initiated. The analysis concluded that from the projects listed in the 2012 Plan, approximately 13 percent of projects had been fully or partially completed, most of which were sidewalk projects followed by crosswalk projects. Critical sidewalk gaps persist in the Downtown, southeast of Downtown, along NC-16, Waxhaw-Marvin Rd, and the larger greenway network.

Completed Crosswalk Projects

- C3 – Kensington/Cuthbertson @ NC-16
- C12 – Providence @ East South Main

Completed Trail Projects

- T23 – Waxhaw Ridge Trail (Partially Complete)

Completed Sidewalks Projects

- S1 – Broome St (Partially Complete)
- S2 – Waxhaw Parkway (Partially Complete)
- S3 – East South Main St (NC-75) (Partially Complete)
- S9 – (Partially Complete)
- S11 – Kensington Dr (Partially Complete)
- S14 – Waxhaw Indian Trail, Howie Mine
- S18 – W Price St (Partially Complete)
- S21 – S. Providence St (Partially Complete)
- S22 – Cuthbertson Rd (Partially Complete)
- S39 – North Church St (Partially Complete)



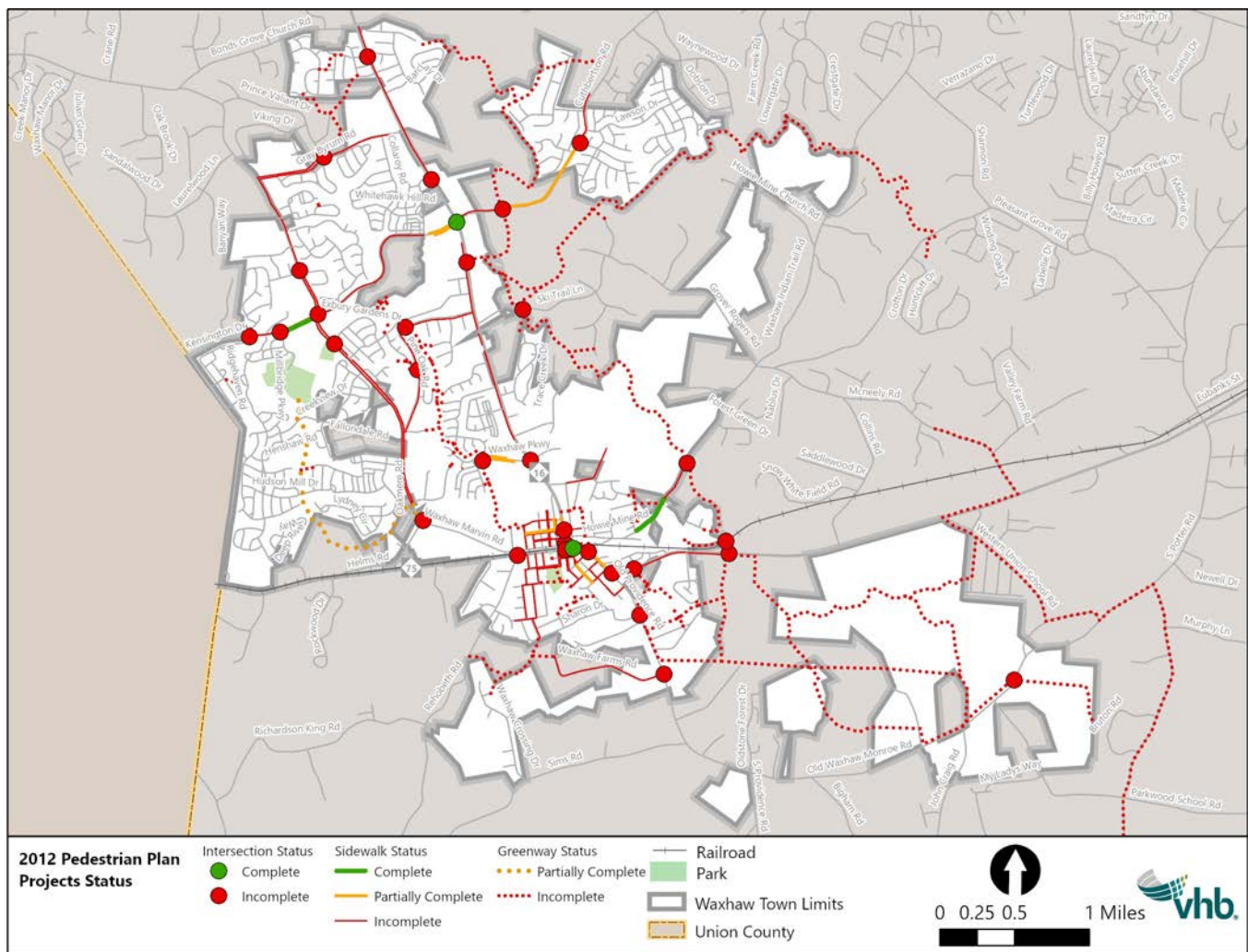


Figure 14 - 2012 Pedestrian Plan Project Status.

However, progress in the implementation of the previous plan is a limited measure. The Town has successfully worked with developers to install sidewalk within planned developments and infill in the Downtown area. Also, the Town has coordinated with NCDOT to include sidewalks and SUPs within planned roadway and bridge projects, notably U-5769A&B, that will address several of the key network connectivity gaps described above. Also, the Town has focused on safety and mobility improvements in the Downtown area, and is addressing accessibility issues with the pedestrian bridge, crossing Old Providence Rd, and enhancing park space for a wider range of users. Finally, the Town has built momentum through construction of several links of the Twelve Mile Creek Greenway and is exploring integration of a blueway with kayak and canoe launch points.



2.2 Public Input

Public input from visitors and the residents of Waxhaw supplemented the quantitative data gathered by the project team. The public had the opportunity to provide input through two online surveys and two events

(one virtual, the other outdoors), and the project team also interviewed stakeholders to further explore pedestrian network gaps, preferences, and potential policy and programmatic solutions. This section summarizes the findings from these outreach efforts.

2.2.1 Phase I Public Survey Results

From April 2021 through May 2021, approximately 450 people participated in the Plan's Phase I survey. The Plan incorporated an online survey platform, MetroQuest, in both English and Spanish. The survey platform offered an interactive experience where respondents are able to plot, move, and arrange responses. The survey's questions directed at gathering information on the responders' opinions on current walking conditions in Waxhaw, barriers to walking, and preferred programs and initiatives to increase walking. The survey also included demographic questions to learn more about the responders, asking responders about their age, walking habits, car ownership, and zip code. Through the survey, the project team and Steering Committee learned that many respondents walked in Waxhaw a few times a month or more frequently (82 percent) (Figure 16).

Rating of the Existing Waxhaw Sidewalk Network

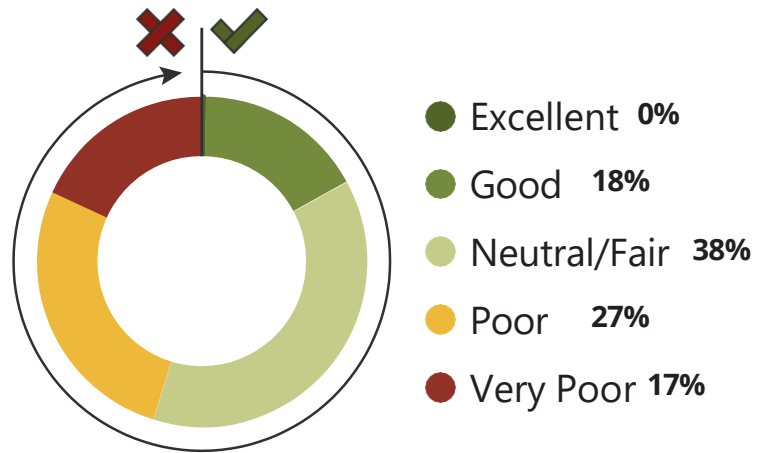


Figure 15 - Rating of the Existing Waxhaw Sidewalk Network.

Demographics- How often do you walk in Waxhaw?

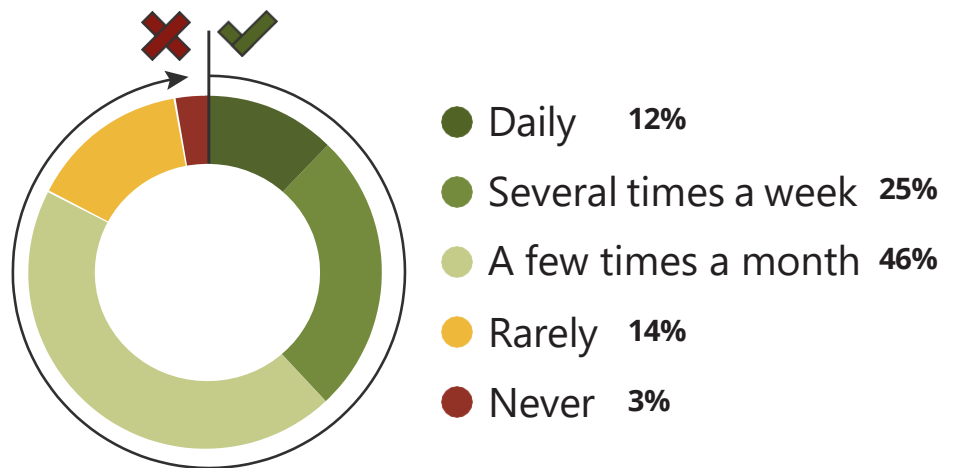


Figure 16 - Demographics - How Often Do You Walk in Waxhaw?

When asked about the quality of the existing sidewalk network, 38 percent ranked it Neutral to Fair, while roughly a quarter each ranked the network as Poor.

The survey allowed responders to plot markers on a map of their home, locations with safety concerns, destinations around the Town, locations where they had ideas for projects to improve walking in Waxhaw, and an “anything else” marker for anything outside the parameters of the other markers. Key survey findings included:

- Self-identified home locations were primarily in the following four areas: Lawson, Millbridge, Alma Village, and Downtown. This led to focused stakeholder interviews to gather feedback from residents in the eastern and southern areas of the Town.
- Destinations and Safety Concerns were the most frequently placed markers.
- Clustering of destination markers Downtown and other key locations: grocery stores, recreational areas and parks, restaurants, shopping centers, and health care center.
- Safety concerns were concentrated Downtown and along Waxhaw-Marvin Rd, NC-16, Kensington Dr, and Old Providence Rd. Most common issues were the following (Figure 17):
 - Traffic speeds and limited visibility;
 - Limited safe crosswalk options;
 - Railroad as a barrier;
 - Lack of sidewalks along roadways.
- Project ideas and their locations were as noted:
 - Complete sidewalks and crossing: NC-16, Waxhaw-Marvin Rd, Cuthbertson Rd, and N & S Main St;
 - Safety improvements: Downtown and NC-16;
 - Add parks, signage, and parking: Downtown.

The noted barriers for walking in the Town were safety and infrastructure focused. Survey respondents shared that unsafe crossings were the top barrier, followed by disconnected networks, unsafe vehicle behavior, and personal safety (Figure 18, higher scores indicate higher barriers). While not an independent project recommendation, lighting should be considered in all crossing projects described in Plan Section 3. According to the FHWA, “adequate lighting provides clear benefits in terms of personal security...Roadway lighting often serves the purpose of safeguarding personal safety for pedestrians, bicyclists, and transit users as they travel along and across roadways.”¹⁷

The survey results also found that distance from destinations and health impairments were not top barriers to walking in Waxhaw. However, distance may not be ranked higher due to most respondents owning at least one car (98 percent). Another notable barrier was “poor maintenance,” which complements the safety barriers; increasing maintenance activities could reduce the safety-related barriers. When asked about visioning and pedestrian facilities, survey respondents shared that wide sidewalks, sidewalks, trails and greenways, and public spaces were the most preferred, which validated both the community concerns and vision for a walkable and vibrant Waxhaw (Figure 19).

17. https://safety.fhwa.dot.gov/roadway_dept/night_visib/lighting_handbook/



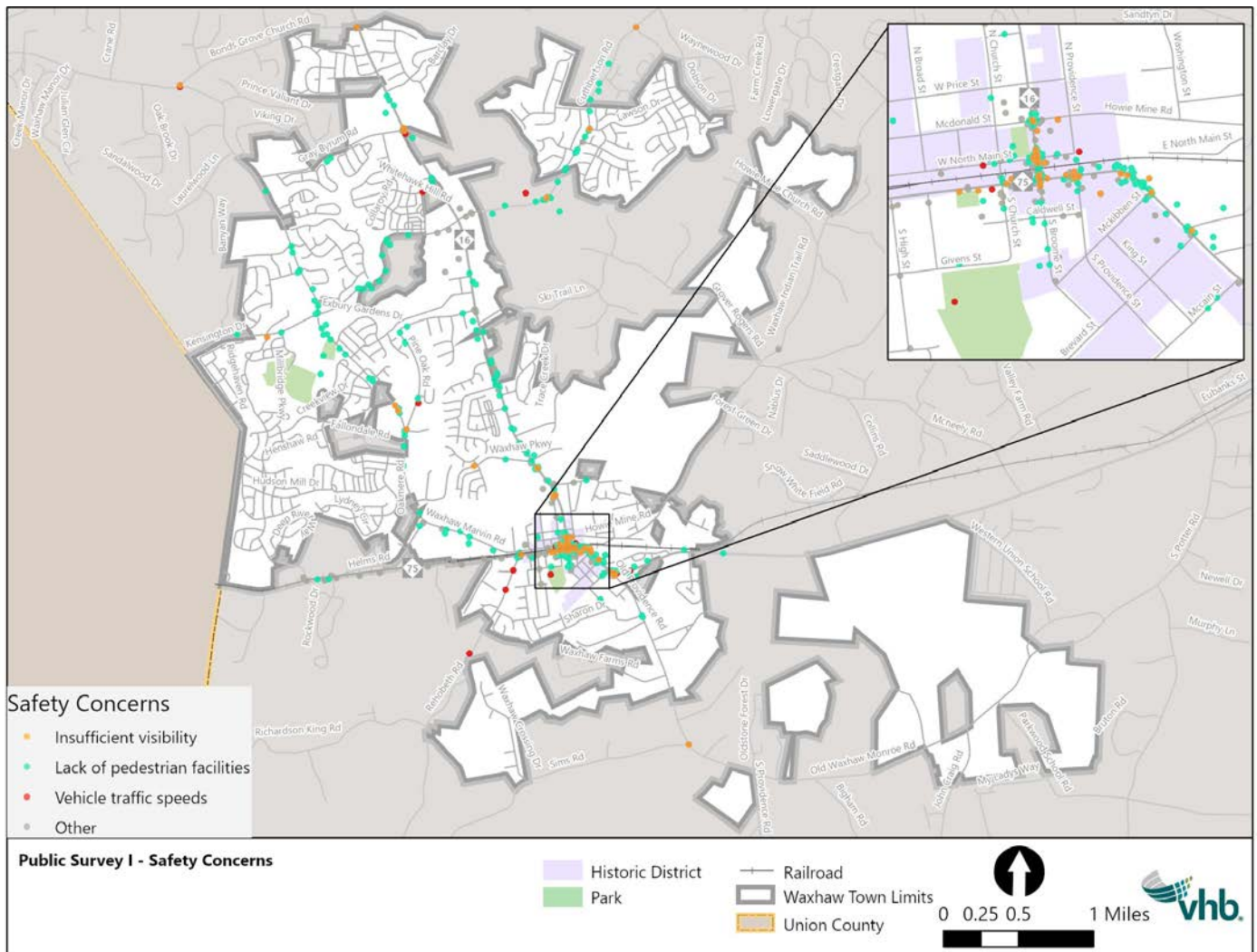


Figure 17- Safety Concerns

Barriers Ranking

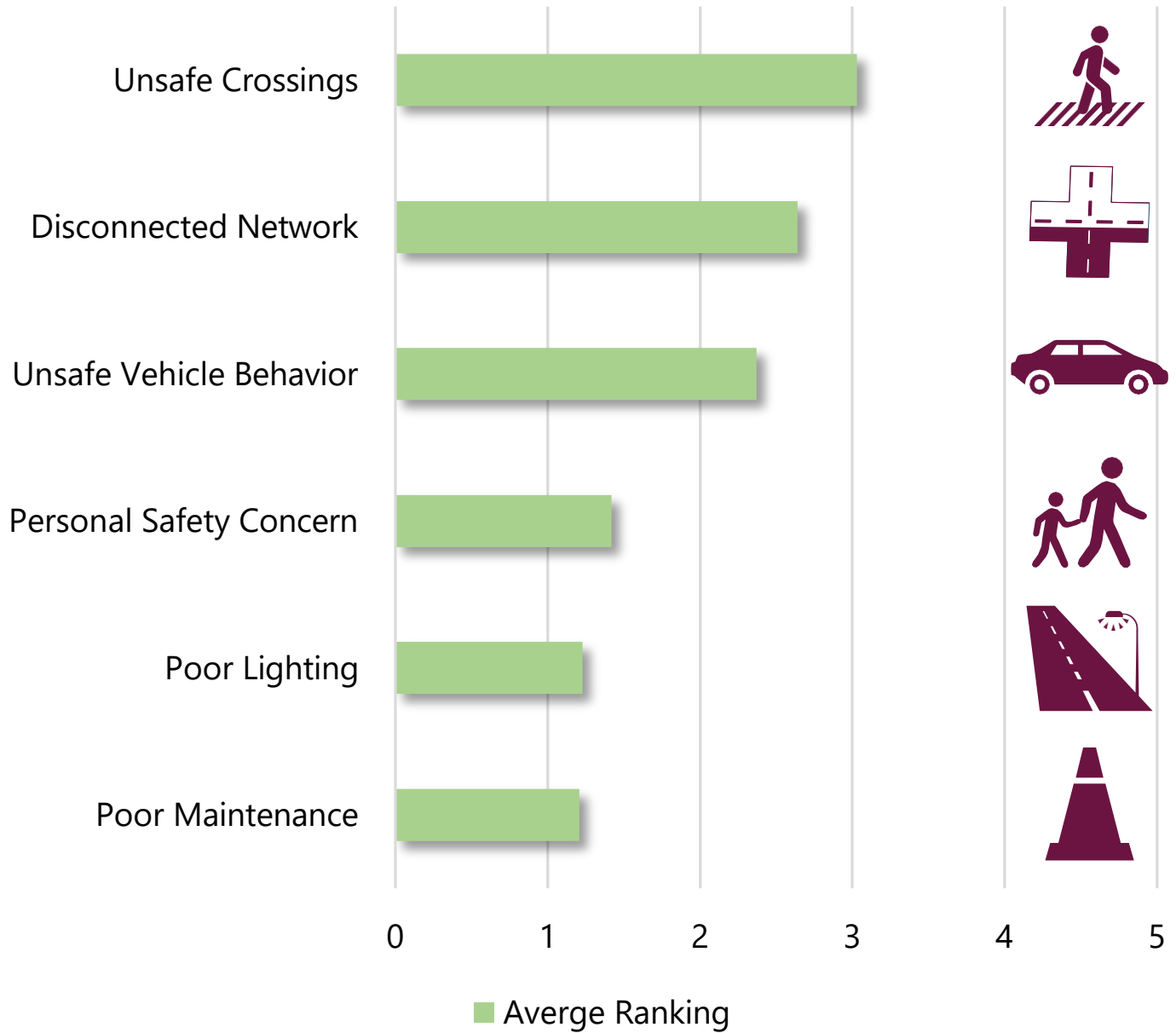


Figure 18 - Barriers to Walking in Waxhaw



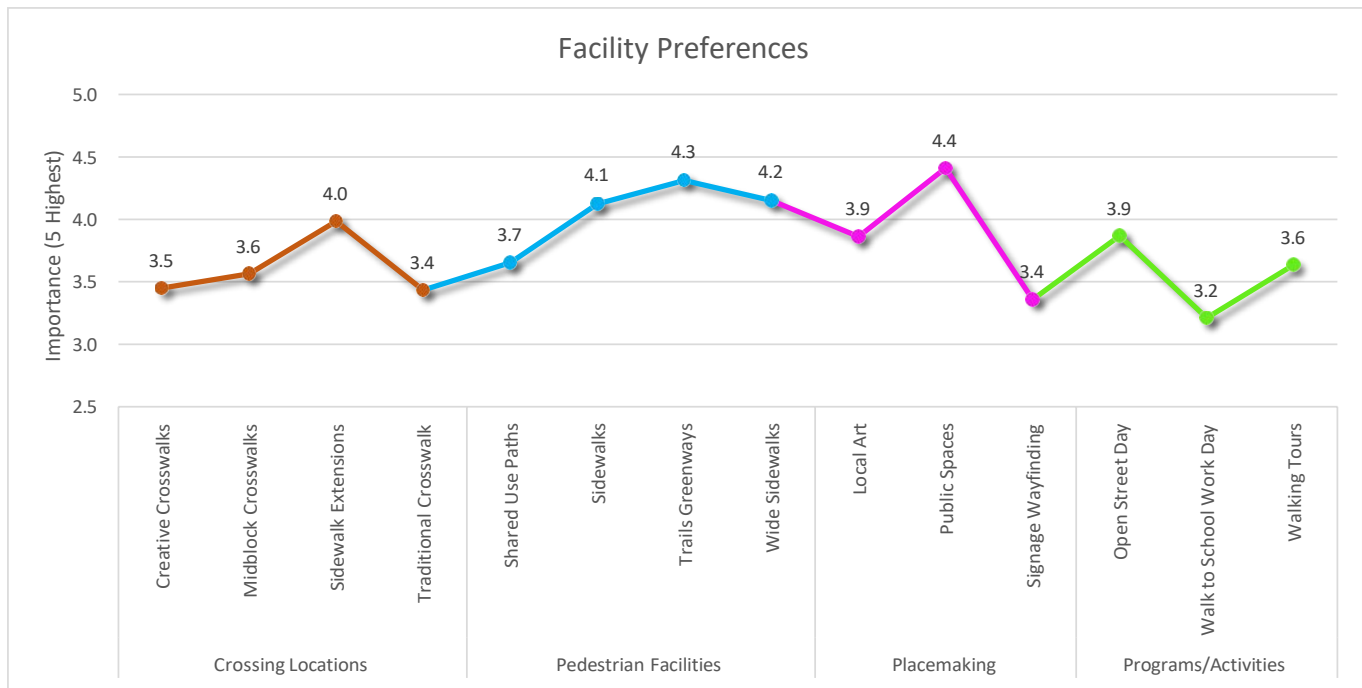


Figure 19 - Survey Facility Preferences

2.2.2 Supplementary Outreach

Several efforts helped bolster the Plan's outreach. First, the project team made independent presentations to the Town's Planning Board and Downtown business association to solicit targeted feedback. Additionally, the project team interviewed four Town departments for reflection on the past plan and potential opportunities to improve Waxhaw's walkability. Findings from the staff interviews included:

- The Town had made progress in implementing previous pedestrian plan policy and ordinance recommendations;
- Sidewalk and greenway facilities were largely included in new developments;
- The Town was proactive in increasing street connectivity metrics through limiting cul-de-sacs and reducing block length;
- Walkability was a high priority for Town staff and residents;
- Pedestrian safety was a high concern with traffic volume and speed being highest concern;
- The Town was focusing on mixed-use zoning districts to promote walkability;
- Town staff and residents were most excited for greenway opportunities for safe, effective, and direct connections.



2.2.3 Phase II Public Survey Results

The project team presented the draft pedestrian network plan and facility descriptions through a second survey and in-person event at Jammin' by the Tracks in later summer 2021 (Figure 20). The in-person event reached roughly 50 people, and the survey collected over 800 submissions. Together, the feedback helped refine the recommendations for the draft plan.

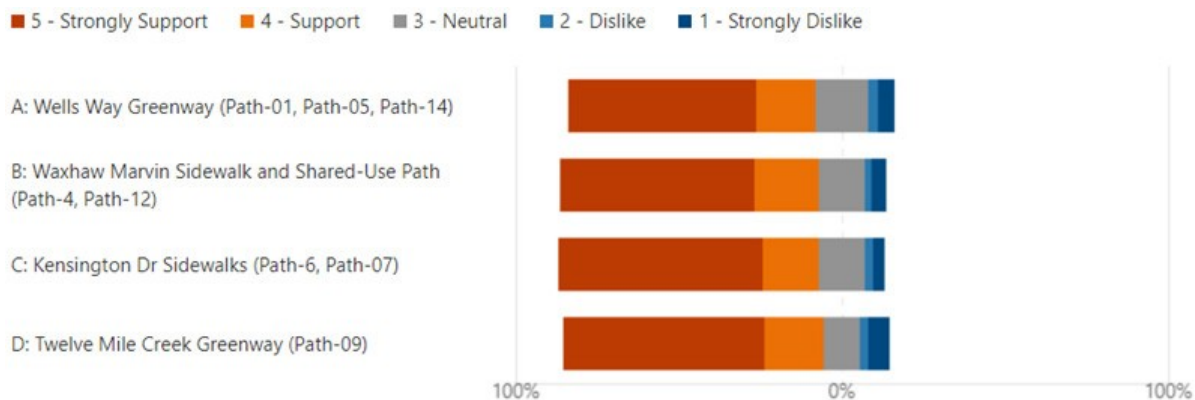


Figure 20 - Phase II Outreach Featuring the In-Person Event and Second Survey (Right and Left)



The second event provided significantly higher levels of engagement and feedback compared to the other events in Phases I or II. The complete summary of the second survey's findings may be found in the Appendix. Though the draft pedestrian network featured over 100 projects, the survey was structured around high-profile projects in the Town's five areas: Northeast, Southwest, Southeast, and Downtown Waxhaw. Overall, the presented projects were highly rated. However, those that received opposition greater than 10% included greenways in Northeast Waxhaw, notably Paths 20, 21, and 22 (the Cureton-Lawson, Lawson Wesley Chapel, and Machine Branch greenways).

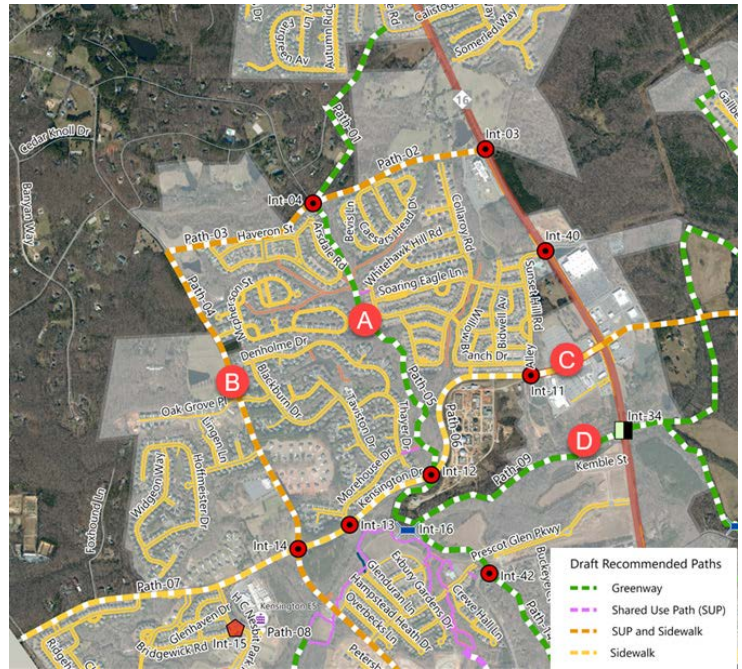


Figure 21 - Phase II Survey Map Example (Northwest Area)

Northwest Waxhaw:

- Respondents overall strongly supported adding sidewalks and greenways, especially those that connected to schools, the Downtown, and to the Carolina Thread Trail. Many respondents in the Northwest section commented on the connections to the Cuthbertson middle and high schools. Others requested sidewalk along Pine Oak Rd and a connection to the Prescott Glen neighborhood.
- New project ideas included crossing improvements on Kensington Dr at Millbridge Pkwy/Garrison Grove and included bicycle accommodations in new projects.

Northwest Waxhaw

- Respondents strongly supported adding sidewalks and crosswalks to schools, especially from the Lawson residential neighborhood to the Cuthbertson middle and high schools. Supporting survey narratives stressed safe access to the schools from the nearby neighborhoods.
- Those who opposed sidewalk and greenway projects expressed safety and privacy concerns about their property and noted that adding sidewalks and trails for the public would threaten their neighborhoods. Others were worried about taxes increasing to pay for these facilities. Specific projects of opposition included Paths 18, 21, and 22 (all greenway projects).
- As for new projects, some requested adding sidewalk to the west side of NC-16 at Kingston Drive as some reported that crossing to the eastside sidewalk is dangerous. Others requested more bike paths for safety. The planned widening and improvement of NC-16 is designed to include sidewalk on the west side with signalized crossings, though there are no planned crossings at the Kingston and Red Oak neighborhood entrances.

- **Southwest Waxhaw**

- Respondents strongly supported sidewalks and trails from the Millbridge community to the Downtown. Adding more bike paths was a recurring request. Also, others recommend sidewalks or SUPs on Pine Oak Rd and to the Town of Mineral Springs.
- Respondents also noted their concerns about taxes and privacy, similar to those reported for the projects in the Northeast.

- **Southeast Waxhaw**

- Many respondents were positive about the plan's proposed changes, especially for sidewalks near the school areas and crossing improvements on dangerous intersections, such as Providence Rd and the Old Waxhaw Monroe intersection.
- The main concerns for opposing projects were privacy related, with the request to focus on funding other transportation and public safety priorities.

- **Downtown Waxhaw**

- The majority of comments supported adding more sidewalks (especially wider sidewalks) and providing more connectivity among streets to support pedestrian safety, especially near school areas. The recommended new projects were mainly about existing sidewalk maintenance, walkway signs, speed bumps and speed reduction efforts, crosswalks with push button and flashing red lights, and having more street lighting for pedestrian safety. Specific crossing areas included NC-75 overall, the location near Emmet's Table (already addressed in a Town planned project), completing the crossing at E North Main St and NC-16, and all stop controlled intersections in the Downtown zone.

In response to the second public input phase, the following projects were added or modified:

- Int-43 – Crossing enhancement at NC-16 and Kingston Dr (potential two-phase signal with crossover for pedestrians, support future development, access to SUP, also 0.3 and 0.5 miles to nearest signalized intersections);
- Int-44 – Crossing enhancement at Millbridge Pkwy and Kensington Dr to support access from the neighborhood and crossing/access to the park complex and Kensington Elementary School;
- Int-45 – Crossing enhancement at E North Main St and NC-16, specifically on the north leg of the intersection;
- Int-46 – Access improvement to the Cuthbertson Middle School, facility and location to be determined as it is on the school grounds. Interior sidewalk connections are considered prerequisites for NCDOT-supported intersection improvements;
- Int-47 – Access improvement to the Cuthbertson High School, facility and location to be determined as it is on the school grounds. Interior sidewalk connections are considered prerequisites for NCDOT-supported intersection improvements;
- Path-21 – Access recommendation changed from Methodist Church Ln to access from Ringtail Dr;
- Path-61 – Sidewalk extension to Cuthbertson Middle School from Sugaree Ct;
- Path-62 – Sidewalk extension from Blackmoor Rd to Wesley Landing Rd;



- Path-63 – Sidewalk extension from Dobson Dr to Ringtail Dr.

2.3 Existing Institutional Framework

Waxhaw is within Union County and under the planning purview of the CRTPO. Many of the infrastructure projects undertaken in the Town, particularly those related to NCDOT initiatives, are planned through the inter-related Town, County, and CRTPO planning processes. Section 2.4 outlines the most recent and relevant plans guiding planning in Waxhaw.

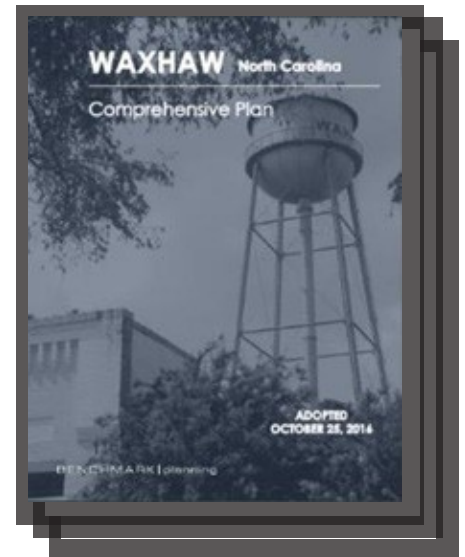
The Town of Waxhaw Code of Ordinances governs development within the Town limits. This document provides regulations for the dimensions and cost-share of installing new sidewalks, speed limits, parking, among other regulations. Section 4 of this Plan provides recommendations for improving existing policies to promote consideration and consistent installation of pedestrian and SUP facilities such as sidewalks and easements for greenways.

2.4 Related Plans and Initiatives

In preparation of this Plan, the project team reviewed relevant past plans developed by the Town and other similar agencies. This section summarizes the important information in those plans.

Town of Waxhaw Comprehensive Plan (2016)

The Comprehensive Plan identifies priority recommendations for the fast-growing town. New developments have been required to provide sidewalks in neighborhoods and along commercial frontages and the town has made investments on improving the pedestrian networks particularly near school properties. While the network has grown, significant gaps remain that create barriers between existing facilities, particularly between older parts of Waxhaw and the newer developments. The suburban growth pattern of the town has brought limited roadway and active mobility connectivity, which the town wants to incrementally correct. The Town of Waxhaw has shown a strong interest in using scalable complete streets policies for all users along roadway rights-of-way. The plan calls for infrastructure that promotes an active lifestyle community with the hope of shifting the preferred mode of transit for local trips to walking. An emphasis is placed on connecting the town's greenway corridors, particularly Twelve Mile Creek corridor as the central connecting spine of the town-wide greenway system. Despite these ambitions for growing the Town's active transportation network, the above recommendations were not part of the highest implementation priorities



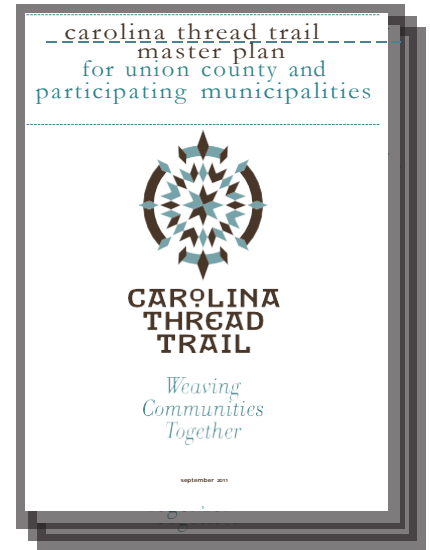
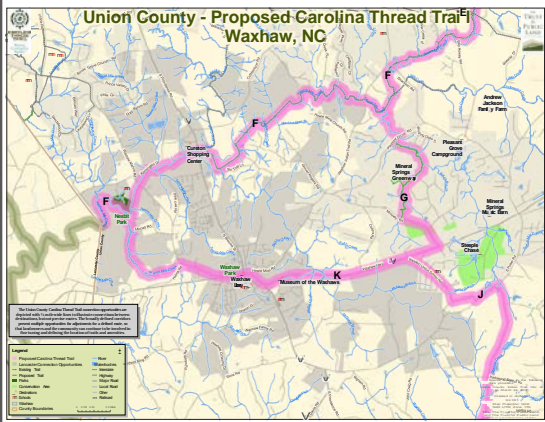
Carolina Thread Trail Master Plan for Union County and Participating Municipalities (2011)

The Carolina Thread Trail Master Plan calls for approximately 100 miles of trails across Union County. The conceptual greenway system consists of 1.7 miles of existing greenways, 34.3 miles of locally proposed trails, and 64.6 miles of newly proposed trails. Of the 11 proposed Carolina Thread Trail segments within Union County, two segments traverse the Town of Waxhaw. Segment F is a 10-mile river corridor in conjunction with a locally proposed plan that will cross the Lancaster County Line, follow

Lancaster County Line, follow

Twelve Mile Creek east until it joins the proposed trail along the creek and end at Segment E. Segment K is a 5.4-mile roadway right-of-way and river corridor trail that will go from Segment G and J and

take Waxhaw Highway west to Main then to Waxhaw Marvin Road and meeting with Twelve Mile Creek, to end at Segment F. Segment G, a 3.9-mile connector, will connect these two routes outside of the town's boundary, where it will take Waxhaw Highway to McNeely Road then go to Mineral Spring Greenway along Bates Branch.



Waxhaw 2020-2029 STIP Projects

- U-5769A – NC-16 (Providence Road South) from SR 1316 (Rea Road Extension) to SR 1321 (Cuthbertson Rd) in Weddington, widen to multi-lanes. Right-of-way (ROW) Year: 2024; Construction Year: 2027
- U-5769B – NC-16 (Providence Road South) from SR 1321 (Cuthbertson Rd) in Weddington to SR 3530 (Waxhaw Parkway) in Waxhaw, widen to multi-lanes. ROW Year: 2024; Construction Year: 2027
- EB-5950 – Kensington Drive corridor improvement project from NC-16 to Sunset Hill Road. ROW Year: 2022; Construction Year: 2024
- U-6248 – NC-75 at SR 1111 (Old Providence Road) intersection improvements. ROW Year: 2023; Construction Year: 2025
- P-5748A/N – CSX SG Line: Construct rail siding and grade separation in vicinity of SR 1300 (Helms Rd) and close at-grade crossings at SR 1300 (Helms Rd) and SR 1432 (Tory Path). Construction Year: 2022
- EB-5819 – Downtown Waxhaw pedestrian and bicycle facility enhancements (enhance pedestrian activity to/from angled parking on S. Main Street with new sidewalk and crosswalks; consolidate and remove driveways; improve access to David G. Barnes Park; install bike racks). Construction Year: 2022
- B-5791 – Waxhaw-Marvin Rd Bridge Replacement: Replace and widen bridge to three-lanes with multi-use path and sidewalk on each side. ROW Year: 2023; Construction Year: 2025



Parks & Recreation Strategic Master Plan: 2019-2028

This plan identifies the Town's goals and strategies for increasing the number and quality of recreational facilities throughout the Town and in the region. The plan follows the Town's 2012 parks and recreation plan that endorsed the creation of a Parks and Recreation Department (established in 2015). Existing recreational conditions within the Town of Waxhaw include 62 acres of recreational facilities, whereas best practices indicate a level closer to 152 acres of parkland given the Town's population. The plan recommendations were created after a review of the existing facilities and robust community engagement. Notable recommendations include the following:

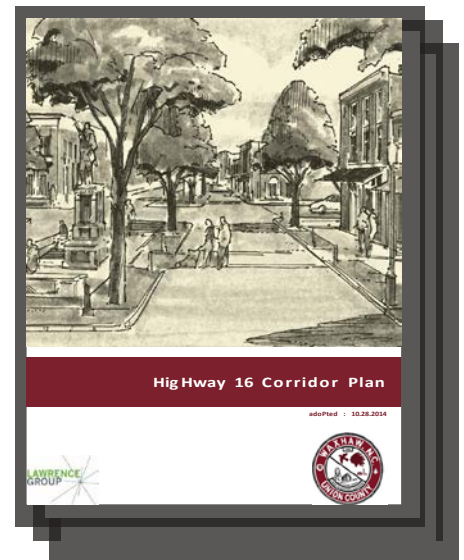
- Completion of HC Nesbit Park;
- Development of phase 1 of the Horton Property/David Barnes Park Expansion;
- Construction of Waxhaw Athletic Fields and support facilities;
- Completion of Town Creek Park;
- Land Acquisition for the Waxhaw Recreation/Community Center.

Each of the parks and recreational facility recommendations include phasing recommendations for the 10-year period and challenges and opportunities for development. Common among the noted challenges and opportunities is ensuring sidewalk and greenway access through the extension and connection with existing and new pedestrian and shared-use facilities like the Twelve Mile Creek Greenway and Carolina Thread Trail (CTT).



Highway 16 Corridor Plan (2014)

Highway 16 is Waxhaw's primary growth corridor, linking residents to Charlotte's retail and employment centers. Highway 16 is likely to be widened and improved within the next 10 years. Plan recommendations include improved accommodations for pedestrians and bicycles along and across Highway 16; construction of multi-use path along Highway 16 that connects to CTT, and higher development intensities to support extension of transit service to corridor. Recommended strategies include driveway consolidation, frontage roads, roundabouts, and improved roadway transitions and signaling. Complete street recommendations include separated bicycle facility on Highway 16 (6-10 years), a roundabout at Waxhaw Parkway and Highway 16 (11-15 years), and improved intersections for all users (6-10 years). Connectivity improvements include a proposed road connection through Lawson Phase 2 and 3 (1-5 years) and Prescott development (6-10 years) in addition to implementation of a CATS Express Bus Route connection (11-15 years) and a local bus circulator (16-20 years). Major economic development activities include the creation of a regional center at Byrum Village (6-10 years) and create a Trailhead park for the CTT at Prescott and Cureton (6-10 years).



Charlotte Regional Transportation Planning Organization (CRTPO) Comprehensive Transportation Plan (Adopted 2017, Revised 2020)

This plan is a Comprehensive Transportation Plan (CTP), a state-required long range plan that identifies improvements for all modes and does not consider fiscal constraints when recommending projects. The CTP is intended to provide a foundation for the region's transportation planning and considers a 30-year planning horizon. Projects from the CTP are further evaluated and prioritized within the region's Metropolitan Transportation Plan (MTP) and developed and programmed within the Transportation Improvement Program (TIP). The Town is within the CRTPO's planning jurisdiction, and the CTP includes pedestrian, roadway, and bicycle projects along many of Waxhaw's existing and planned main corridors and SUPs to connect neighborhoods.



Pedestrian Projects

- Bonds Grove Church Rd – Sidewalks from South Providence Road to Gray Byrum Road Ext
- Broomes Old Mill Rd – Sidewalks from South Providence Rd to Bonds Grove Church Rd Ext
- Gray Byrum Rd – Sidewalks from South Providence Rd to Waxhaw-Marvin Rd
- Cuthbertson Rd (SR 321) – Sidewalks from South Providence Rd to New Town Rd
- Cureton Pkwy – Sidewalks from South Providence Rd to Waxhaw-Marvin Rd
- Kensington Dr – Sidewalks from Jim Wilson Rd to Waxhaw-Marvin Rd
- Waxhaw-Marvin Rd – Sidewalks from Gray Byrum Rd to Waxhaw Pkwy Ext
- Waxhaw Pkwy – Sidewalks from South Providence Rd to Providence Rd
- South Providence Rd – Sidewalks from New Town Rd to Main Street
- Old Waxhaw-Monroe Road – Sidewalks from Main Street to Robinson Rd
- Waxhaw Hwy – Sidewalks from SC border to South Providence Rd
- Waxhaw Indian Trail Rd – Sidewalks from South Providence Rd to Bloomsberry Ln
- NC-75 / Old Waxhaw-Monroe Rd Connector – Sidewalks from Waxhaw Hwy to Old Waxhaw Monroe Road

Multi-Use Path Projects

- Shared-Use Path – From South Carolina State Line to Millbridge Subdivision
- Shared-Use Path – From Millbridge Subdivision to Shoppes at Howard's Mill
- Shared-Use Path – From Shoppes at Howard's Mill to Lawson Subdivision
- Shared-Use Path - From Lawson Subdivision to Waxhaw Indian-Trail Rd
- Shared-Use Path – From Millbridge Subdivision to Helms Rd
- Shared-Use Path – From Helms Rd to Rehobeth Rd



- Shared-Use Path – From McKibben Street to Parkwood School Rd
- Shared-Use Path – From Old Waxhaw-Monroe Rd to Parkwood School Rd

Bicycle Projects

- Broomes Old Mill Rd – On-road bicycle facility or multi-use path
- Bonds Grove Church Rd – On-road bicycle facility or multi-use path
- Twelve-mile Creek Greenway – From SC border to Newtown Rd
- Unnamed Greenway – From Millbridge COS to Western Union School Road (Along Waxhaw Hwy)
- Unnamed Greenway – From Old Waxhaw-Monroe Rd to Parkwood School Road
- Waxhaw Parkway On-Road Bicycle – From Waxhaw-Marvin Road to Davis Road and from Providence Road to Providence Road

Highway Projects

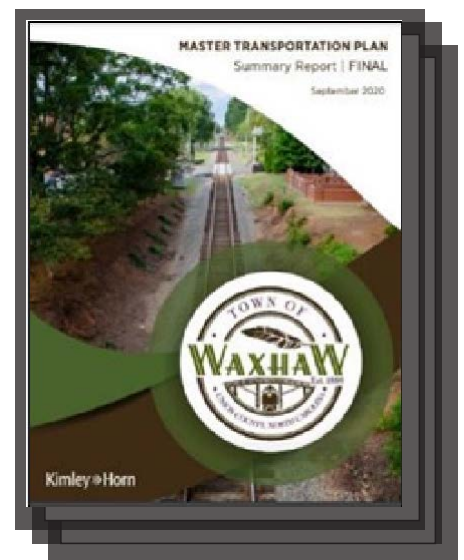
- Waxhaw Parkway (Boulevard) – From Davis Rd to Waxhaw Hwy and from Broome St to Providence Road
- Waxhaw Parkway – South Connector (Boulevard) – From Waxhaw Highway to Waxhaw Parkway
- Broomes Old Mill Rd (Minor Thoroughfare) – From Providence Rd to Bonds Grove Church Rd
- Bonds Grove Church Rd Ext (Minor Thoroughfare – From Providence Rd to Broomes Old Mill Rd

Waxhaw Transportation Master Plan (2020)

The plan identified that transportation needs are exceeding funding that is available through existing local and state sources. The widening of NC-16 (Providence Road) was identified to be a critical improvement in addition to the completion of the Waxhaw Parkway to help alleviate downtown traffic. It was recommended that the Town explore options for smaller connections and realignments to improve connectivity and safety. The following list identifies projects of highest importance to the community, followed by bicycle and pedestrian specific projects in Tier 2.

Tier 1 project prioritization projects:

- NC-16 (Providence Rd) at NC-75 (South Main St) – intersection improvements
- Alma Blvd, Kingston Dr, and Red Oaks Trail Crosswalks – create crosswalks across NC-16
- Waxhaw Parkway Extension East Part 1 – New road from existing terminus to Waxhaw-Indian Trail Rd
- Broome Street (NC-16) Center Turn Lane – Widening from North Church St to South Main St
- Waxhaw Parkway Extension East Part 2 – New roadway from Waxhaw Indian Trail Rd to Waxhaw Highway (NC-75)
- Waxhaw-Marvin Rd at Bonds Grove Church Rd – Intersection improvements
- Waxhaw-Marvin Rd at Pine Oak Road – Intersection Improvement



- Waxhaw Parkway Extension West – New roadway from existing terminus to Waxhaw-Marvin Rd at Helms Road to connect P-5748 with U-5769

Bicycle and Pedestrian projects were listed in Tier 2 projects, including:

- Howie Mine Rd Sidewalk – Sidewalk repair/construction from NC-16 (Broome St) to Waxhaw Indian Trail Rd
- Pine Oak Rd Sidewalk – New sidewalk from NC-16 (Providence Rd) to Buckeye Circle
- Twelve Mile Creek Greenway – New multi-use path between Nesbit Park and Town Creek Park
- Additional funded projects not in the STIP:
- W-5710L – NC-16 at Gray Byrum Road: Intersection realignment, signalization, and turn lanes
- NC-75 at Old Providence Rd – Signalized intersection and realignment or single lane roundabout. Design: 2021; Construction: 2025
- Kensington Drive at Morehouse Drive – Left turn lane into Morehouse Drive. Construction: 2020
- Waxhaw-Marvin Rd Sidewalk – 1750ft of new sidewalk on west side of Waxhaw-Marvin Rd from Eutaw Dr to Follondale Rd

Union County 2050 Comprehensive Plan (2021)

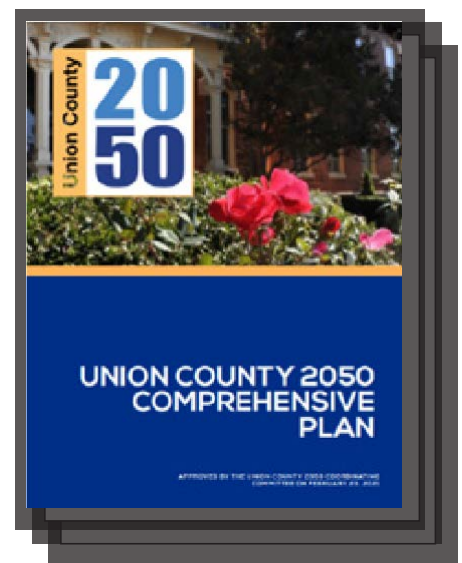
The proposed land use map includes single family residential, mixed residential, and neighborhood centers in and near Waxhaw with employment corridors primarily along NC-75 and NC-16. The Union County Comprehensive Plan supports the Waxhaw Parkway construction, despite not yet being in the MTP in addition to the NC16 widening currently in the STIP. Union County has not accepted maintenance responsibility for trails or other facilities built as part of neighborhood additions nor has committed to building trails or greenways identified in the Carolina Thread Trail, County Multi-Modal Plan, or Parks and Recreation Master Plan. A quarter-cent sales tax, expected to generate more than \$5 million per year is recommended as the revenue source for many of the new initiatives, including increased transportation and recreation investments.

Town of Waxhaw Future Land Use Plan (2020)

The future land use plan identifies six neighborhood centers and three economic centers within the Town of Waxhaw. The neighborhood centers are located at:

- Providence Rd South and Bonds Grove Church Rd;
- Providence Rd South and Ski Trail Ln;
- Providence Rd South and Alma Blvd;
- Pine Oak Rd and Waxhaw-Marvin Rd;
- Waxhaw-Marvin Rd and Waxhaw Parkway Extension;
- Waxhaw Highway.

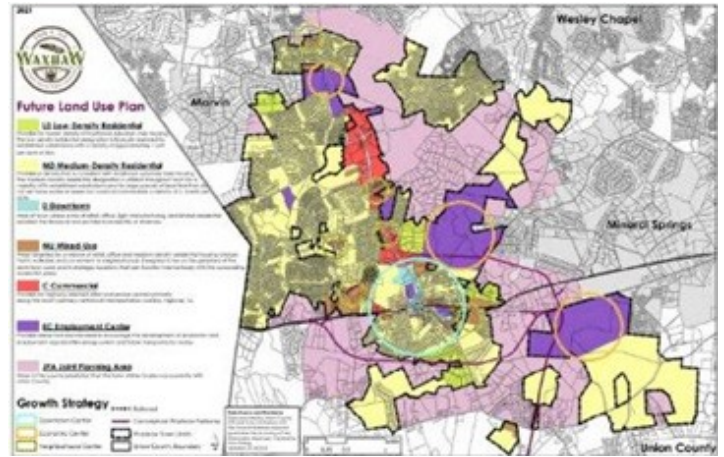
Neighborhood centers will allow for smaller scale offices, neighborhood-oriented retail and services, as well as townhomes, duplexes, triplexes, and quadraplexes. These areas are intended to encourage the creation of compact and walkable mixed-use-



-neighborhoods.

Employment centers will be located along Waxhaw Highway and Waxhaw Parkway, north of Waxhaw Parkway, and along Providence Road South near Gray Byrum Rd. Employment centers will allow for office parks, light or high-tech industrial campuses, warehousing, or distribution facilities located near regional transportation routes.

Commercial zoning will occur primarily along NC-16 South Providence Road and N Broome St. The proposed future land use map will continue to include medium-density residential as the town's primary land use.



Town of Waxhaw 2021 Americans with Disabilities Act Transition Plan and Self-Evaluation (2021)

The plan details how the Town will seek compliance with the Americans with Disabilities Act across mediums such as transportation facilities, access to public buildings, and telecommunication. For pedestrian planning, the plan reports that the Town has created a curb ramp inventory and assessment, and that ADA-compliant curb ramps will be installed, repaired, and/or replaced based on use and need.

NCDOT 2022-2026 Highway Maintenance Improvement Program (HMIP) – Division 10

NCDOT Division 10 has scheduled several NCDOT maintained roadways within Waxhaw for resurfacing, preservation, and rehabilitation from FY2022 through FY2026 (Figure 22). Resurfacing projects specifically present opportunities to update pavement markings like crosswalks, stop bars, and even on-street bicycle lanes to support active transportation. This Plan highlights coordination between resurfacing and intersection improvements, including those along NC-75 (year 2023), Cuthbertson Rd, and Gray Byrum Rd (both year 2024). The FHWA guidebook, "[Incorporating On-Road Bicycle Networks into Resurfacing Projects](#)," describes how both bicycle and pedestrian safety improvements can be bundled with planned roadway improvements like resurfacing. Incorporating pedestrian projects as part of scheduled NCDOT resurfacing projects is highlighted in this Plan's Implementation chapter.

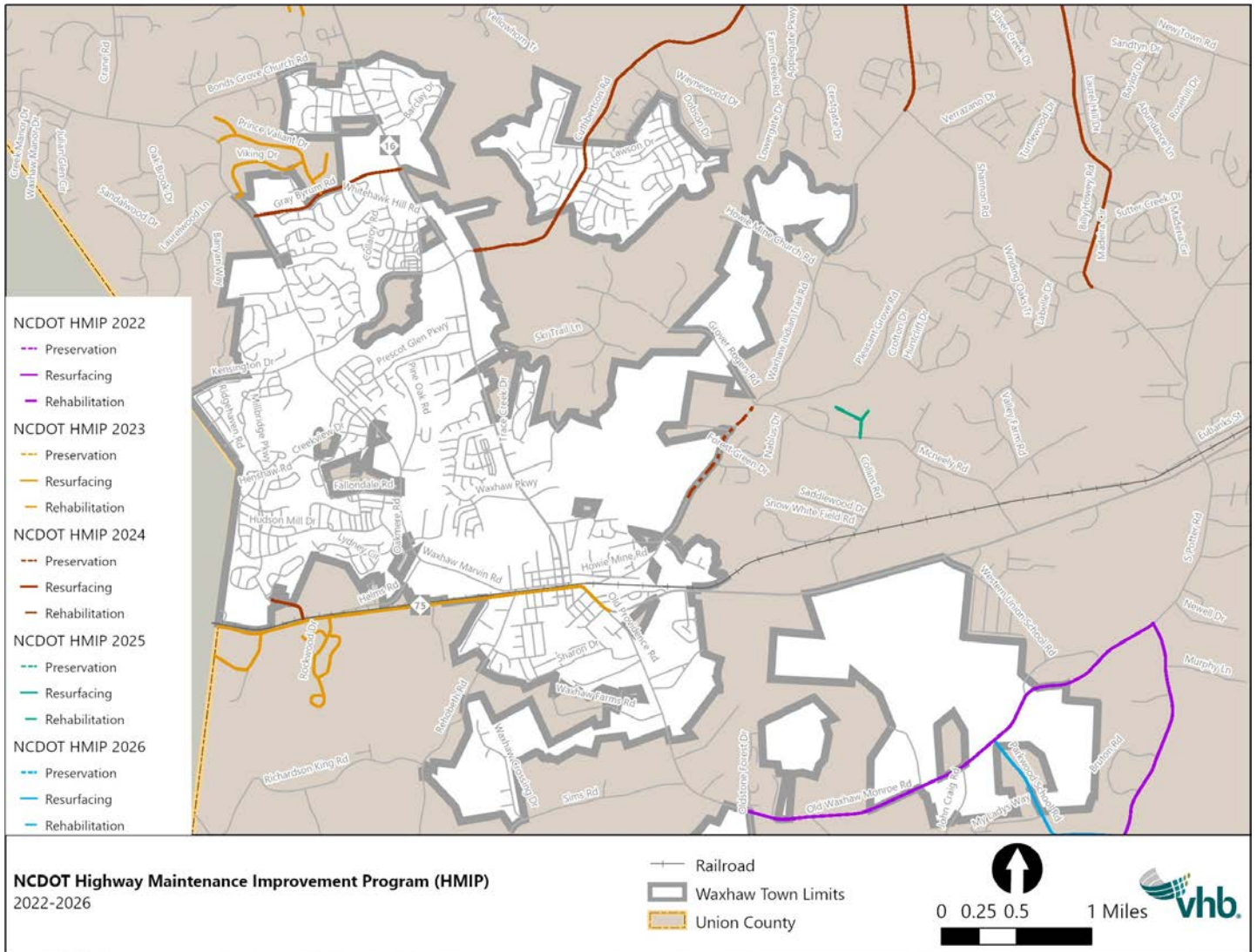


Figure 22 – Waxhaw Area HMIP Projects (2022-2026)





Credit: Town of Waxhaw





Recommended Facilities

3

This section outlines the infrastructure recommendations intended to promote the development of a coherent and navigable network for a sustainable active transportation network. It also outlines the planning process pedestrian facilities available to the Town, as well as provides guidance for implementation.



3.1 Overview

Input from the public and Steering Committee assisted in prioritizing the most important opportunities for the Town and determined the most relevant projects to meet the Town's near-term and high community priority pedestrian safety needs. These recommendations will serve to enhance the abilities an already active community to safely and conveniently access its daily and recreational needs.

3.2 Key Inputs for Recommendations

Inputs for the development of project recommendations included identifying priority corridors, evaluation criteria, projects, and then scoring those projects. These steps and the results are explored below.

3.3 Priority Corridors

Priority corridors serve as the trunk of the network, with secondary corridors branching out and filling in connections to neighborhoods and other destinations. Priority corridors (purple lines on Figure 23) represent the most direct routes between residents and desired destinations and were identified for higher priority projects. Secondary corridors (yellow lines) support the primary corridors, though they may not form a complete network. These are the corridors future iterations of the Waxhaw Pedestrian Plan should consider for improvement.



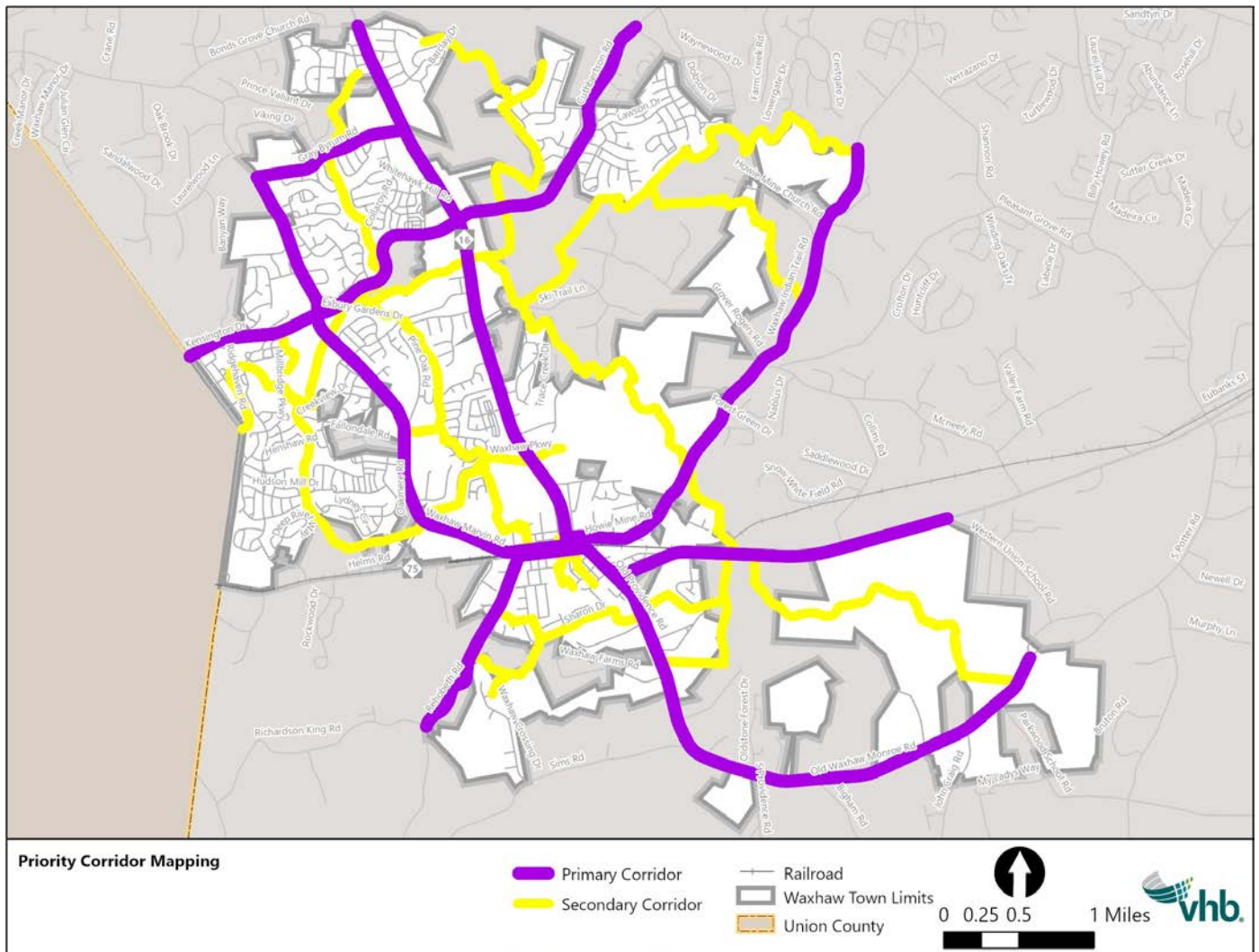


Figure 23 - Priority Corridor Network

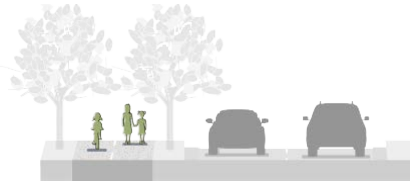
3.4 Facility Recommendations

This section outlines the final list of recommended infrastructure projects. These projects have been scored and ranked according to a set of evaluation criteria described in the following section. Figure 24, Figure 25, Figure 26, Figure 27, and Figure 28 show views of the projects by Northwest, Northeast, Southwest, Southeast, and Downtown Waxhaw areas, respectively. Table 6 provides project details, and projects are listed in an unranked order corresponding to their map ID number (e.g. "Path-01" or "Int-10"). The project team applied an iterative process involving stakeholder direction, geographic distribution, significant destinations, the existing pedestrian network, and priority corridors to identify these projects. Specific facility recommendations, such as number of sidewalks, SUP locations, and greenway alignments, were identified based partly upon best practices for active transportation design. These recommendations are anticipated for continued refinement throughout the project development process. Table 5 defines these projects, and refer to the Appendix for additional guidance.



Access improvement

Includes the extension of sidewalk, removal of barriers, and other small modifications at a specific location to increase pedestrian access.



Shared-Use Path (SUP)

A paved facility for non-motorized users that is separate from the roadway; commonly 10' wide.



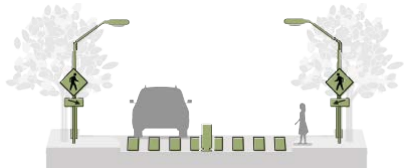
Bridge

A structure for use by pedestrians and non-motorized users that crosses water features and other barriers; may connect greenway segments.



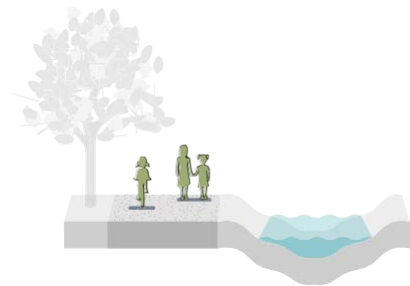
Sidewalk

A paved facility for non-motorized users (and typically excluding bicyclists where prohibited) above the curb and 5' wide.



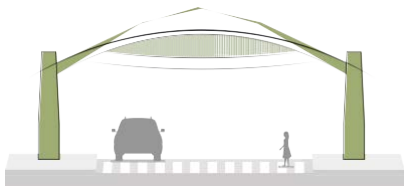
Crossing improvement

Includes signals, crosswalks, beacons, and other enhancements to support pedestrians crossing at signalized and unsignalized locations.



Greenway

A separated SUP that follows a natural feature like a stream, river, or utility easement (among other features). May be paved or natural surface.



Gateway

Signage, wayfinding, and other modifications to signify a transition to a slower speed and expectation of pedestrians.



SUP and Sidewalk

The arrangement of a SUP on one side of the road with a sidewalk on the other side of the roadway to accommodate both pedestrians and bicyclists; dependent on site constraints.



Traffic calming

Includes speed reduction treatments, pedestrian visibility enhancements, and other measures to reduce vehicle speeds and improve yielding to pedestrians.

Table 5 – Definitions of Recommended Improvements

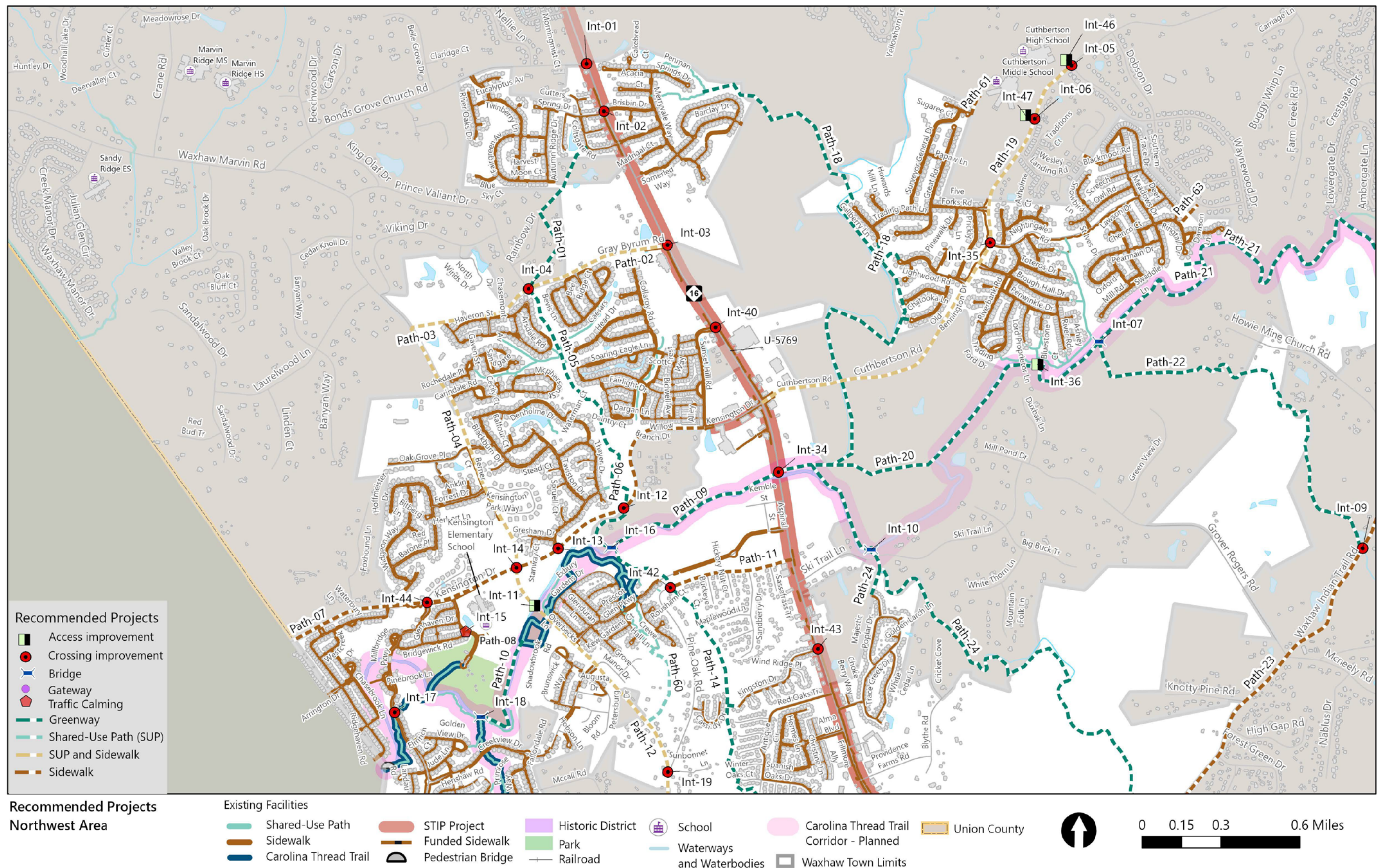


Figure 24 - Recommended Projects, Northwest Waxhaw

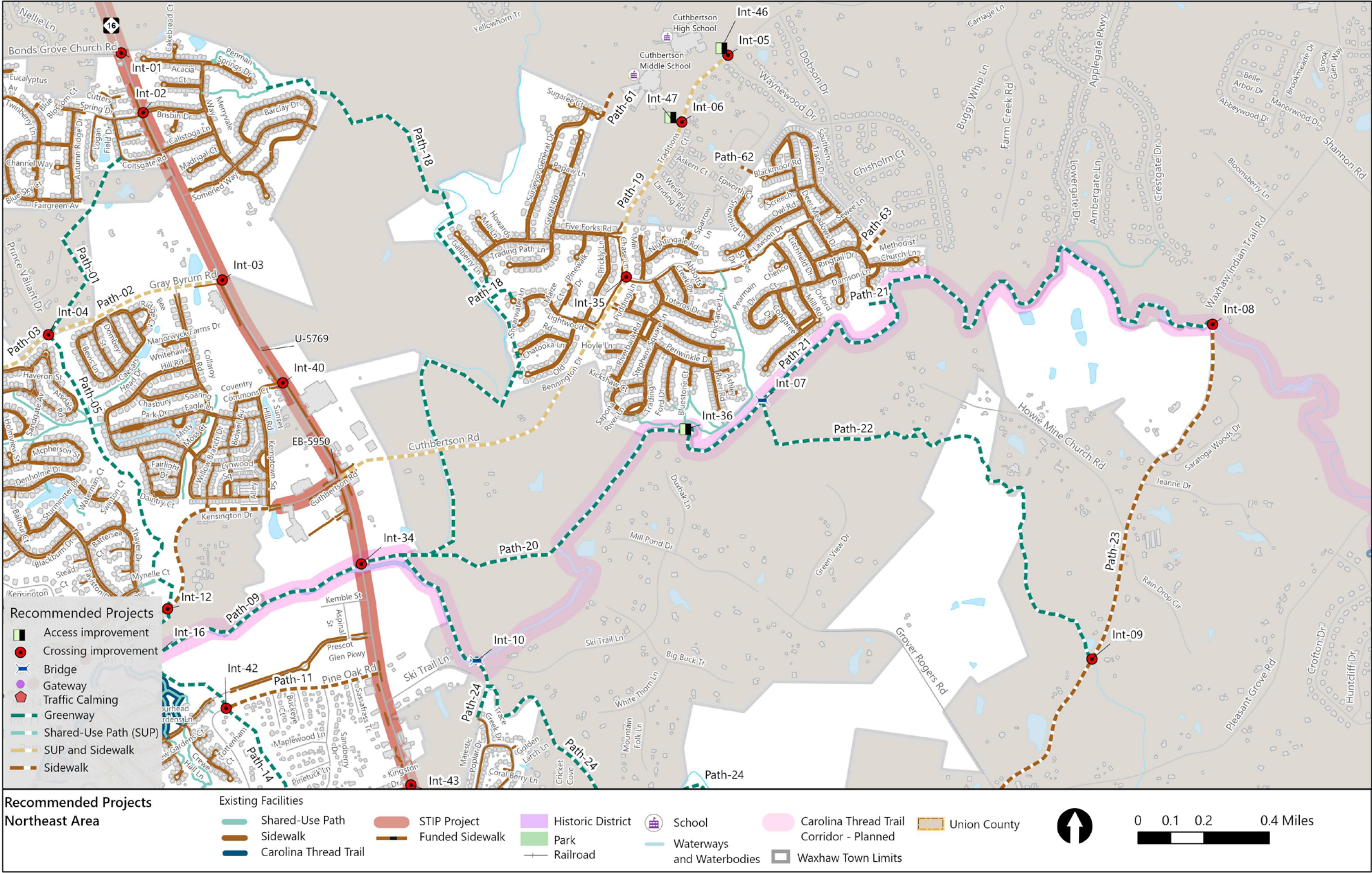
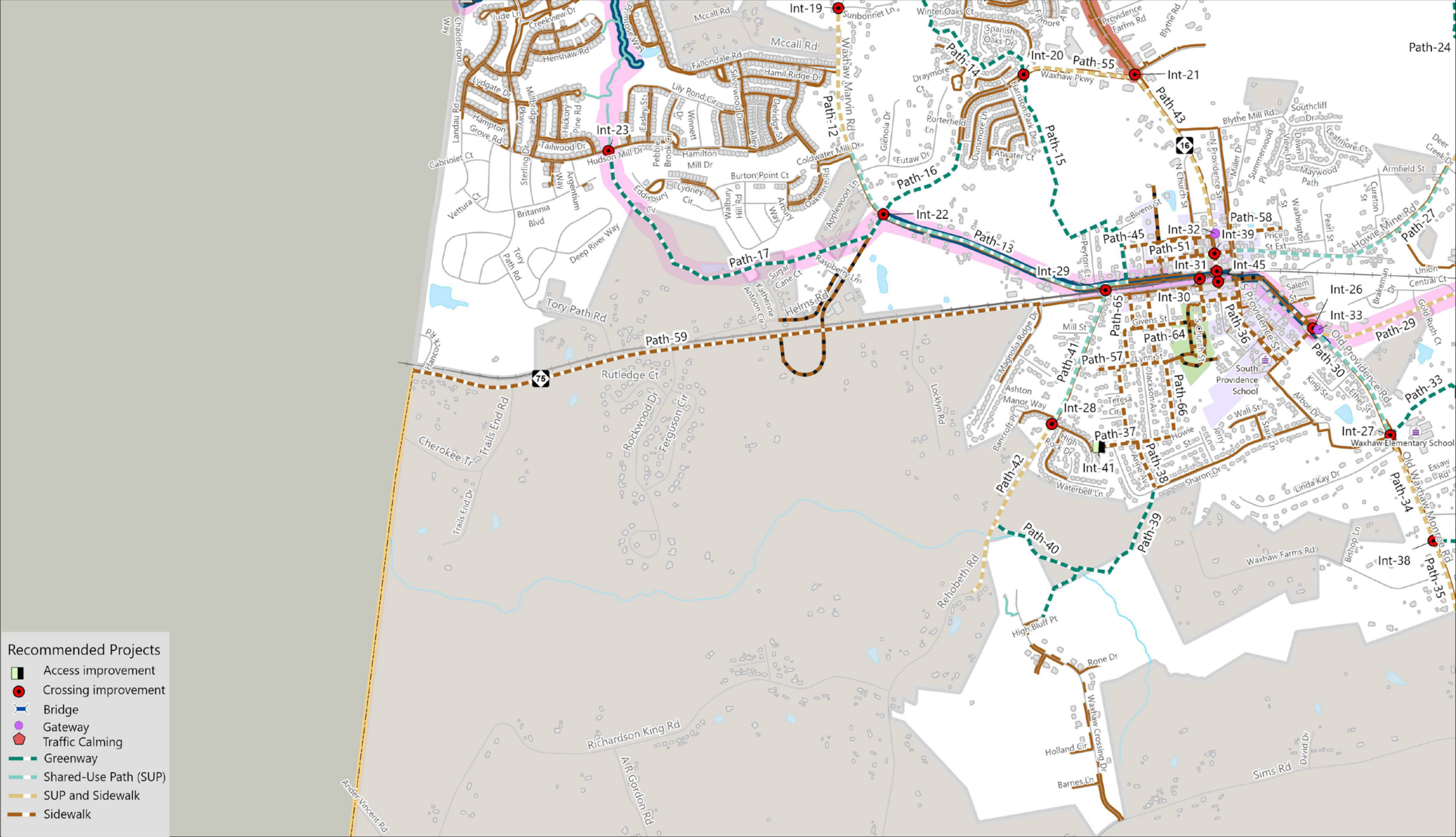


Figure 25 - Recommended Projects, Northeast Waxhaw



**Recommended Projects
Southwest Area**

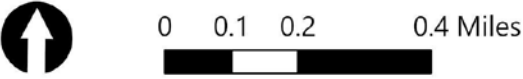


Figure 26 – Recommended Projects, Southwest Waxhaw

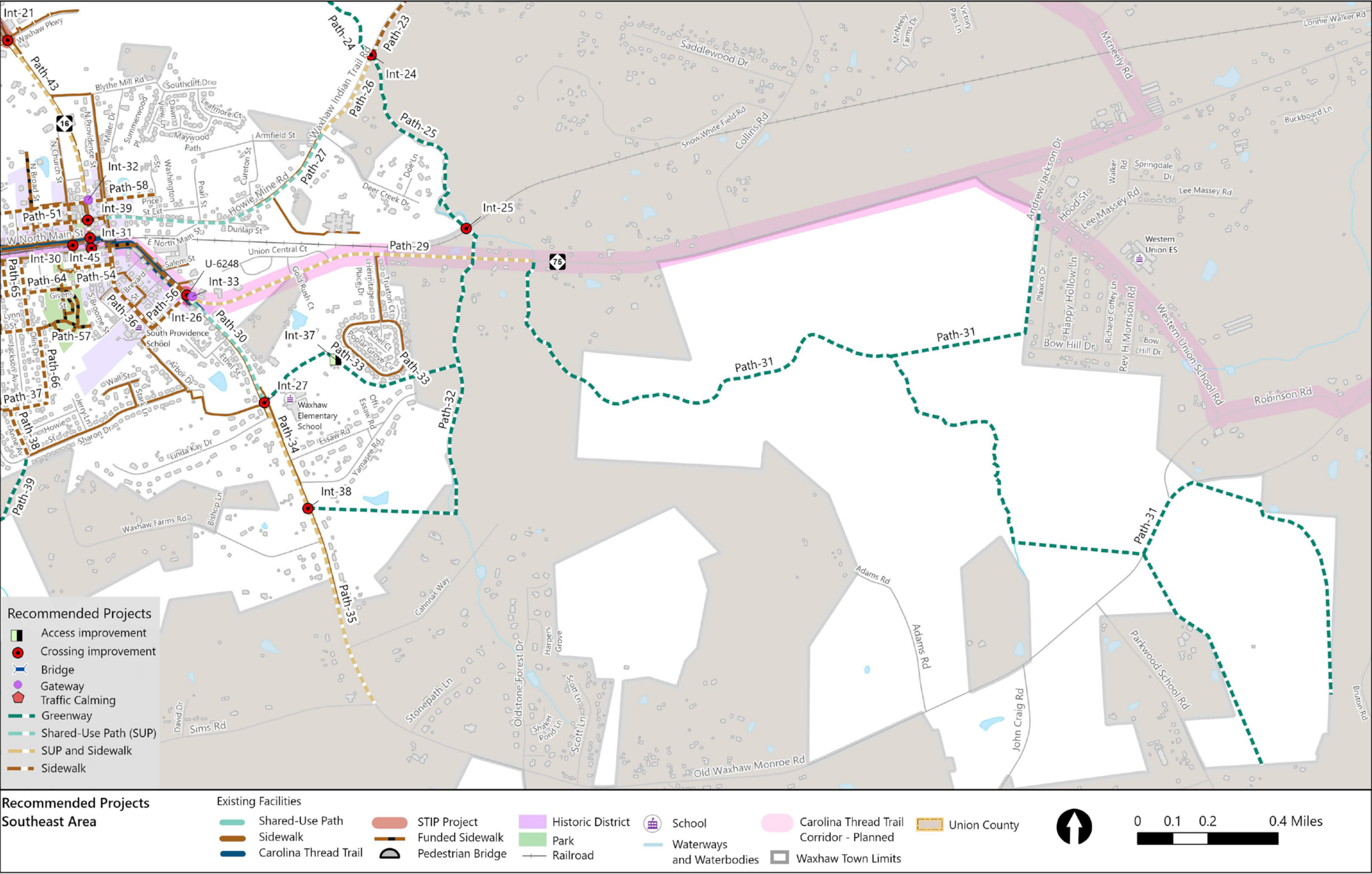


Figure 27 - Recommended Projects, Southeast Waxhaw

Table 6 - Facility Recommendations - Unranked

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Int-01	Crossing improvement	NC 16 and Bonds Grove Church Rd	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-02	Crossing improvement	NC 16 and Cutter Spring Dr	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-03	Crossing improvement	NC 16 and Gray Byrum Rd	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-04	Crossing improvement	Gray Byrum Rd and Prince Valiant Dr	N/A	N/A	Enhanced crossing (ramps, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-05	Crossing improvement	Cuthbertson Rd at Waynewood Dr	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-06	Crossing improvement	Cuthbertson Rd and High School entrance	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	Visualization
Int-07	Bridge	Machine Branch Greenway and Cureton Lawson Greenway	N/A	N/A	Bridge crossing	Mobility	Non-System	N/A	
Int-08	Crossing improvement	Waxhaw Indian Trail Rd at Lawson Chapel Greenway	N/A	N/A	Greenway crossing (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-09	Crossing improvement	Waxhaw Indian Trail Rd at Machine Branch Greenway	N/A	N/A	Greenway crossing (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	System	N/A	

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Int-10	Bridge	Blythe Creek Greenway I near Cureton Lawson Greenway	N/A	N/A	Bridge crossing	Mobility	Non-System	N/A	
Int-11	Access improvement	Waxhaw Marvin Rd at Ex-bury Gardens Dr	N/A	N/A	Greenway crossing under bridge	Accessibility	Non-System	N/A	Visualization
Int-12	Crossing improvement	Kensington Dr and Sonny Way Greenway III	N/A	N/A	Greenway crossing under bridge	Safety	Non-System	N/A	Visualization
Int-13	Crossing improvement	Kensington Dr and Morehouse Dr	N/A	N/A	Greenway crossing (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	Non-System	N/A	
Int-14	Crossing improvement	Kensington Dr and Waxhaw Marvin Rd	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-15	Traffic Calming	HC Nesbit Park Rd and Bridgewick Rd	N/A	N/A	Traffic calming near school	Safety	Non-System	N/A	
Int-16	Bridge	Sonny Way Greenway	N/A	N/A	Bridge crossing for multiple greenway sections, also wayfinding, benches, and fixit	Mobility	Non-System	N/A	
Int-17	Crossing improvement	Millbridge Pkwy and Millbridge Trails	N/A	N/A	Greenway crossing (ramps, marked crosswalk, signage, curb extensions)	Safety	Non-System	N/A	
Int-18	Bridge	Twelve Mile Creek Greenway and Millbridge Trails	N/A	N/A	Greenway bridge	Mobility	Non-System	N/A	
Int-19	Crossing improvement	Waxhaw Marvin Rd and Sunbonnet Ln	N/A	N/A	Crossing enhancement (ramps, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-20	Crossing improvement	Waxhaw Pkwy at Sonny Way Greenway II	N/A	N/A	Greenway crossing (ramps, marked crosswalk, signage, curb extensions)	Safety	Non-System	N/A	

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Int-21	Crossing improvement	NC 16 and Waxhaw Pkwy	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-22	Crossing improvement	Waxhaw Marvin Rd and Waxhaw Ridge Trail	N/A	N/A	Greenway crossing (ramps, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-23	Crossing improvement	Hudson Mill Dr and Waxhaw Ridge Trail	N/A	N/A	Greenway crossing under bridge	Safety	Non-System	N/A	
Int-24	Crossing improvement	Waxhaw Indian Trail Rd and Blythe Creek Greenway I	N/A	N/A	Greenway crossing under railroad	Safety	System	N/A	
Int-25	Crossing improvement	Blythe Creek Greenway II and Railroad	N/A	N/A	Greenway crossing	Safety	Non-System	N/A	
Int-26	Crossing improvement	NC 75 and Old Providence Rd	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-27	Crossing improvement	Old Providence Rd and Arbor Dr	N/A	N/A	Crossing enhancement (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-28	Crossing improvement	Rehobeth Rd and High Rock Dr	N/A	N/A	Crossing enhancement (ramps, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-29	Crossing improvement	Rehobeth Rd and Rail Rd	N/A	N/A	Crossing enhancement (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-30	Crossing improvement	S Church St and RR Crossing	N/A	N/A	Crossing enhancement on both sides Railroad Crossing (ramps, marked crosswalk, signage, curb extensions)	Safety	Non-System	N/A	

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Int-31	Crossing improvement	NC 75 and S Broome St	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, Leading Pedestrian Internal (LPI), curb extensions, and lighting)	Safety	System	N/A	Project in progress
Int-32	Gateway	NC 16 and Price St	N/A	N/A	Wayfinding	Accessibility	System	N/A	
Int-33	Gateway	NC 75 and Old Providence Rd	N/A	N/A	Wayfinding	Accessibility	System	N/A	
Int-34	Access improvement	NC 16 and Twelve Mile Creek Greenway	N/A	N/A	Greenway crossing under bridge	Accessibility	System	N/A	
Int-35	Crossing improvement	Cuthbertson Rd and Lawson Dr	N/A	N/A	Crossing enhancement (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-36	Access improvement	Cureton Lawson Greenway and Lawson Community	N/A	N/A	Access to greenway from Lawson	Accessibility	Non-System	N/A	
Int-37	Access improvement	Waxhaw Elementary Trail and Poplar Grove Circle	N/A	N/A	Access to greenway from Hermitage Place and Museum of the WYSACKY	Accessibility	Non-System	N/A	
Int-38	Crossing improvement	Waxhaw Monroe Rd and Blythe Creek Greenway III	N/A	N/A	Crossing enhancement (ramps, RRFB, marked crosswalk, signage, curb extensions)	Safety	System	N/A	
Int-39	Crossing improvement	NC 16 and Howie Mine Rd	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	Project in progress

Map of Proposed Improvements									
MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Int-40	Crossing improvement	NC 16 and Sunset Hill Rd	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-41	Access improvement	High Rock Dr and Sharon Dr	N/A	N/A	Remove barrier in roadway	Accessibility	Non-System	N/A	Visualization
Int-42	Crossing improvement	Pine Oak Rd at Sonny Way Greenway Phase II	N/A	N/A	Greenway crossing under bridge	Safety	System	N/A	
Int-43	Crossing improvement	NC 16 at Kingston Dr	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	Visualization
Int-44	Crossing improvement	Millbridge Pkwy and Kensington Dr	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-45	Crossing improvement	NC 16 at East North Main St	N/A	N/A	Signalized crossing improvement (ramps, marked crosswalks, pedestrian signal phase and control, and lighting)	Safety	System	N/A	
Int-46	Access improvement	Cuthbertson High School	N/A	N/A	Pedestrian access within campus from Cuthbertson Rd	Accessibility	Non-System	N/A	
Int-47	Access improvement	Cuthbertson Middle School	N/A	N/A	Pedestrian access within campus from Cuthbertson Rd	Accessibility	Non-System	N/A	
Path-01	Greenway	Sonny Way Greenway	Gray Byrum Rd	Coltsgate Rd	Greenway connection	Mobility	Non-System	3,510	
Path-02	SUP and Sidewalk	Gray Byrum Rd	Prince Valiant Dr	NC 16	SUP on south and sidewalk on north	Safety	System	2,950	
Path-03	SUP and Sidewalk	Haveron St	Waxhaw Marvin Rd	Prince Valiant Dr	SUP on south and sidewalk on north	Safety	System	2,580	
Path-04	SUP and Sidewalk	Waxhaw Marvin Rd	Kensington Dr	Haveron St	SUP on east and sidewalk on west	Safety	System	5,320	

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Path-05	Greenway	Sonny Way Greenway III	Kensington Dr	Gray Byrum Rd	Greenway connection	Mobility	Non-System	6,330	
Path-06	Sidewalk	Kensington Dr	Waxhaw Marvin Rd	Sunset Hill Rd	Sidewalk on north side	Safety	Non-System	5,440	
Path-07	Sidewalk	Kensington Dr	County limits	Waxhaw Marvin Rd	Sidewalk infill	Mobility	System	4,780	
Path-08	Sidewalk	N/A	Kensington Elementary School	HC Nesbit Park Rd	Connecting sidewalk	Safety	Non-System	260	
Path-09	Greenway	Twelve Mile Creek Greenway	Wysacky Greenway II	NC 16	Greenway	Mobility	Non-System	3,810	
Path-10	Greenway	Twelve Mile Creek Greenway	County limits	Wysacky Greenway II	Greenway	Mobility	Non-System	2,430	
Path-11	Sidewalk	Pine Oak Rd	Sonny Way Greenway Phase II	NC 16	Sidewalk on one side	Safety	System	2,590	
Path-12	SUP and Sidewalk	Waxhaw Marvin Rd	Coldwater Mill Dr	Kensington Dr	SUP on east side, sidewalk on west side	Safety	System	7,460	
Path-13	SUP	Waxhaw Marvin Rd	N Jackson St	Coldwater Mill Dr	SUP on east side	Safety	System	4,980	
Path-14	Greenway	Sonny Way Greenway II	Waxhaw Marvin Pkwy	Wysacky Greenway III	Greenway	Mobility	Non-System	8,640	Visualization
Path-15	Greenway	Sonny Way Greenway I	W North Main St	Waxhaw Marvin Pkwy	Greenway	Mobility	Non-System	4,450	
Path-16	Greenway	Waxhaw Pkwy Connector	Waxhaw Marvin Rd	Waxhaw Pkwy	Greenway connection	Mobility	Non-System	1,720	
Path-17	Greenway	Waxhaw Ridge Trail	Waxhaw Marvin Rd	Hudson Mill Dr	Greenway	Mobility	Non-System	5,530	
Path-18	Greenway	West Fork Greenway	NC 16	Providence Rd	Greenway	Mobility	Non-System	14,950	
Path-19	SUP and Sidewalk	Cuthbertson Rd	Waynewood Dr	NC 16	SUP on west side, sidewalk on east side	Safety	System	10,220	
Path-20	Greenway	Cureton Lawson Greenway	Machine Branch Greenway	West Fork Greenway	Greenway	Mobility	Non-System	10,280	

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Path-21	Greenway	Lawson Wesley Chapel Greenway	Waxhaw Indian Trail Rd	Cureton Wesley Chapel Greenway	Greenway	Mobility	Non-System	12,060	
Path-22	Greenway	Machine Branch Greenway	Waxhaw Indian Trail Rd	Cureton Wesley Chapel Greenway	Greenway	Mobility	Non-System	9,150	
Path-23	Sidewalk	Waxhaw Indian Trail Rd	Blythe Creek Greenway I	Lawson Wesley Chapel Greenway	Sidewalk connection dependent on annexation or development	Safety	System	13,100	
Path-24	Greenway	Blythe Creek Greenway I	Waxhaw Indian Trail Rd	Ski Trail Ln	Greenway	Mobility	Non-System	11,830	
Path-25	Greenway	Blythe Creek Greenway II	NC 75	Waxhaw Indian Trail Rd	Greenway	Mobility	Non-System	4,000	
Path-26	SUP and Sidewalk	Waxhaw Indian Trail Rd	Deer Creek Dr	Blythe Creek Greenway II	SUP on east side, sidewalk on west side	Safety	System	1,410	
Path-27	SUP	Howie Mine Rd	N Providence Rd	Deer Creek Rd	SUP on south side	Safety	System	3,820	
Path-28	Sidewalk	NC 75	Old Providence Rd	Salem St	Infill sidewalk on east side	Mobility	System	510	
Path-29	SUP and Sidewalk	NC 75	Adam's Look Greenway	Mccain St	Sidewalk on northside, SUP on south	Safety	System	5,380	
Path-30	SUP	Old Providence Rd	Arbor Dr	Mccain St	SUP on east side	Safety	System	2,030	
Path-31	Greenway	Adam's Loop Greenway	Old Waxhaw Monroe Rd	NC 75	Greenway	Mobility	Non-System	27,034	
Path-32	Greenway	Blythe Creek Greenway III	Old Waxhaw Monroe Rd	NC 75	Greenway	Mobility	Non-System	6,170	
Path-33	Greenway	Waxhaw Elementary Trail	Old Providence Rd	Blythe Creek Greenway III	Greenway connection	Mobility	Non-System	3,720	
Path-34	SUP and Sidewalk	Old Waxhaw Monroe Rd	Blythe Creek Greenway III	Arbor Dr	Upgrade sidewalk on east side to SUP, sidewalk on west side	Safety	System	1,720	
Path-35	SUP and Sidewalk	Old Waxhaw Monroe Rd	Sims Rd	Blythe Creek Greenway III	Sidewalk on east side, SUP on west	Safety	System	3,120	

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Path-36	Sidewalk	S Providence Rd	NC 75	Mccain St	Sidewalk infill	Mobility	System	1,460	
Path-37	Sidewalk	Stanton Dr	West of Sharon Dr	Olin Dr	Sidewalk extension	Safety	Non-System	1,160	
Path-38	Sidewalk	Anne Ave	Sharon Dr	Stanton Dr	Sidewalk, location TBD	Safety	Non-System	730	
Path-39	Greenway	Rane Branch Greenway I	Waxhaw Crossing Dr	Sharon Dr	Greenway	Mobility	Non-System	2,880	
Path-40	Greenway	Rane Branch Greenway II	Rane Branch Greenway I	Rehobeth Rd	Greenway connection	Mobility	Non-System	1,510	
Path-41	SUP	Rehobeth Rd	High Rock Dr	NC 75	SUP on west side	Safety	System	2,110	
Path-42	SUP and Side-walk	Rehobeth Rd	Rane Branch Greenway II	High Rock Dr	SUP on west side, sidewalk on east side	Safety	System	2,870	
Path-43	SUP and Side-walk	NC 16	W Price St	South of Waxhaw Pkwy	SUP on east side, sidewalk on west. Extension of STIP project	Safety	System	2,750	
Path-44	Sidewalk	W Price St	N Church St	NC 16	Wide sidewalk both sides	Safety	Non-System	260	
Path-45	Sidewalk	W Price St	N Broad St	N Jackson St	Wide sidewalk both sides	Safety	Non-System	540	
Path-46	Sidewalk	W Price St	N Church St	N Broad St	Infill sidewalk on north side, side-walk on south side	Mobility	Non-System	550	Project in progress
Path-47	Sidewalk	NC 16	E North Main St	Howie Mine Rd	Wide sidewalk both sides	Safety	System	270	
Path-48	Sidewalk	McDonald St	N Church St	NC 16	Infill wide sidewalk both sides	Mobility	Non-System	270	Project in progress
Path-49	Sidewalk	N Church St	E North Main St	W Price St	Infill wide sidewalk both sides	Mobility	Non-System	540	
Path-50	Sidewalk	Mcdonald St	N Providence Rd	NC 16	Infill wide sidewalk south side	Mobility	System	270	
Path-51	Sidewalk	Mcdonald St	N High St	N Church St	Sidewalk both sides	Safety	Non-System	810	
Path-52	Sidewalk	S Church St	Downtown Park	NC 75	Sidewalk both sides	Safety	Non-System	690	Project in progress

MAP ID	TYPE	ROUTE	FROM or CROSS-STREET	TO	LENGTH (ft)	NCDOT SYSTEM	PROJECT TYPE	IMPROVEMENT DESCRIPTION	PHASE (If Applicable)
Path-53	Sidewalk	S Broome St	Caldwell St	NC 75	Sidewalk both sides	Safety	Non-System	270	
Path-54	Sidewalk	Caldwell St	S Church St	S Providence St	Sidewalk both sides	Safety	Non-System	540	
Path-55	SUP and Side-walk	Waxhaw Pkwy	Harrison Park Dr	NC 16	Upgrade sidewalk on north side to SUP, and infill sidewalk on south side; address ADA issues	Mobility	Non-System	1,720	
Path-56	Sidewalk	Mccain St	S Providence Rd	Old Providence Rd	Sidewalk both sides	Safety	System	720	
Path-57	Sidewalk	Lynne St	Downtown Park	Lynne St	Sidewalk one side	Safety	Non-System	1,086	
Path-58	Sidewalk	Price St	Washington St	NC 16	Sidewalk both sides	Safety	Non-System	1,060	
Path-59	Sidewalk	NC 75	Magnolia Ridge Rd	Trails Ends Rd	Sidewalk one side	Safety	System	8,070	
Path-60	SUP	N/A	Waxhaw Marvin Rd	Twelve Mile Creek Greenway	SUP in coordination with new development	Safety	Non-System	1,860	
Path-61	Sidewalk	N/A	Cuthbertson Middle School	Sugaree Ct	Sidewalk connection to Middle School from existing cul-de-sac	Safety	Non-System	460	
Path-62	Sidewalk	N/A	Wesley Landing Rd	Blackmoor Rd	Sidewalk connection between Lawson and Champion Woods	Safety	Non-System	390	
Path-63	Sidewalk	N/A	Dobson Dr	Ringtail Dr	Sidewalk connection between Lawson neighborhoods	Safety	Non-System	460	
Path-64	Sidewalk	Givens St	Downtown Park	S Jackson St	Sidewalk one side	Safety	Non-System	675	
Path-65	Sidewalk	Anne Ave	Stanton Dr	NC 75	Sidewalk one side	Safety	Non-System	2,538	
Path-66	Sidewalk	Olin Dr	Stanton Dr	NC 75	Sidewalk one side	Safety	Non-System	2,339	

3.4.1 Evaluation Criteria

During the third Steering Committee meeting, members were asked to consider evaluation criteria for inclusion in the Plan project rankings. The Steering Committee reviewed the previous ranking structure from the 2012 plan that was weighted towards access to destinations and difficulty. The majority of the Steering Committee requested weighted criteria of High, Medium, and Low (maximum 5, 3, and 1 points, respectively) across the following variables. Two categories, "NC-16" and "Anticipated Use," were dropped from consideration based on Steering Committee polling.

The following evaluation criteria advanced after discussion from Steering Committee Meeting #3 (see in Table 7):

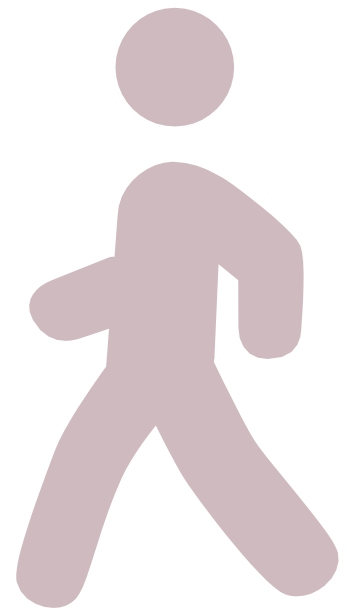


Table 7 - Evaluation Criteria

	Criteria	Description	Points Range
1.	Connectivity to Destinations	The project connects to an Economic, Neighborhood, Downtown, or other Center(s) identified from the Plan's public engagement phases and existing plans. <ul style="list-style-type: none"> Connect to 1 or more areas – 5pts No connection - 0 	0-5
2.	Downtown Connectivity	The project connects to the Downtown area. <ul style="list-style-type: none"> Connects to Downtown or is within Downtown – 3pts No connection - 0 	0-3
3.	Completing the Network	The project fills a gap in the existing pedestrian network or extends the existing network (100' search distance). <ul style="list-style-type: none"> Fills gap or extends network – 5pts Does not fill gap or extend existing network - 0 	0-5
4.	Estimated Project Cost	Relative rank of project's planning level cost in the plan. <ul style="list-style-type: none"> Top 50% - 0 Bottom 50% - 1pt <p>Cost was derived from recent local project per unit units (i.e. sidewalk and SUP) and the Bicycle and Pedestrian Cost Estimator Tool adjusted to 2022 USD (\$). Costs are highly generalized for assumptions on ROW, engineering, and contingency expenses.</p>	0-1
5.	Difficulty	Summation of three variables that relate to the difficulty of developing a project. <ul style="list-style-type: none"> The project is wholly within the Town boundaries - +1pt The project is along a locally maintained roadway or off route - +1pt The project crosses fewer than three parcels - +1pt 	0-3
6.	Community Priority	Does the project align with community input? <ul style="list-style-type: none"> Strongly and widely endorsed during community meetings and surveys – 3pts Steering Committee or Town supported – 2pts New project in response to community request or consultant derived – 1pt 	1-3
7.	Pedestrian Safety/ Conflict Minimization	Extent to which the project addresses a reported safety issue or is located along a high risk corridor. High risk corridors were those with multi-lanes, higher speeds, and higher vehicle volumes, among other factors. <ul style="list-style-type: none"> High risk location (upper quintile) or cluster of >4 crashes – 5pts Moderate risk location, Upper 3+4 quintiles – 3pts Project meets neither of those above but provides separation – 1pt No separation - 0 	0-5
8.	Health, Wellness, and Equity	The project's Transportation Disadvantage Index (TDI) score by block group for Union County (in quintiles). The TDI is a composite measure of the concentrations of six variables related to transportation barriers, including: concentration of carless households, people with low incomes, people with mobility impairments, youth under 16 years of age, people over 64 years of age, and Black, Indigenous, and Persons of Color compared to the Union County average for the period 2015-2019. <ul style="list-style-type: none"> Highest quintile – 5pts 4th – 3pts 3rd – 1pt 2nd and 1st – 0 	0-5

3.4.2 Project Scoring

Table 8 lists the project evaluation results ranked in descending order of highest to lowest score. The order of tied project rankings do not imply prioritization over similarly ranked projects. It should be noted that these rankings are merely a guide for future planning considerations and not necessarily the exact sequence for implementation. The efficacy of certain projects may be contingent on the implementation of other planned recommendations. For example, if the Town accelerates a planned resurfacing project or a new development allows for the inclusion of sidewalks or an intersection improvement project, the Town should implement those projects regardless of ranking. As well, if crashes occur or high risk conditions develop at a certain project location, that project should move up the priority list. Figure 29 shows the locations of the Top 25 ranked project recommendations.

The Top 25 projects reflect the Town's prioritization criteria. There are intersection safety projects along in the Downtown area, sidewalks within and to the Town's Downtown, sidewalk and safety projects for areas with fewer transportation amenities, and shared-use paths that provide safe and attractive routes for visitors and residents to community assets. Together, these top projects and the entire list will support Waxhaw vision for a safer and more enjoyable place to walk.

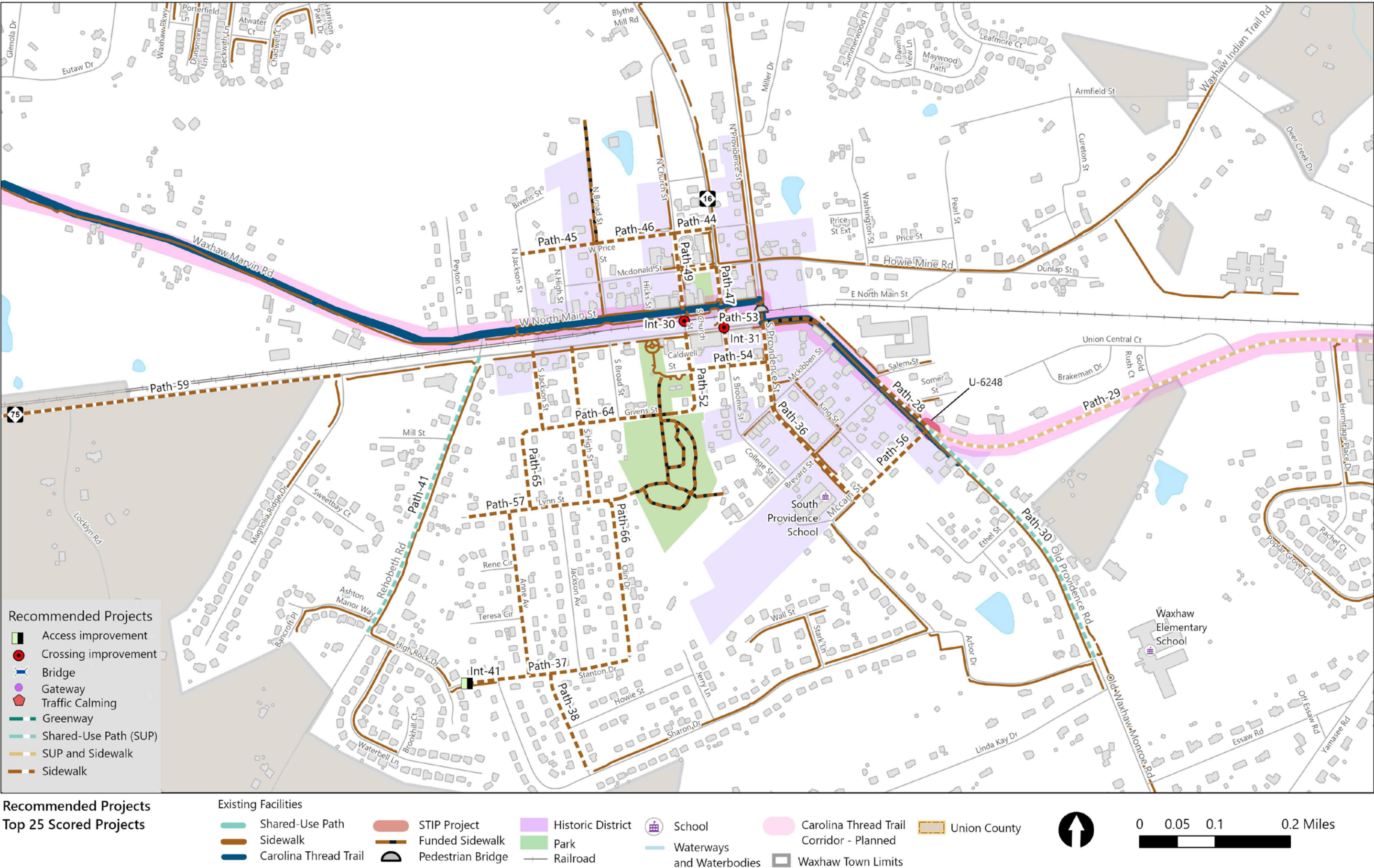


Figure 29 - Top 25 Facility Recommendations

Legend	Crossing
	Off-Road Path
	On-Road Path

Table 8 - Evaluation Results

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-41	Access improvement	High Rock Dr and Sharon Dr	N/A	N/A	15,000	30	1
Path-53	Sidewalk	S Broome St	Caldwell St	NC 75	30,000	30	1
Path-54	Sidewalk	Caldwell St	S Church St	S Providence St	55,000	30	1
Int-31	Crossing improvement	NC 75 and S Broome St	N/A	N/A	270,000	29	4
Path-28	Sidewalk	NC 75	Old Providence Rd	Salem St	25,000	29	4
Path-38	Sidewalk	Anne Ave	Sharon Dr	Stanton Dr	40,000	29	4
Path-52	Sidewalk	S Church St	Downtown Park	NC 75	75,000	29	4
Path-57	Sidewalk	Lynne St	Downtown Park	Lynne St	55,000	29	4
Path-64	Sidewalk	Givens St	Downtown Park	S Jackson St	35,000	29	4
Path-30	SUP	Old Providence Rd	Arbor Dr	Mccain St	1,055,000	28	10
Path-36	Sidewalk	S Providence Rd	NC 75	Mccain St	75,000	28	10
Path-37	Sidewalk	Stanton Dr	West of Sharon Dr	Olin Dr	60,000	28	10
Path-41	SUP	Rehobeth Rd	High Rock Dr	NC 75	1,100,000	28	10
Path-56	Sidewalk	Mccain St	S Providence Rd	Old Providence Rd	75,000	28	10
Path-65	Sidewalk	Anne Ave	Stanton Dr	NC 75	135,000	28	10
Path-66	Sidewalk	Olin Dr	Stanton Dr	NC 75	125,000	28	10
Path-29	SUP and Sidewalk	NC 75	Adam's Look Greenway	Mccain St	3,080,000	27	17
Path-59	Sidewalk	NC 75	Magnolia Ridge Rd	Trails Ends Rd	420,000	27	17

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-30	Crossing improvement	S Church St and RR Crossing	N/A	N/A	190,000	26	19
Path-44	Sidewalk	W Price St	N Church St	NC 16	30,000	26	19
Path-45	Sidewalk	W Price St	N Broad St	N Jackson St	55,000	26	19
Path-46	Sidewalk	W Price St	N Church St	N Broad St	60,000	26	19
Path-48	Sidewalk	McDonald St	N Church St	NC 16	30,000	26	19
Path-49	Sidewalk	N Church St	E North Main St	W Price St	55,000	26	19
Path-47	Sidewalk	NC 16	E North Main St	Howie Mine Rd	30,000	25	25
Int-26	Crossing improvement	NC 75 and Old Providence Rd	N/A	N/A	270,000	24	26
Int-39	Crossing improvement	NC 16 and Howie Mine Rd	N/A	N/A	270,000	24	26
Path-15	Greenway	Sonny Way Greenway I	W North Main St	Waxhaw Marvin Pkwy	2,320,000	24	26
Path-27	SUP	Howie Mine Rd	N Providence Rd	Deer Creek Rd	1,990,000	24	26
Path-43	SUP and Sidewalk	NC 16	W Price St	South of Waxhaw Pkwy	1,575,000	24	26
Path-50	Sidewalk	Mcdonald St	N Providence Rd	NC 16	15,000	24	26
Path-51	Sidewalk	Mcdonald St	N High St	N Church St	85,000	24	26
Path-58	Sidewalk	Price St	Washington St	NC 16	110,000	24	26
Int-21	Crossing improvement	NC 16 and Waxhaw Pkwy	N/A	N/A	270,000	23	34
Int-29	Crossing improvement	Rehobeth Rd and Rail Rd	N/A	N/A	140,000	23	34

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-40	Crossing improvement	NC 16 and Sunset Hill Rd	N/A	N/A	270,000	23	34
Int-45	Crossing improvement	NC 16 at East North Main St	N/A	N/A	270,000	23	34
Int-03	Crossing improvement	NC 16 and Gray Byrum Rd	N/A	N/A	270,000	22	38
Int-15	Traffic Calming	HC Nesbit Park Rd and Bridgewick Rd	N/A	N/A	85,000	22	38
Path-06	Sidewalk	Kensington Dr	Waxhaw Marvin Rd	Sunset Hill Rd	285,000	22	38
Path-13	SUP	Waxhaw Marvin Rd	N Jackson St	Coldwater Mill Dr	2,590,000	22	38
Path-55	SUP and Sidewalk	Waxhaw Pkwy	Harrison Park Dr	NC 16	985,000	22	38
Int-27	Crossing improvement	Old Providence Rd and Arbor Dr	N/A	N/A	140,000	21	43
Int-28	Crossing improvement	Rehobeth Rd and High Rock Dr	N/A	N/A	95,000	21	43
Int-38	Crossing improvement	Waxhaw Monroe Rd and Blythe Creek Greenway III	N/A	N/A	140,000	21	43
Path-02	SUP and Sidewalk	Gray Byrum Rd	Prince Valiant Dr	NC 16	1,690,000	21	43
Int-22	Crossing improvement	Waxhaw Marvin Rd and Waxhaw Ridge Trail	N/A	N/A	95,000	20	47
Int-32	Gateway	NC 16 and Price St	N/A	N/A	15,000	20	47

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-33	Gateway	NC 75 and Old Providence Rd	N/A	N/A	15,000	20	47
Int-44	Crossing improvement	Millbridge Pkwy and Kensington Dr	N/A	N/A	270,000	20	47
Path-16	Greenway	Waxhaw Pkwy Connector	Waxhaw Marvin Rd	Waxhaw Pkwy	895,000	20	47
Path-19	SUP and Sidewalk	Cuthbertson Rd	Waynewood Dr	NC 16	5,855,000	20	47
Path-34	SUP and Sidewalk	Old Waxhaw Monroe Rd	Blythe Creek Greenway III	Arbor Dr	990,000	20	47
Int-01	Crossing improvement	NC 16 and Bonds Grove Church Rd	N/A	N/A	270,000	19	54
Int-02	Crossing improvement	NC 16 and Cutter Spring Dr	N/A	N/A	270,000	19	54
Int-05	Crossing improvement	Cuthbertson Rd at Waynewood Dr	N/A	N/A	270,000	19	54
Path-17	Greenway	Waxhaw Ridge Trail	Waxhaw Marvin Rd	Hudson Mill Dr	2,880,000	19	54
Path-31	Greenway	Adam's Loop Greenway	Old Waxhaw Monroe Rd	NC 75	14,080,000	19	54
Path-33	Greenway	Waxhaw Elementary Trail	Old Providence Rd	Blythe Creek Greenway III	1,940,000	19	54
Path-35	SUP and Sidewalk	Old Waxhaw Monroe Rd	Sims Rd	Blythe Creek Greenway III	1,785,000	19	54
Int-13	Crossing improvement	Kensington Dr and Morehouse Dr	N/A	N/A	140,000	18	61
Path-04	SUP and Sidewalk	Waxhaw Marvin Rd	Kensington Dr	Haveron St	3,050,000	18	61

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Path-07	Sidewalk	Kensington Dr	County limits	Waxhaw Marvin Rd	250,000	18	61
Path-08	Sidewalk	N/A	Kensington Elementary School	HC Nesbit Park Rd	15,000	18	61
Int-06	Crossing improvement	Cuthbertson Rd and High School entrance	N/A	N/A	270,000	17	65
Int-14	Crossing improvement	Kensington Dr and Waxhaw Marvin Rd	N/A	N/A	270,000	17	65
Int-35	Crossing improvement	Cuthbertson Rd and Lawson Dr	N/A	N/A	140,000	17	65
Path-01	Greenway	Sonny Way Greenway	Gray Byrum Rd	Coltsgate Rd	1,830,000	17	65
Path-12	SUP and Sidewalk	Waxhaw Marvin Rd	Coldwater Mill Dr	Kensington Dr	4,275,000	17	65
Path-42	SUP and Sidewalk	Rehobeth Rd	Rane Branch Greenway II	High Rock Dr	1,645,000	17	65
Path-61	Sidewalk	N/A	Cuthbertson Middle School	Sugaree Ct	25,000	17	65
Int-11	Access improvement	Waxhaw Marvin Rd at Exbury Gardens Dr	N/A	N/A	340,000	16	72
Int-19	Crossing improvement	Waxhaw Marvin Rd and Sunbonnet Ln	N/A	N/A	95,000	16	72
Int-20	Crossing improvement	Waxhaw Pkwy at Sonny Way Greenway II	N/A	N/A	95,000	16	72
Int-43	Crossing improvement	NC 16 at Kingston Dr	N/A	N/A	270,000	16	72

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Path-03	SUP and Sidewalk	Haveron St	Waxhaw Marvin Rd	Prince Valiant Dr	1,475,000	16	72
Path-05	Greenway	Sonny Way Greenway III	Kensington Dr	Gray Byrum Rd	3,295,000	16	72
Path-10	Greenway	Twelve Mile Creek Greenway	County limits	Wysacky Greenway II	1,265,000	16	72
Int-42	Crossing improvement	Pine Oak Rd at Sonny Way Greenway Phase II	N/A	N/A	340,000	15	79
Path-11	Sidewalk	Pine Oak Rd	Sonny Way Greenway Phase II	NC 16	135,000	15	79
Path-14	Greenway	Sonny Way Greenway II	Waxhaw Marvin Pkwy	Wysacky Greenway III	4,500,000	15	79
Path-26	SUP and Sidewalk	Waxhaw Indian Trail Rd	Deer Creek Dr	Blythe Creek Greenway II	810,000	15	79
Path-32	Greenway	Blythe Creek Greenway III	Old Waxhaw Monroe Rd	NC 75	3,215,000	15	79
Path-39	Greenway	Rane Branch Greenway I	Waxhaw Crossing Dr	Sharon Dr	1,500,000	15	79
Path-60	SUP	N/A	Waxhaw Marvin Rd	Twelve Mile Creek Greenway	965,000	15	79
Path-18	Greenway	West Fork Greenway	NC 16	Providence Rd	7,785,000	14	86
Int-12	Crossing improvement	Kensington Dr and Sonny Way Greenway III	N/A	N/A	340,000	12	87
Int-17	Crossing improvement	Millbridge Pkwy and Millbridge Trails	N/A	N/A	95,000	12	87
Int-23	Crossing improvement	Hudson Mill Dr and Waxhaw Ridge Trail	N/A	N/A	340,000	12	87

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-36	Access improvement	Cureton Lawson Greenway and Lawson Community	N/A	N/A	85,000	12	87
Int-37	Access improvement	Waxhaw Elementary Trail and Poplar Grove Circle	N/A	N/A	85,000	12	87
Path-21	Greenway	Lawson Wesley Chapel Greenway	Waxhaw Indian Trail Rd	Cureton Wesley Chapel Greenway	6,280,000	12	87
Int-34	Access improvement	NC 16 and Twelve Mile Creek Greenway	N/A	N/A	425,000	11	93
Int-46	Access improvement	Cuthbertson High School	N/A	N/A	85,000	11	93
Int-47	Access improvement	Cuthbertson Middle School	N/A	N/A	85,000	11	93
Path-24	Greenway	Blythe Creek Greenway I	Waxhaw Indian Trail Rd	Ski Trail Ln	6,160,000	11	93
Path-40	Greenway	Rane Branch Greenway II	Rane Branch Greenway I	Rehobeth Rd	785,000	11	93
Path-62	Sidewalk	N/A	Wesley Landing Rd	Blackmoor Rd	20,000	11	93
Int-04	Crossing improvement	Gray Byrum Rd and Prince Valiant Dr	N/A	N/A	95,000	10	99
Path-20	Greenway	Cureton Lawson Greenway	Machine Branch Greenway	West Fork Greenway	5,355,000	10	99
Path-63	Sidewalk	N/A	Dobson Dr	Ringtail Dr	25,000	10	99

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-09	Crossing improvement	Waxhaw Indian Trail Rd at Machine Branch Greenway	N/A	N/A	140,000	8	102
Int-24	Crossing improvement	Waxhaw Indian Trail Rd and Blythe Creek Greenway I	N/A	N/A	280,000	7	103
Int-25	Crossing improvement	Blythe Creek Greenway II and Railroad	N/A	N/A	140,000	7	103
Path-23	Sidewalk	Waxhaw Indian Trail Rd	Blythe Creek Greenway I	Lawson Wesley Chapel Greenway	680,000	7	103
Int-07	Bridge	Machine Branch Greenway and Cureton Lawson Greenway	N/A	N/A	425,000	6	106
Int-16	Bridge	Sonny Way Greenway	N/A	N/A	445,000	6	106
Int-18	Bridge	Twelve Mile Creek Greenway and Millbridge Trails	N/A	N/A	425,000	6	106
Path-09	Greenway	Twelve Mile Creek Greenway	Wysacky Greenway II	NC 16	1,985,000	6	106
Path-25	Greenway	Blythe Creek Greenway II	NC 75	Waxhaw Indian Trail Rd	2,085,000	6	106
Int-08	Crossing improvement	Waxhaw Indian Trail Rd at Lawson Chapel Greenway	N/A	N/A	140,000	5	111

Project ID	Facility Type	Roadway/ Cross Street	To	From	Planning Level Cost (2022 USD)	Score	Rank
Int-10	Bridge	Blythe Creek Greenway I near Cureton Lawson Greenway	N/A	N/A	425,000	5	111
Path-22	Greenway	Machine Branch Greenway	Waxhaw Indian Trail Rd	Cureton Wesley Chapel Greenway	4,765,000	4	113

Project scoring revealed the following insights:

- Projects located within one mile of the Downtown were ranked more highly than other projects. This is likely related to the focus of the prioritization criteria of connection to Downtown, completing the network through infill sidewalk, and equity considerations.
- While highly popular among residents and the Town, the greenway projects and associated crossings were lower ranked than the sidewalk infill and SUP projects. This is due to the higher cost and inter-neighborhood connection characteristics of the proposed greenway network compared to the sidewalk network that often connects to Downtown and is lower cost per square foot. The greenway system could complement the existing and proposed sidewalk and SUP network.
- Projects on the NCDOT system were represented to a greater extent in the Top 25 projects than projects on the Town's network. This may be attributed to the Town's progress in building out its own sidewalk network within residential developments, the connection of NCDOT routes to major Waxhaw destinations, and the character of NCDOT routes through Waxhaw (such as higher vehicle speed and greater safety concerns). Coordination with NCDOT during scheduled projects and those submitted through the Highway Safety Improvement Program (HSIP) will be critical to implementing these projects.

3.5 Project Visualizations

This section outlines six Plan projects that were within the Top 25 ranked project or recommended for expanded detail based upon their significance to the community. The project visualizations describe in greater details the constraints, considerations, planning coordination, and roadway characteristics compared to Plan's other recommended projects. These selected projects are examples of potential improvements, and they will require site-specific environmental, design, and engineering analysis before construction. All six project cut-sheets include an estimated project cost derived from the North Carolina Department of Transportation Integrated Mobility's Bicycle and Pedestrian Cost Estimator Tool (BPCE) and adjusted to 2022 USD (\$). These estimates include ROW acquisition, construction, utilities, and other cost estimates based on past projects from across North Carolina. They are not engineering cost estimates. The BPCE costs may differ from the other project costs due to the tool's specificity, and all project estimates should be subject to specific feasibility studies before proceeding with project development.

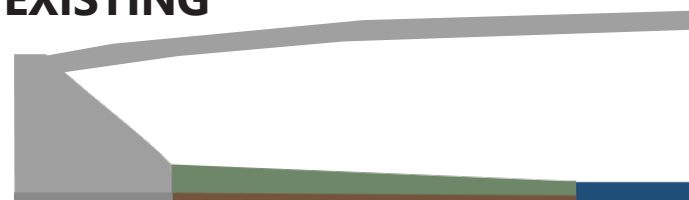
Project
Int-11

Waxhaw-Marvin Rd Underpass Greenway Connection

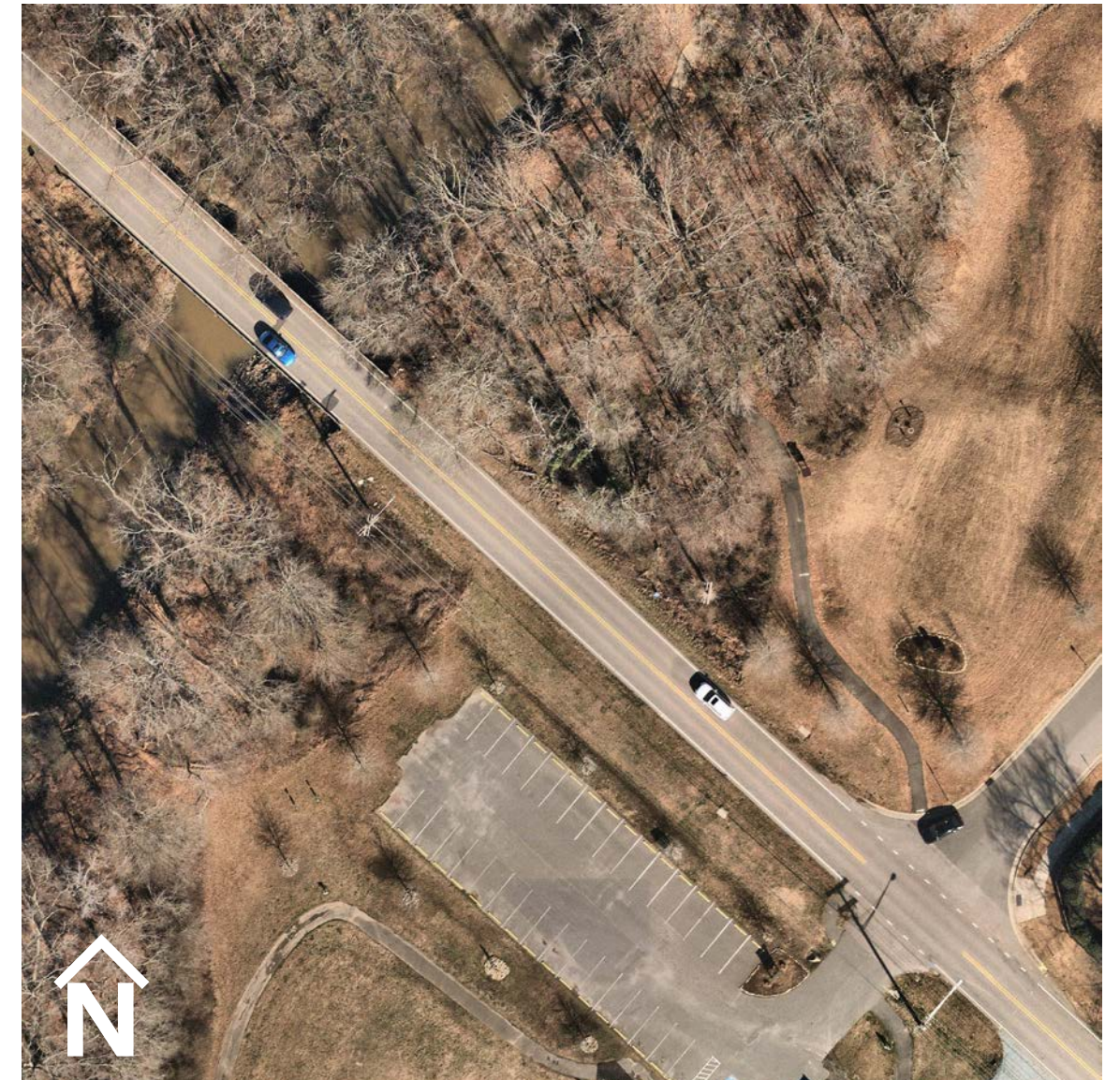
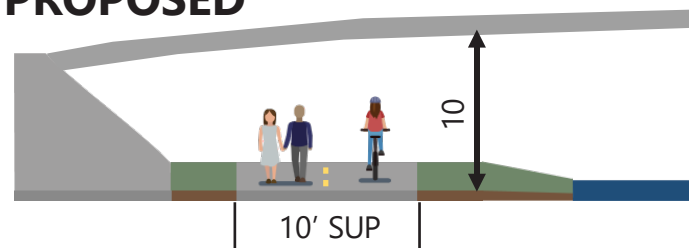
EXISTING CONDITIONS

Route	AADT (2020)	Speed Limit	Roadway Width (ft)	ROW (ft)	System
Waxhaw-Marvin Rd at Twelve Mile Creek	5,500	45 mph	20'	55'	NCDOT

EXISTING



PROPOSED



Aerial image of the of potential greenway crossing under the Waxhaw-Marvin Rd bridge.



CONSIDERATIONS

- Coordination with Waxhaw-Marvin Rd bridge replacement for adequate clearance and greenway integration
- Coordinate with Path-12
- Option of additional at-grade crossing closer to park parking lot, would necessitate reduced speed limit (35mph or lower) and warning signage or Pedestrian Hybrid Beacon or traffic signal if speed is not reduced
- Coordinate with Water Utility or other landowners for connecting greenway easements

CONSTRAINTS

- Utilities located near ROW
- Project located in flood prone area
- Embankment and slope may alter route of connecting path to at-grade sidewalk and SUP

COST

Total Planning Level Cost: \$324,800

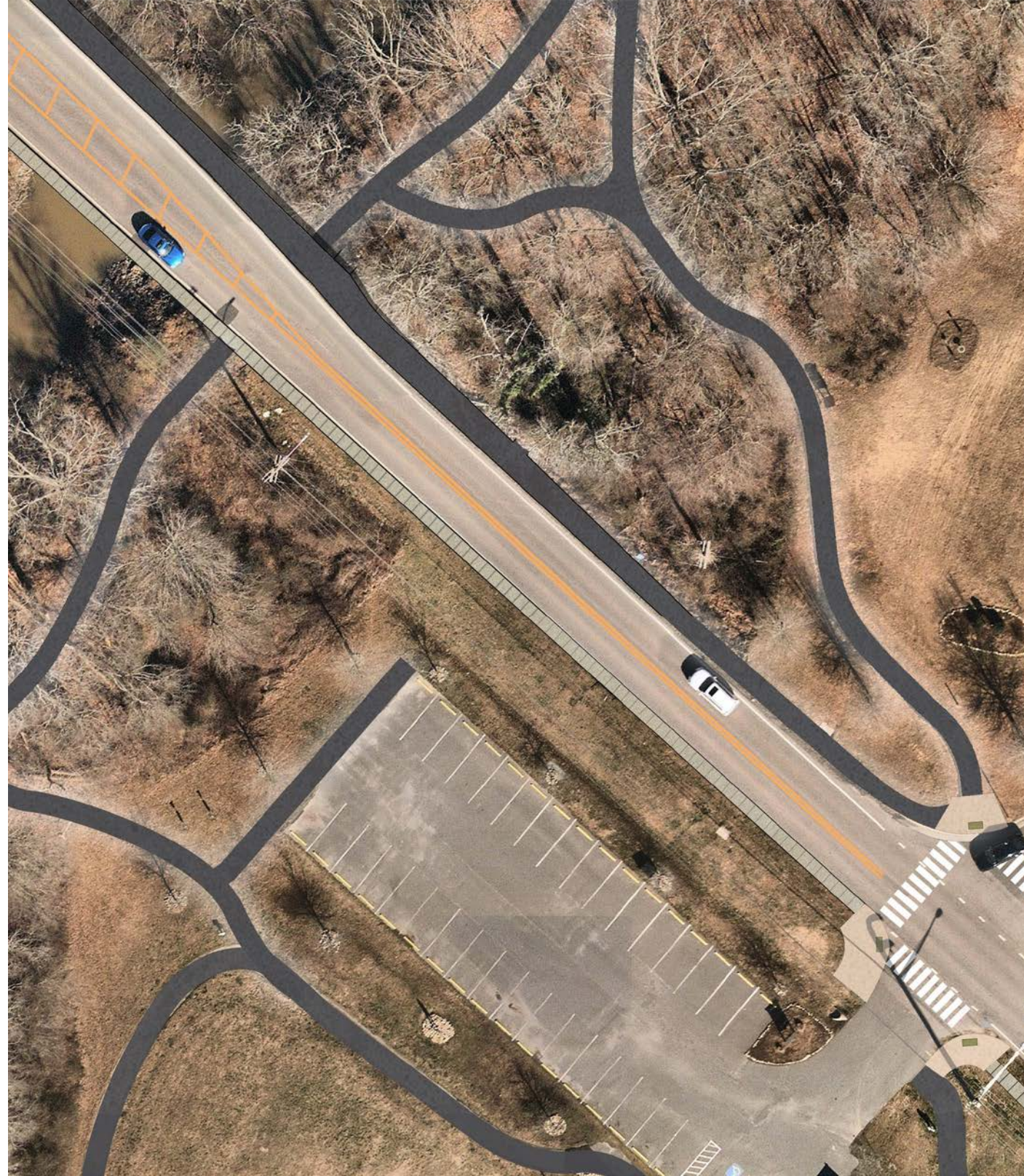
Design: \$92,200

ROW: \$5,600

Utilities: \$5,600

Construction: \$218,400

Costs developed with NCDOT's Bicycle and Pedestrian Cost Estimation Tool and adjusted to 2022 USD (\$)



Aerial conceptual rendering of Project Int-11, showing proposed under-road greenway crossing and connection to the proposed SUP along Waxhaw Marvin Rd.

RECOMMENDATIONS

Establish a greenway crossing under the improved Waxhaw-Marvin Rd bridge with a 10' wide SUP to continue greenway and provide a connection to the SUP (Project Path-12).



Project Int-11 conceptual rendering from person-level perspective showing the greenway connection under the Waxhaw-Marvin Rd bridge.

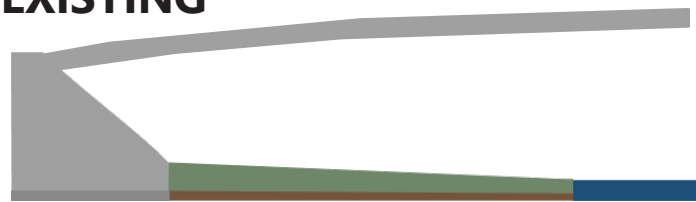
Project
Int-12

Underpass Greenway Connection at Kensington Dr

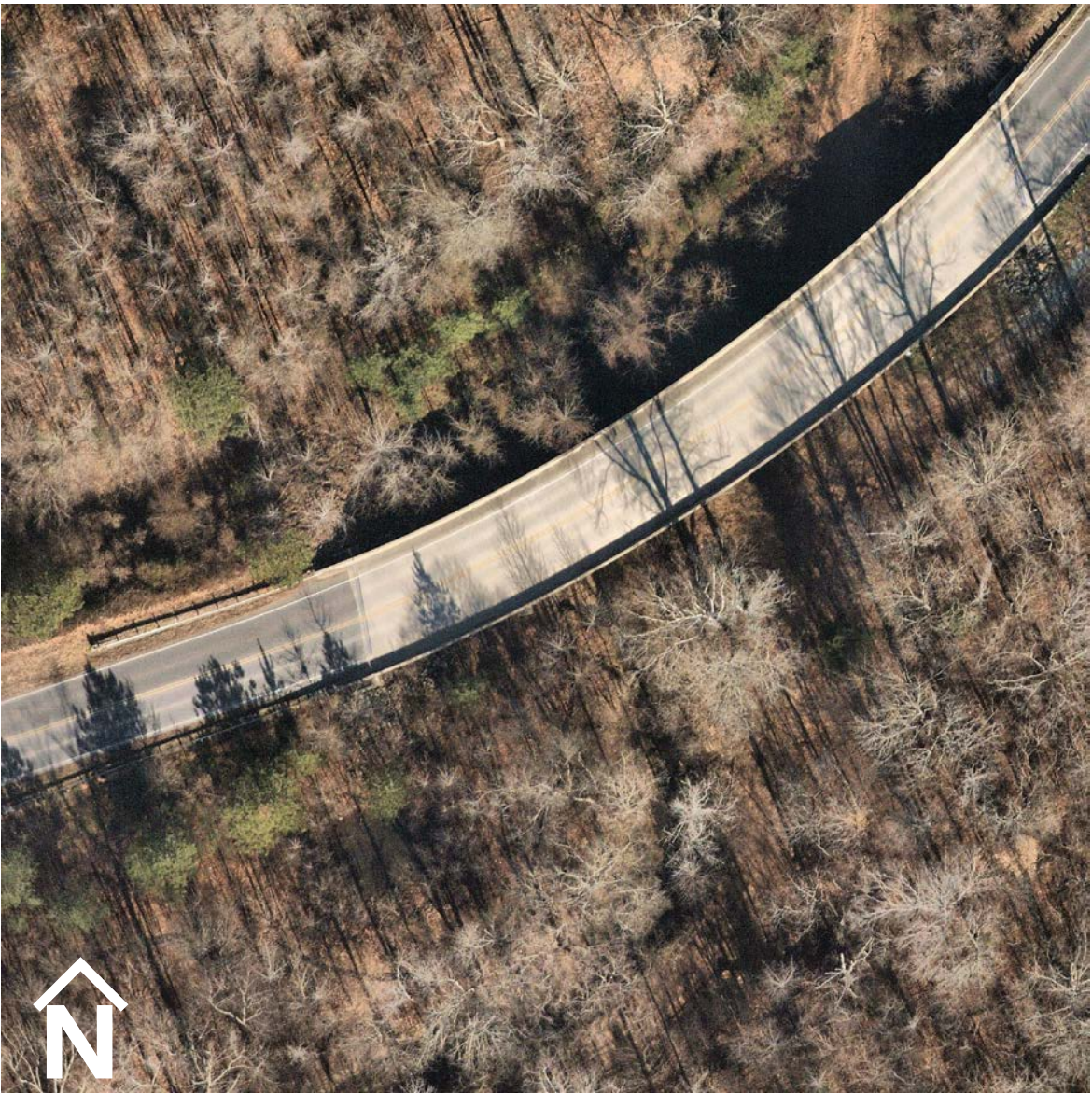
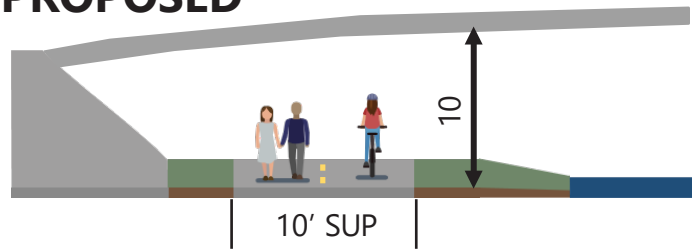
EXISTING CONDITIONS

Route	AADT (2020)	Speed Limit	Roadway Width (ft)	ROW (ft)	System
Kensington Dr	UNK	25 mph	31'	80'	Town

EXISTING



PROPOSED



Aerial image of the potential greenway crossing under Kensington Dr.



CONSIDERATIONS

- Coordinate project with Path-05
- Option of at-grade crossing is limited due to roadway curvature and embankment
- Coordinate with Water Utility and other landowners for easements

CONSTRAINTS

- Existing bridge structure may not accommodate under-bridge crossing
- Project is an area potentially subject to flooding
- Potential privacy concerns among adjacent landowners

COST

Total Planning Level Cost: \$324,800

Design: \$92,200

ROW: \$5,600

Utilities: \$5,600

Construction: \$218,400

Costs developed with NCDOT's Bicycle and Pedestrian Cost Estimation Tool and adjusted to 2022 USD (\$)



Aerial conceptual rendering of Project Int-12, showing the proposed under-road greenway crossing at Kensington Dr and connection to the proposed Sonny Way Greenway.

RECOMMENDATIONS

Establish a greenway crossing under the Kensington Dr bridge with a 10' wide SUP to continue Path-05, the Sonny Way Greenway to Twelve Mile Creek.



Project Int-12 conceptual rendering from person-level perspective showing the greenway connection under the Kensington Dr bridge and connection to the Sonny Way Greenway.

Project
Int-06

Crossing at Cuthbertson Middle School

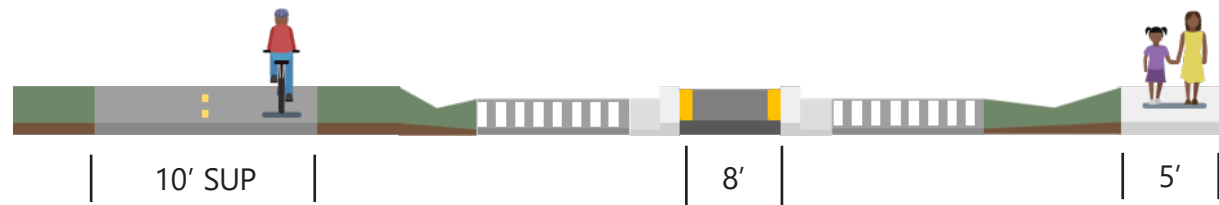
EXISTING CONDITIONS

Route	AADT (2020)	Speed Limit	Length	Roadway Width (ft)	ROW (ft)	System
Cuthbertson Rd at Cuthbertson Middle School	8,800	35 mph	N/A	35'	55'	NCDOT

EXISTING



PROPOSED



Aerial image of the potential marked crossing at the signalized intersection of Cuthbertson Rd and the Middle School.

CONSIDERATIONS

- Coordinate with NCDOT for roadway improvements and Union County Schools for ROW and interior school sidewalk connection
- Coordinate with Path-19
- Relocation of pavement markings and signal heads to accommodate pedestrian phase and removal of splitter island
- Consider additional signalized crossing south to new library site

CONSTRAINTS

- Limited ROW on west side of roadway
- Private driveways near sidewalk extension
- Modification of existing school bus circulation pattern
- Limited internal pedestrian network on Middle School campus
- Utilities partially within ROW

COST

Total Planning Level Cost: \$224,400

Design: \$36,000

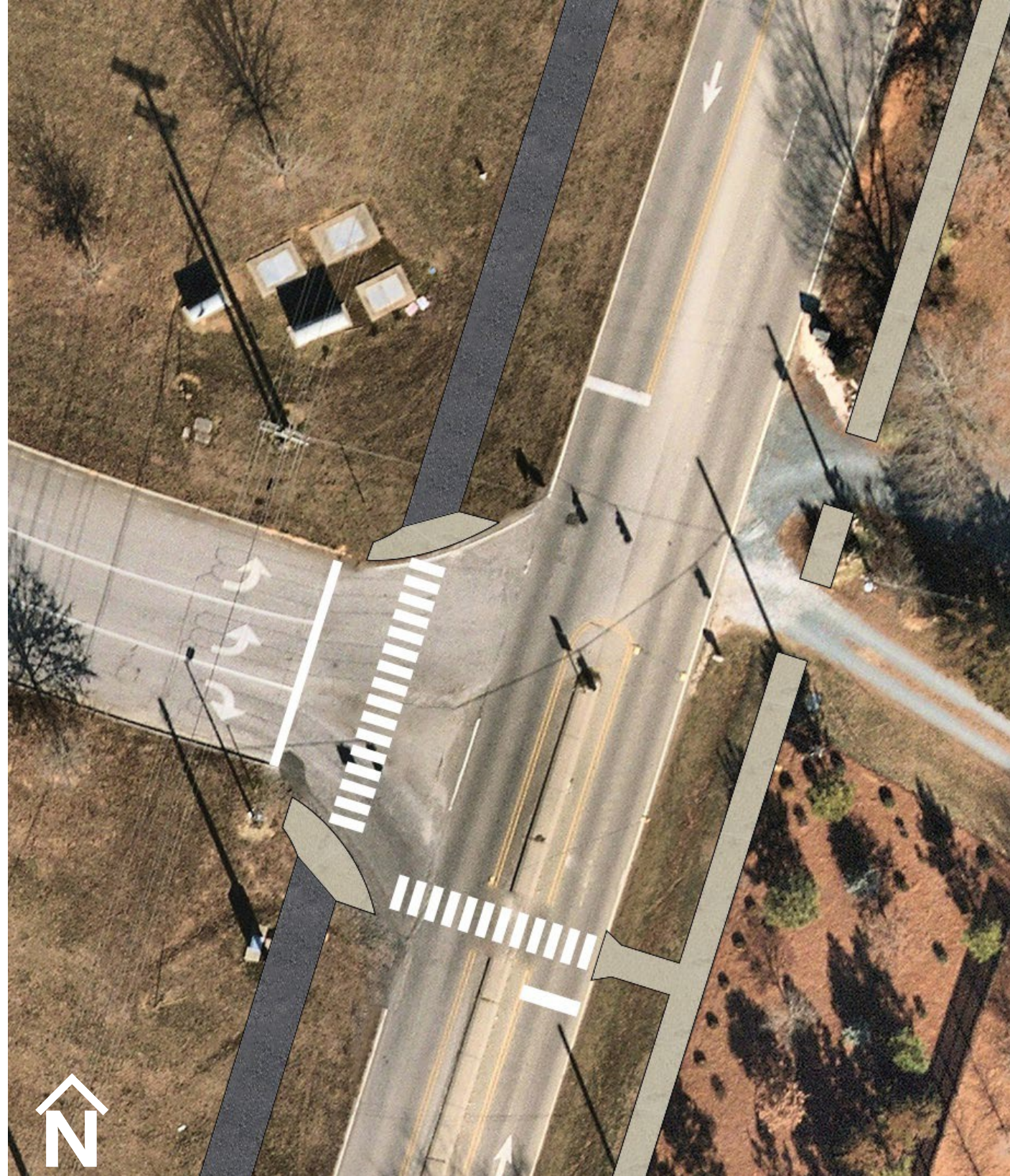
ROW: \$5,600

Utilities: \$5,600

Construction: \$179,200

Costs developed with NCDOT's Bicycle and Pedestrian Cost Estimation Tool and adjusted to 2022 USD (\$)





Aerial conceptual rendering of Project Int-06, showing the proposed marked crossing at the existing signalized intersection with high visibility marked crosswalks, conversion of the raised median to a refuge island, and connection to the sidewalk extension and SUP.

RECOMMENDATIONS

Establish a marked crosswalk with a pedestrian signal phase at the existing signalized intersection at Cuthbertson Rd and Middle School entrance to support safe access to the Middle School. The crossing would connect to the existing sidewalk and the proposed sidewalk extension on the east side and SUP on the west side (Path-19). Incorporate pedestrian signal heads, Leading pedestrian Interval (LPI), Accessible Pedestrian Signal (APS), high visibility marked crosswalks, and refuge island within existing raised median. Coordinate location of interior school site sidewalk connection with School District. Consider additional or alternate crossing location to south at new library site.



Project Int-06 conceptual rendering from person-level perspective showing the improved intersection with pedestrian phase and marked crosswalks.

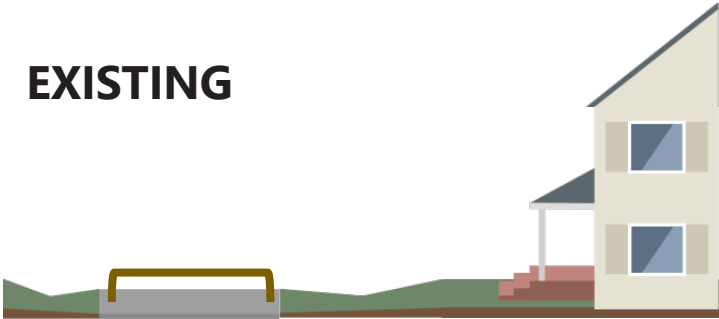
Project
Int-41

High Rock Dr & Stanton Dr

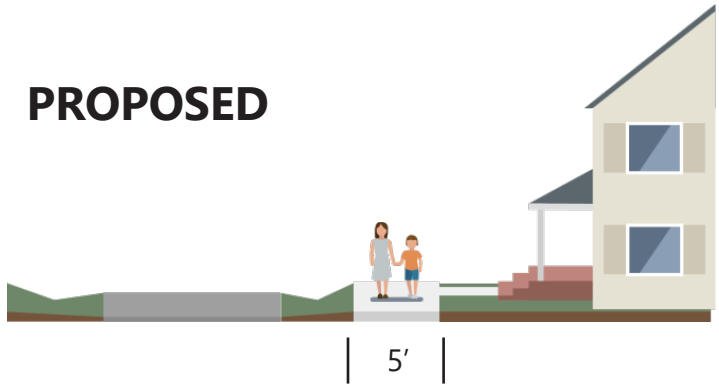
EXISTING CONDITIONS

Route	AADT (2020)	Speed Limit	Length	Roadway Width (ft)	ROW (ft)	System
High Rock Dr at Stanton Dr	UNK	10-20 mph	N/A	12'-18'	60'	Town

EXISTING



PROPOSED



Ground level image of the in-road barrier and lack of sidewalk connection between High Rock Dr at Stanton Dr.



CONSIDERATIONS

- Coordinate with projects Path-37 and Path-57
- Support deliberate public engagement given existing access restrictions and neighborhood traffic calming
- Evaluate deployment of law enforcement during special events to support or reduce access

CONSTRAINTS

- Neighborhood concerns over non-local and higher speed vehicles
- Stormwater culvert on south side of roadway

COST

Total Planning Level Cost: \$15,000

Engineering: \$3,000

ROW: \$1,000

Contingency: \$2,000

Construction: \$11,000

Costs developed with NCDOT's Bicycle and Pedestrian Cost Estimation Tool and adjusted to 2022 USD (\$)



Aerial conceptual rendering of Project Int-41, showing the proposed removal of the roadway barrier at High Rock Dr and Stanton Dr and extension of the sidewalk on the south side of the roadway (Path-37).

RECOMMENDATIONS

Improve access for pedestrians and bicyclists to neighborhoods and the new Downtown Park through the removal of the in-road barrier, extension of the sidewalk (Project Path-37), and conversion of the roadway connection to a limited access one-way (out only to High Rock Dr) except for bicycles. Sidewalk costs are included in Project Path-37.



Project Int-41 conceptual rendering from person-level perspective showing the replacement of the roadway barrier with restricted access signage and extension of the sidewalk.

Project

Int-43

Kingston Dr at NC-16

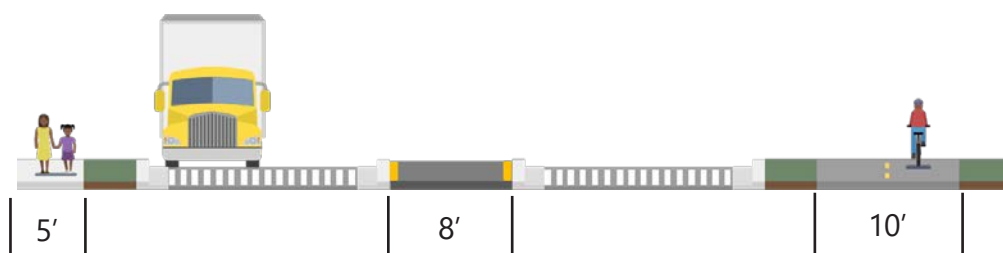
EXISTING CONDITIONS

Route	AADT (2020)	Speed Limit	Roadway Width (ft)	ROW (ft)	System
Kingston Dr at NC-16	16,500	55 mph	50'	60'	NCDOT

EXISTING



PROPOSED



Person-level view of existing two-lane roadway and lack of controlled crossing at Kingston Dr at NC-16. The roadway is planned for widening in 2027 to a multi-lane roadway with sidewalk on the westside and SUP on the east side. Credit: Town of Waxhaw



CONSIDERATIONS

- Coordination with NCDOT U-5769A project manager on inclusion
- Further evaluation of two-phased signal or Pedestrian Hybrid Beacon (PHB) for control
- Involve adjacent neighborhoods in project consultation prior to development
- Consider near-term deployment of a PHB and accompanying visibility improvements to support crossing prior to corridor widening

CONSTRAINTS

- Potential limited space for refuge island within raised median
- Pedestrian crossing levels or anticipated activity may not meet typical levels for signalization or PHB

COST

Total Planning Level Cost: \$218,400

Design: \$33,600

ROW: \$5,600

Utilities: \$5,600

Construction: \$173,600

Costs developed with NCDOT's Bicycle and Pedestrian Cost Estimation Tool and adjusted to 2022 USD (\$)



Aerial conceptual rendering of Project Int-43, showing the proposed controlled pedestrian crossing at the Kingston Dr intersection that would provide access to the SUP on the east side of the road as part of TIP U-5769A.

RECOMMENDATIONS

Improve access for pedestrians and bicyclists through the modification of the proposed unsignalized limited movement crossover at Kingston Dr as part of U-5769A through the inclusion of a controlled crossing with pedestrian-oriented lighted, pedestrian signal or Pedestrian Hybrid Beacon, Accessible Pedestrian Signal (APS), refuge island, and high visibility marked crosswalks.



Project Int-43 conceptual rendering from person-level perspective showing the inclusion of the controlled pedestrian crossing at the Kingston Dr intersection that includes high visibility marked crosswalks and a pedestrian refuge island.

Project
Path-14

Sonny Way Greenway II

EXISTING CONDITIONS

Route	AADT (2020)	Speed Limit	Length	Roadway Width (ft)	ROW (ft)	System
Sonny Way Greenway	N/A	N/A	8,640	N/A	N/A	Town/Private

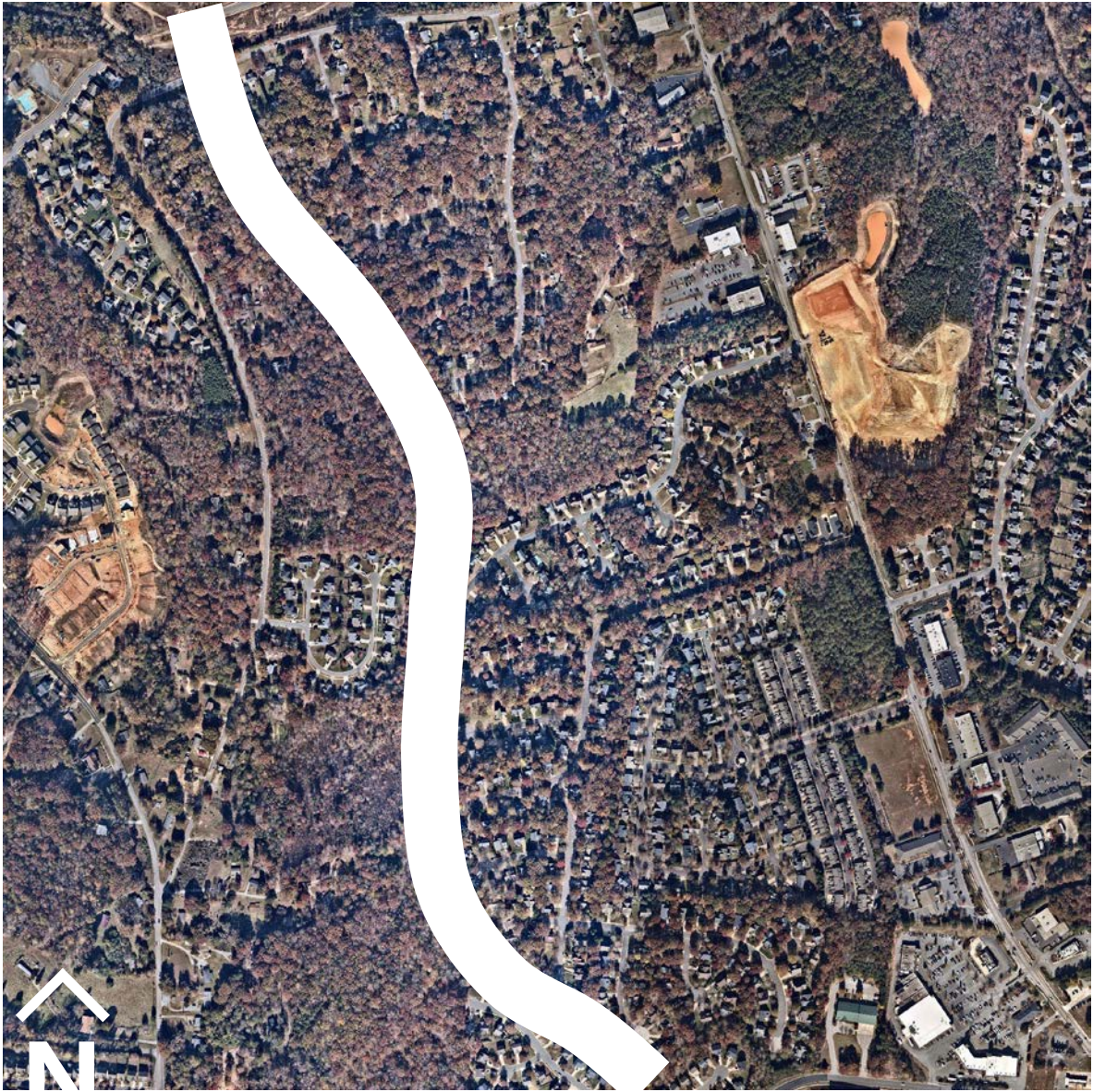
EXISTING



PROPOSED



10' SUP



Aerial view of the potential north-south corridor for Path-14, the Sonny Way Greenway II.

CONSIDERATIONS

- Coordinate with development of Path-09, Path-05, Path-15, Int-16, Int-42, and Int-20
- Determine access points for nearby neighborhoods

CONSTRAINTS

- Limited public ROW and easement discussions among many private landowners

COST

Total Planning Level Cost: \$5,051,200

Design: \$632,800

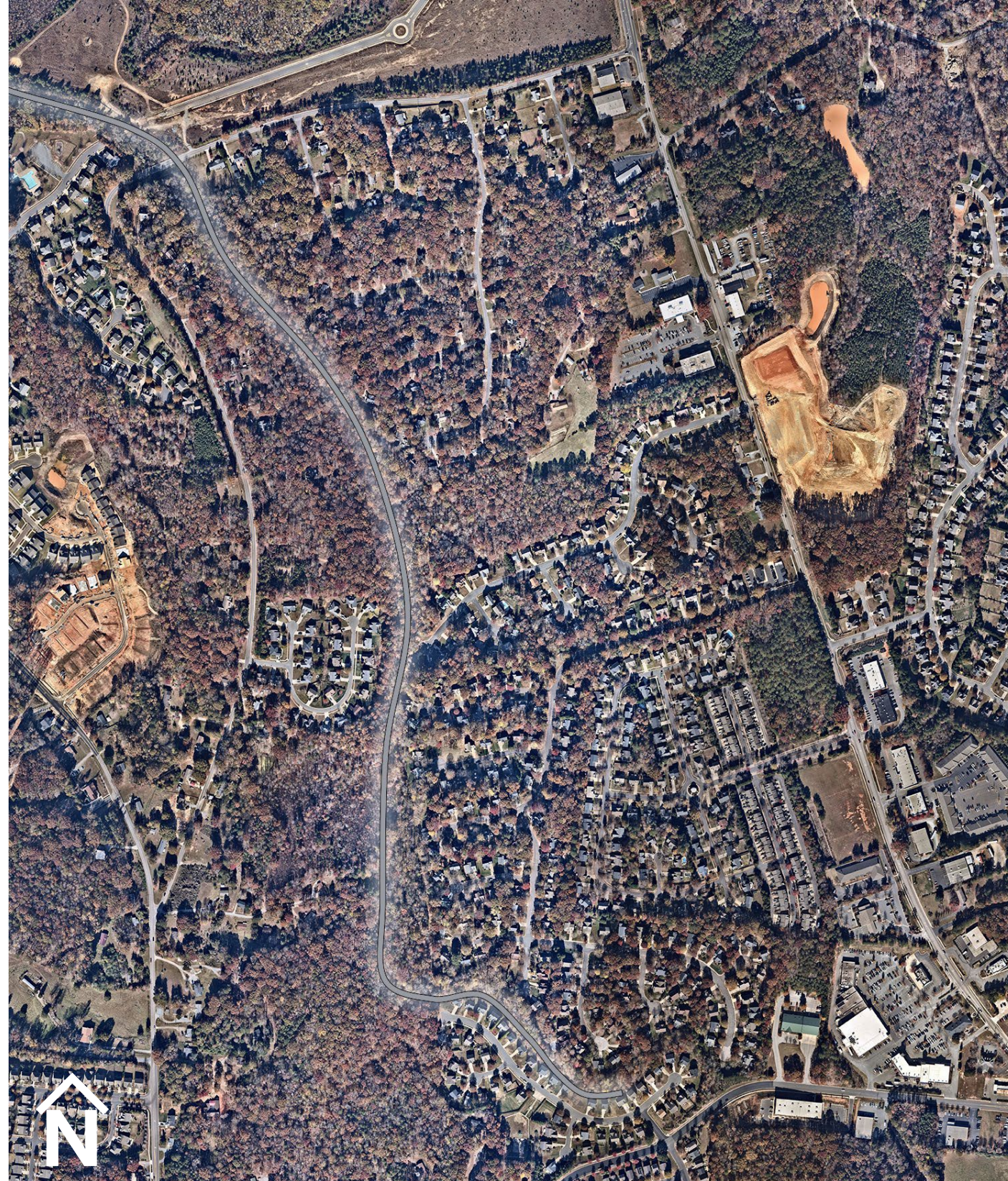
ROW: \$16,800

Utilities: \$168,000

Construction: \$4,233,600

Costs developed with NCDOT's Bicycle and Pedestrian Cost Estimation Tool and adjusted to 2022 USD (\$)

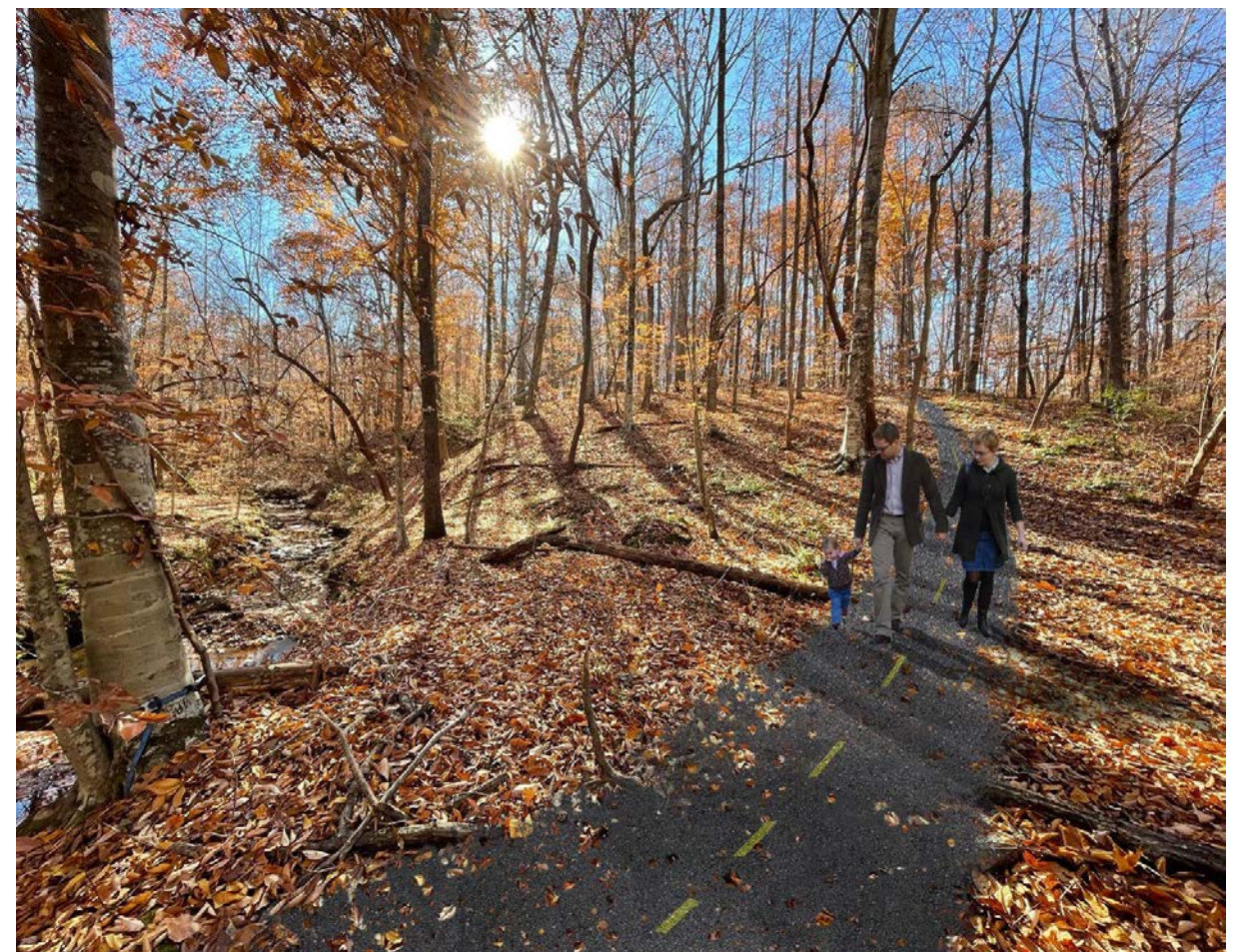




Aerial conceptual rendering of Project Path-14, showing the proposed greenway that would help form a main north-south corridor for people walking and bicycling between neighborhoods and the Downtown.

RECOMMENDATIONS

Establish a 10' wide greenway running north-south of Twelve Mile Creek and parallel to NC-16 with connections to the adjacent neighborhoods and access to the Downtown.



Project Path-14 conceptual rendering from person-level perspective showing the 10' wide path for pedestrians and bicyclists that would form the spine of the Waxhaw greenway network.



Credit: Town of Waxhaw

4

Recommended Programs and Policies

In addition to engineered infrastructure (Section 3), strong programs and policies can help encourage and support pedestrians within the Town.

4.1 Overview

While development of facilities relates directly to engineering, pedestrian programs are concerned with the other five of the six E's: encouragement, education, enforcement, equity, and evaluation (Figure 30). Active transportation policies can improve pedestrian friendly design and development of both public and private sector projects. The project team encourages the Town to explore a comprehensive approach to the six E's, with equity as a foundation for the others. This requires ongoing communication and collaboration with a wide range of government agencies, organizations, the community, and individual stakeholders.

Many of the following activities represent continuations and/or enhancements of programs and policies that the Town is already administering. Recommendations in this section support ongoing activities to enhance overall livability and walkability for the Town's growing population (Table 10). Many programs and resources listed in this section are subject to the availability of grant funding. The Town should follow up directly with the organizations listed for more information on the status of these programs or newer funding resources.



Figure 30 - The Six E's of Pedestrian Planning.

4.2 Existing Programs

The Town annually coordinates or participates in numerous public events to promote outdoor activity and recreation, and the Parks and Recreation Department is the prime convenor. Common Town-sponsored events include a walking club, recreational sports leagues, seasonal festivals, outdoor concerts, and art walks. In partnership with the Waxhaw Athletic Association, the Town hosts organized sports like softball, baseball, flag football, and soccer. The summer concert Jammin' by the Tracks series bring hundreds of residents and visitors to the Downtown every month, as do spring and fall-oriented festivals. In 2021, the Town hired dedicated staff to develop a Main Street program to support local businesses and increase foot traffic to the Downtown businesses. While the Town has made progress on several of its program recommendations from the 2012 plan, such as the walking club, adopting local spaces, sustainability initiatives at the local parks, it has opportunities to pursue art-focused placemaking, school-centric walking, and safety programming.

4.3 Program Recommendations and Resources

4.3.1 Encouragement Programs

The Town can use encouragement programs to strengthen walking culture within the community. Local businesses and Town departments can all play a role in encouraging pedestrian through a variety of opportunities and incentives. Increasing the amount and coverage of encouragement programs were highly recommended from the community outreach.

Lead agencies and stakeholders:

- Town staff;
- County health department;
- Community leaders/stakeholders.

Elements of a good encouragement program:

- Provides residents casual introductions to walking in a non-competitive setting;
- Uses a variety of print and electronic strategies to disseminate pedestrian information;
- Celebrates and promotes community wins through print or online media, and word of mouth.

Non-Infrastructure Transportation Alternatives Program

NCDOT has transitioned the Active Routes to School program, a project under NC Safe Routes to School, to a grant-based program funded through the Non-Infrastructure Transportation Alternatives Program. Agencies may request up to three years of funding for projects that encourage children to walk and bike to school, make walking more appealing, and facilitate the development of projects and activities to improve transportation safety near schools. Funding may be requested to support activities for community-wide, regional, or statewide programs. The Town may choose to coordinate with schools, the school district, or the county to pursue funding and recommend projects.

Walking Maps

User maps are important tools for encouraging walking. The Town can update its print maps to electronic maps and smart phone applications that identify common walking and/or biking routes, identify key destinations, and other available or planned facilities. The Town should refine and update the maps as they develop new facilities and should seek opportunities to distribute to residents and visitors. Colorful, graphic maps should appeal to all ages and abilities and can also include educational information about the rules of the road for drivers, cyclists, and pedestrians; safety; and etiquette.

Self-Guided and Group Walking Tours

Walking tours encourage walking and present an opportunity for residents to socialize. By developing and advertising one or more formal tour routes in association with the walking maps previously described, the Town could identify routes to connect pedestrians to recreational, shopping, dining, and scenic destinations in addition to the Town's historic Downtown architecture, pedestrian bridge, and sites like the Museum of the Waxhaws. Tour routes could begin with existing facilities and expand as the pedestrian network develops. Walking tours could include organized groups with Town-sponsored tour guides.

Ghost tours provide another theme for local walking tours, and they take place in many of the cities across North Carolina and offer a great way to learn about the history of key landmarks and locations that make these towns special. Generally, these historic tours are planned in partnership with a local event company and or municipal historical society such as Waxhaw's Historic Preservation Commission. The New Bern Ghost walk is one example of these tours. Hosted by the New Bern Historical Society, their Ghost walk is a family-friendly event that combines historic spirits, talented local volunteer actors, historic sites not normally open to the public, as part of a walk tour that takes residents around historic New Bern.

Story Walks

Story walks, strolls, or trails are an interactive way to get people of all ages out walking while reading children's picture books. The StoryWalk® Project originally was created by Anne Ferguson of Montpelier, VT in 2007 and was developed in collaboration with the Kellogg-Hubbard Library. These walks are simple and low cost to set up, requiring at minimum only a physical copy of a children's book. Pages from the book are separated and attached to a mount or stand for people to read as they walk. Many libraries in NC have partnered with communities, colleges and municipalities to install these the book pages along local walking paths.

Art Walks

Arts Walks combine planned routes and profiling local artists and arts-related businesses into a programmed week, day, or period (day or evening). For example, the Charlotte "South End Art Stroll" is a route created by the Center City Partners in partnership with artists funded by the City of Charlotte's Arts and Science Council. The route is made up of seven stops displaying murals and interactive installations. Each stop is centered around local businesses and key destinations in the South End. The route is intended for both work and recreational trips. The route is also used as part of the South End Gallery Crawl, a free festival that takes residents on a tour of local galleries and studio spaces. During this event, shops and galleries offer extended hours, special activities, and live music. The crawl takes place the first Friday of every week and is hosted by Center City Partners. The Town's Parks and Recreation Department and Main Street committee could collaborate with local artists to launch a standalone Art Walk in coordination with an Open Streets Day.

Wayfinding Signs

As the pedestrian system develops, and especially as sidewalks are installed and neighborhoods are connected, wayfinding will help contribute to the overall pedestrian environment. Items such as mile markers, consistent themes and logos, and regular wayfinding kiosks will become important elements to encourage walking. The Town can use services such as Walk [Your City] (<https://walkyourcity.org>) to purchase inexpensive, weather resistant signs to educate residents about the distance and direction between destinations.

Awareness Days and Events

The Town can devote specific days of the year to raise awareness related to pedestrian promotion. Events can be held in parks, schools, Town facilities, or similar venues.

The Town can use national events to increase use of pedestrian and bicycle facilities, create new versions specific to local events, and add pedestrian topics to existing Town events. Examples of national events include National Walk to Work Day (April), Earth Day (April 22), National Trails Day (First Saturday in June), PARK(ing) Day (September 17), National Open Streets Day (September 22), and National Walk to School Day (October).

Temporary Installations

The Town can use temporary installations to get the public invested and excited about the multimodal future of Waxhaw. There are several types of temporary projects the Town can conduct:

- **Open Streets:** an event where main roads are closed to cars and activities occur in the right-of-way, often including bicycle rides, outdoor seating, and other potential uses for the public space. These events often occur on a weekend and engage the community in imagining community-focused public spaces. This type of activity could be sponsored by the Town, Main Street Committee, arts groups, and or the county, and it could feature the temporary conversion of parking spaces to parklets. Temporary closure roads such as W North Main St or McDonald St may allow for use of the street without creating significant traffic issues. See <https://openstreetsproject.org/> for more information.
- **Demonstration Projects:** short-term installations of bicycle or pedestrian infrastructure using low-cost and temporary materials. These projects can evaluate the effectiveness of different facilities or recommendations without investing in the development of them. Potential examples include application of continental crosswalk marking patterns and curb extensions with flex posts and pavement markings.

Town Designations

Several national recognition programs encourage towns and cities to promote pedestrian activity. The Town can pursue or strive for progress towards one of the programs that recognize communities that are working to improve access, safety, mobility, and transportation options. Recognition programs include the following examples:

- Walk Friendly Community <http://www.walkfriendly.org/>
- Active Towns <https://www.activetowns.org/>

Encouragement Program Resources

- Healthy Places By Design <https://healthyplacesbydesign.org/resources/>
- Non-Infrastructure Transportation Alternatives Program <https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx>.
- Healthy Aging Research Network Archives. <http://depts.washington.edu/hprc/resources/products-tools/healthy-aging-research-network-archives/>
- Livable Communities: Livable in Action. <http://www.aarp.org/livable-communities/livable-in-action/>
- Move More Walking Map Guide. <https://www.eatsmartmovemorenc.com/resource/walking-map-guide/>
- National Center for Safe Routes to School. <http://saferoutesinfo.org/>.
- Walk Wise, Drive Smart: A Senior Pedestrian Safety Program in Hendersonville, North Carolina. http://www.pedbikeinfo.org/cms/downloads/WalkWise_Hunter.pdf

4.3.2 Education Programs

The Town can take advantage of existing educational materials from state or federal programs and tailor these to the specific needs of the community. The educational materials should promote safe behaviors, rules, and responsibilities for all roadway users including pedestrians, bicyclists, and motorists, and overcome barriers to bicycling on shared facilities. Local businesses, Town departments, and local advocates can all play a role in developing and distributing educational materials.

Lead agencies and stakeholders:

- Town staff;
- Union County health department;
- Dedicated and committed community leaders/stakeholders.

Elements of a good education program:

- Provides the community with information on bicycle and pedestrian laws, safe behaviors, and skills;
- Reaches people of all skill levels, physical abilities, and ages;
- Delivers information through a variety of print and electronic messages and hands-on training;
- Includes all roadway users: motorists, bicyclists, and pedestrians.

Project-Related Efforts

The Town should coordinate closely with NCDOT and other local stakeholders when elements of the Plan and other pedestrian roadway improvements are planned or implemented. Public involvement and education are essential throughout the project process. Communication with the public during the planning phase ensures the community is aware of upcoming events or potential impacts to their roadway, construction schedules, improvements, and proposed completion dates. This also provides an opportunity for community feedback, which can help inform future educational efforts on the project. Once a project is completed, such as new SUPs or crossing improvements with Rectangular Rapid Flashing

Beacons or Leading Pedestrian Intervals, education efforts should provide information on how to use the facilities and new features. Project-related coordination efforts can be distributed through local media outlets, on-site, at special events/community events, project-related meeting, local and Town websites, and in coordination with NCDOT outreach.

Driver Education

Stakeholders from the community expressed the need for driver education in the community. Town staff, Steering Committee members, and community leaders can work together to identify priority educational topics, key audiences, and outreach methods (e.g., signage, workshops, print media). Potential educational campaigns, as discussed by both community stakeholders and Steering Committee members, include the following:

- General rules of the road conducted at day cares and churches (for young residents);
- General awareness signs for visitors entering Waxhaw, through potential application of gateway and wayfinding stations like Int-32: NC-16 at Price St and Int-33: NC 75 at Old Providence Rd.

Internal Education

Education is not limited to the community, it should also include all key staff involved in Plan implementation. This includes Town staff, Commission members, and Steering Committee members as well as NCDOT Division staff and regional or county staff, when relevant. Opportunities for education include, but are not limited to, the following:

- Staff presentations on sessions or conference events;
- Meetings or retreats on the Plan to discuss the status of the Plan, potential funding opportunities, roadblocks to implementation, or other similar pertinent information;
- Coordination between agencies and departments, such as information or resource sharing between transportation, planning, health, facilities, parks and recreation, and other such Town or county-

-departments;

- Training opportunities—webinars, brown bag lunch presentations—to educate staff on pedestrian guidelines and designs and best practices from across the state and nation.

Let's Go NC – Pedestrian and Bicycle

Curriculum

NCDOT sponsors this free educational program and provides instructional lesson plans, videos, and other downloadable programming to teach elementary age children how to walk and bicycle safely. Instructors do not need to receive training; for example, public safety or local educators can provide the training if desired. The Town should work with local agencies, schools, or community organizations to identify one or more individuals willing to take responsibility for conducting the training.

Eat Smart, Move More NC

Eat Smart, Move More NC is a North Carolina movement that promotes physical activity and healthy eating. They provide free, downloadable resources to encourage communities, schools, grocery stores, and similar businesses to make the healthy choice the easier choice. Community-based tools support creating active outdoor play spaces, information on coalitions to support the movement, and handouts for distribution, among others.

Education Program Resources

- Eat Smart, Move More NC. <https://www.eatsmartmovemorenc.com/>
- Guide to Creating Active Outdoor Play Spaces. <https://www.eatsmartmovemorenc.com/wp-content/uploads/2019/08/PlaySpacesGuide-HiRez.pdf>.
- Eat Smart, Move More Coalitions. <https://www.eatsmartmovemorenc.com/resource/eat-smart-move-more-coalitions/>.
- Eat Smart, Move More Manual. https://www.eatsmartmovemorenc.com/wp-content/uploads/2019/08/070317_Ipan_manual.pdf.

- Federal Highway Administration Pedestrian and Bicycle Safety. <http://safety.fhwa.dot.gov/pedbike/>.
- Institute for Transportation Research and Education: Education and Training – Bicycle and Pedestrian. <https://itre.ncsu.edu/training/bike-ped/>.
- Let's Go, NC! <https://www.ncdot.gov/initiatives-policies/safety/lets-go-nc/Pages/default.aspx>
- National Highway Traffic Safety Administration Pedestrian Safety. <https://www.nhtsa.gov/road-safety/pedestrian-safety>.
- NCDOT Integrated Mobility Division. <https://connect.ncdot.gov/projects/BikePed/Pages/default.aspx>.
- Pedestrian and Bicycle Information Center. <http://www.pedbikeinfo.org/>.
- WalkBikeNC. <https://www.ncdot.gov/bikeped/walkbikenc/>.

4.3.3 Enforcement Programs

Much like education programs, enforcement programs can be used inform and remind all roadway users about traffic laws and encourage safer behaviors. Programs include periodic reminders or events to obey traffic rules and ongoing monitoring of public spaces. Enforcement programs also reinforce and support the other E's.

Lead agencies and stakeholders:

- Law enforcement agencies
- Town staff

Elements of a good enforcement program:

- Reviews and updates North Carolina laws that impact bicycle safety (to address users of SUPs)
- Ongoing enforcement of relevant laws.
- Reduces the number of pedestrian crashes.

Watch for Me NC

This statewide pedestrian and bicycle safety campaign is designed to reduce pedestrian and bicycle injuries and deaths through education and enforcement. Watch for Me NC targets all roadway users and provides useful resources and tools for municipalities and residents. The Town can use the program to improve relationships between residents and law enforcement through educational events and safety materials giveaways (such as reflective gear and bike lights). It can also deploy the vehicle enforcement operations to those locations with higher failure to yield to pedestrians incidents along its higher speed and higher volume arterials such as those identified in for RSAs in Section 4.3.4 below.

SeeClickFix

Community members can use this website to report neighborhood concerns related to infrastructure, such as potholes, streetlight issues, or graffiti. The comments are routed to the local officials who can respond to the comment with information. The Town can use this resource to better track community concerns and identify areas in need of attention.

Speed Feedback Signs

The Town can use temporary traffic calming devices at key locations. These devices are mobile and can be placed along NC-16, S Providence Rd, NC-75, Howie Mine Rd, Cuthbertson Rd, and other locations where motorists may be traveling at higher speeds and pedestrian may be walking or using mobility devices in the roadway due to lack of sidewalks.

Motorist Enforcement

Local police should work together with Town officials to use any of the programs and resources to coordinate one-time or ongoing motorist enforcement campaigns. Enforcement may include monitoring vehicle speeds and traffic signal compliance.

Another approach to motorist enforcement is to

incentivize or offer rewards for appropriate behavior. Local law enforcement can conduct a pedestrian enforcement campaign that commends pedestrians for using crosswalks. The Town can work with local business owners to provide gift certificates, coupons, or other small tokens as rewards. The Town should conduct these enforcement efforts at highly visible locations and publicize them in the community and via social media.

Enforcement Program Resources

- FHWA Partnering with Law Enforcement. https://www.fhwa.dot.gov/environment/bicycle_pedestrian/ntpp/partner_law.cfm.
- NCDOT Watch for Me NC. <http://www.watchformenc.org/>.
- NHTSA Resource Guide on Laws Related to Pedestrian and Bicycle Safety. <https://one.nhtsa.gov/people/injury/pedbimot/bike/resourceguide/index.html>.
- Pedestrian and Bicycle Information Center Training and Events. <http://www.pedbikeinfo.org/training/index.cfm>.
- Pedestrian and Safety Guide and Countermeasure Selection System. <http://www.pedbikesafe.org/pedsafe/>.

4.3.4 Evaluation Efforts

The Town can use evaluation efforts to understand how well the strategies in the plan are working over time. Evaluation activities include setting goals, collecting baseline data (where possible), setting timetables, and collecting follow up data for all projects. Not all evaluation activities are data-driven; qualitative feedback and partnerships can assist with achieving the goal of evaluating program/strategy effectiveness and identifying improvements.

Lead agencies and stakeholders:

- Pedestrian Committee
- Steering Committee
- Town staff
- Public Works maintenance staff

Elements of a good evaluation effort:

- Dedicated staff or volunteer who will take responsibility of monitoring all elements of the Plan.
- Established metrics that are measurable and have associated timelines.

Town of Waxhaw Pedestrian Advisory Committee (PAC)

The Town should establish a standing Pedestrian Advisory Committee and engage with the Steering Committee for its initial membership. The Pedestrian Advisory Committee should be responsible for moving the Plan towards implementation and tracking success. Steering Committee members can help champion the Plan by working closely with the Pedestrian Advisory Committee to help measure success, work as liaisons with the greater community, and help identify solutions to barriers during implementation. The PAC may also be helpful in generating interest in independent bond funding for greenways.

Annual Pedestrian Count Program

The Town and the Pedestrian Advisory Committee can

work together to conduct annual bicycle and pedestrian counts to identify high-traffic locations. Volunteers from schools or community organizations can conduct manual observational counts at different times of the day and days of the week. Counts for specific locations should be done prior to implementation of a project to establish a baseline and then continue annually or on a two-year cycle. Observational qualitative data can also be used to identify locations for specific safety, enforcement, and educational efforts. When designing a counts program, the Town should consider the following issues: cost and equipment tradeoffs of continuous and short-durations counts; evaluating mid-week/typical days; address bias and errors through a quality control process, and; rotate counts around the Town. The Pedestrian and Bicycle Information Center (PBIC) provides resources for how to conduct pedestrian counts (see <https://www.pedbikeinfo.org/topics/countingestimating.cfm>). The Town may also contact the North Carolina-based Institute for Transportation Research and Education (ITRE) for information on the State's non-motorized volume data program (<https://itre.ncsu.edu/focus/bike-ped/nc-nmvdv/>).

Conduct Road Safety Audits

Town staff and representatives can conduct Road Safety Audits on priority corridors to identify more specific engineering-related improvements. This is a formal and detailed process that involves a multidisciplinary team to identify roadway elements that present the most safety concerns and formulate solutions to eliminate or mitigate the safety issues. The Town may request support from NCDOT Division 10, the NCDOT Traffic Safety Unit's Western Regional Field Operations Unit, and even request technical assistance from the North Carolina Division of the FHWA (alternatively, the Town can consider hiring an outside consultant to organize and conduct RSAs).

Corridors that may be suitable candidates based on their traffic volumes, speeds, numbers of lanes, pedestrian crashes, pedestrian-focused land uses, and recommended facilities include:

- East South Main St
- Cuthbertson Rd near Cuthbertson Middle and High School: In July 2022, the Town convened a multi-jurisdictional Cuthbertson Road Focus Group to discuss options for addressing congestion and safety. Considerations included increased sidewalk connectivity and coordination between the HOAs, Division 10, the Union County School District, and Town of Waxhaw.
- NC-16 corridor: The future U-5769A/B widening projects affects corridor options in addition to the Plan's recommended sidewalk projects and future demand for crossings.

reaching hundreds of residents from across the Town.

Facility Inspection and Maintenance

A key piece of evaluation is measuring and identifying maintenance needs, particularly after implementation. Public Works maintenance and facility staff should conduct routine maintenance checks of installed pedestrian projects to identify general wear and tear and immediate fixes—such as potholes and broken asphalt—that may impede use. The Town should establish a plan and timeline for addressing such issues. This encouragement initiative relies upon crowd-sourcing to report maintenance needs.

Community Surveys

The Town can use surveys and other similar feedback mechanisms as tools to gauge community-wide acceptance and understanding of new projects; needs and interests for other future projects; and other community concerns that may be addressed through Encouragement and Education programming. The Town should work with stakeholder groups who reach broad audiences to help disseminate survey tools and collect feedback. This Plan demonstrated the Town's outreach through electronic surveys was capable of

Evaluation Resources

- National center for Safe Routes to School – Walkability Checklist. http://walkbiketoschool.org/wp-content/uploads/2017/01/walkability_checklist.pdf.
- Pedestrian and Bicycle Information Center – Counts. http://www.pedbikeinfo.org/planning/tools_counts.cfm.
- FHWA – Road Safety Audits. <https://safety.fhwa.dot.gov/rsa/>.

4.4 Policy Recommendations

4.4.1 State Pedestrian Transportation Policy

The NCDOT Integrated Mobility Division web page includes references and links to state and federal policies to support accommodation of pedestrians as part of the transportation system. See <https://www.ncdot.gov/divisions/bike-ped/Pages/bike-ped-laws.aspx> along with the summaries below.

Complete Streets Policy and Guidelines

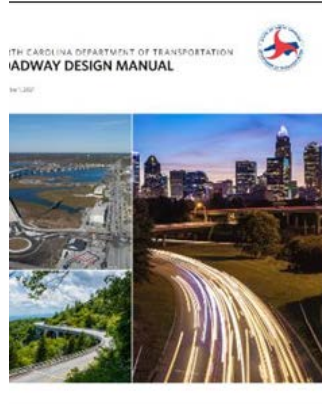
The USDOT defines Complete Streets as “streets designed and operated to enable safe use and support mobility for all users....[including] people of all ages and abilities, regardless of whether they are travelling as drivers, pedestrians, bicyclists, or public

transportation riders.”¹⁹ The Town of Waxhaw does not have a Complete Streets policy or design guidelines as of 2022.

NCDOT adopted its first Complete Streets Policy in 2009, revised it in 2019, and updated implementation guidance in 2022.²⁰ The updated policy and guidance documents reinforced that NCDOT is committed to partnering with local agencies to deliver Complete Streets. NCDOT highway projects (as defined by the STIP with a primary purpose of improving mobility for motor vehicles) that do not yet have an environmental document (as of August 30, 2019) are subject to the new policy. Revisions or clarification to the policy and guidance will be considered by a NCDOT Complete Streets Technical Team on an ongoing basis.

The 2019 policy and guidelines require NCDOT staff to incorporate multimodal facilities into the design of all transportation projects led by NCDOT, with few exceptions. Those exceptions may include facilities where non-motorized travel is prohibited by law (i.e. interstates and controlled access highways); areas with low densities of population and employment; areas with low demand for transit service; emergency repair or some routine maintenance projects.

The NCDOT Roadway Design Manual is the authoritative reference for Complete Streets design for NCDOT projects. NCDOT has recently moved to use the roadway cross sections developed for the SPOT process as illustrative examples for Complete Streets. There are additional resources to the standard roadway drawings, including curb ramp details.



The Town of Waxhaw should adopt a local Complete Streets Policy. The Town may reference the 2019 NCDOT policy or develop language customized to meet the objectives of this plan and local stakeholders. A Waxhaw Complete Streets Policy should include the following elements as recommended from Smart Growth America and the National Complete Streets Coalition ²¹:

1. **Vision and intent:** Includes an equitable vision for how and why the community wants to complete its streets. Specifies need to create complete, connected, network and specifies at least four modes, two of which must be biking or walking.

2. **Diverse users:** Benefits all users equitably, particularly vulnerable users and the most underinvested and underserved communities.
3. **Commitment in all projects and phases:** Applies to new, retrofit/reconstruction, maintenance, and ongoing projects.
4. **Clear, accountable exceptions:** Makes any exceptions specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.
5. **Jurisdiction:** Requires interagency coordination between government departments and partner agencies on Complete Streets.
6. **Design:** Directs the use of the latest and best design criteria and guidelines and sets a time frame for their implementation.
7. **Land use and context sensitivity:** Considers the surrounding community's current and expected land use and transportation needs.
8. **Performance measures:** Establishes performance standards that are specific, equitable, and available to the public.
9. **Project selection criteria:** Provides specific criteria to encourage funding prioritization for Complete Streets implementation.
10. **Implementation steps:** Includes specific next steps for implementation of the policy.

4.4.2 Town of Waxhaw, North Carolina Code of Ordinances

The Land Development Code (LDC) is the current legislation adopted by the Town in March 2021 and is

19. USDOT <https://www.transportation.gov/mission/health/complete-streets>

20. NCDOT Complete Streets Policy <https://connect.ncdot.gov/projects/Project-Management/Documents/CS%20Policy%20Update%20Memo%20Secretary%208.28.19.pdf>

21. Smart Growth America, "The Elements of a Complete Streets Policy," 2018, <https://smartgrowthamerica.org/resources/elements-complete-streets-policy/>

available on the Town's website. Waxhaw has achieved several policies for promoting pedestrian activity from the 2012 plan, including promoting street connectivity, supporting tree coverage, and a connectivity ratio for subdivisions. However, there are opportunities within the existing LDC to improve language to further support pedestrian facilities and pedestrian-oriented development. Table 9 outlines Waxhaw's existing standards and guidelines and recommended improvements to the standard.

4.4.3 Other Plans and Coordination

There are several local and regional plans that detail pedestrian-related projects and improvements. The Town should coordinate with the County, Carolina Thread Trail, NCDOT Division 10, and CRTPO—among other actors—to promote the successful deployment of these interconnected and often dependent planned projects.

Recommendation: The Town should develop a plan that further develops this Plan's greenways and identifies potential locations for blueways and blueway and greenway access points. Both these facilities follow water features and offer a range of transportation and recreation options for users of all ages and abilities and connect residents and visitors to Waxhaw's natural features.

Recommendation: The Town should work with Union County and the CRTPO to identify opportunities to coordinate efforts for transportation on a regional level.

Recommendation: The Town should identify and engage community organizations and leaders to be responsible for monitoring and implementing the Plan. These may include the Pedestrian Advisory Committee, staff from Public Works, or an outside firm.

Credit: Town of Waxhaw



Table 9 - Recommended Code of Ordinances Updates

Development Standard or Guideline	Improvement Needed	Reference
Increase required pedestrian/vehicle points of entry/egress for subdivisions	Increase required points of entry/egress for subdivisions to at least three when the exterior frontage of the subdivision on a particular public road is more than 750 ft (see Block Length) or when the subdivision contains more than 100 lots. State that additional points of ingress/egress may be required when the Planning Board determines that physical characteristics (such as the location of opposing driveways) would render the additional entrance practical for vehicles and pedestrian use.	LDC section 7.2.1 (p. 143) https://www.waxhaw.com/home/
Required block length and exceptions	Update the LDC section 7.2.1 to reduce maximum block length to no more than 600 feet for all zoning districts where it's currently greater (Employment Center (EC), R-1). Clarify exception based on "unusual topography"- recommended standards: slopes exceeding 15% for a sustained length (fifty feet), or stream valley widths in excess of 20 feet.	LDC section 7.2.1 p. 145 (table)
Sidewalk Installation Requirements: Include a condition on schools for the installation of an internal sidewalk system connecting to sidewalks along major streets	In order to provide safe pedestrian connections to schools, amend the LDC to include a clear requirement for schools for the installation of an internal sidewalk system connecting to sidewalks along major streets that abut or join school facilities. This would apply to schools and limited other uses for internal sidewalk networks to encourage pedestrian connectivity to school. Coordinate with walk to school programs. Current LDC Section 7.1.2 requires sidewalks on both sides of the street for "all new streets within Town limits" unless a waiver is provided by the Town Engineer. Section 7.2.2 requires a minimum sidewalk width of 5 feet.	LDC section 7.1.2, 7.2.2 Pedestrian/ Bicycle Connectivity 7.2.3 Cross Access for Non- Residential Developments
Sidewalk Installation Requirements: Infill developments	Modify LDC to include the extension of an existing adjacent pedestrian facility if physical conditions permit and it is in the adopted plan at the discretion of the Town Engineer or Zoning Administrator. This change would require infill development for all land uses to include sidewalks or a comparable pedestrian facility.	LDC
Crosswalk/Pedestrian Traffic Controls: Conditional rezoning for potential generators of pedestrian use	Update policy/LDC to require that all uses that might typically generate a significant amount (i.e. consistent and recurring) of pedestrian traffic (e.g. schools, parks) be subject to a conditional use; a condition could be placed on such facilities require the installation of crosswalks on major streets that abut such facilities requiring review for crosswalks and pedestrian signals at all signalized intersections adjacent to developed areas.	LDC; Consult NCDOT Pedestrian Crossing Guidelines

Development Standard or Guideline	Improvement Needed	Reference
Crosswalk/Pedestrian Traffic Controls: Crosswalks and Midblock Connections	Update policy/LDC to require crosswalks at any residential street intersection and at midblock locations for long blocks. Require review for additional crossing treatments at all midblock connections. Amend LDC to require midblock crosswalks along collector streets within subdivisions for block lengths of greater than 500 feet. Currently LDC mentions that "all redevelopment and street improvement projects shall take advantage of opportunities for retrofitting existing streets to provide increased vehicular and pedestrian connectivity, such as sidewalks, crosswalks, and multi-use paths."	LDC; Subdivision Standards; Consult NCDOT Pedestrian Crossing Guidelines
Greenway Installation and Connectivity	Update the LDC to include objective guidelines by which the Zoning Administrator can base a determination of conditions being "impractical" for sidewalk or multi-use trail connections. These guidelines should include maximum degree of slope, maximum distance, or presence of wetlands. Recommended standards: slopes exceeding 15% for a sustained length (fifty feet), or distance of paved road separation exceeding 500 feet. Include a reference the Town's new Comprehensive Pedestrian Plan and other future related planning documents for location of proposed greenways and multi-use trails.	LDC Section 7.2.2 Pedestrian/Bicycle Connectivity Section 7.2.3; Section 7.4 Greenways.
Ensure Adequate Pedestrian-Scale Lighting	Update the LDC and Waxhaw Engineering Design and Construction Standards Procedures Manual to specify pedestrian-scale lighting requirements for Neighborhood Commercial areas and other districts that are likely to generate pedestrian activity (downtown, commercial, campus locations, etc.). Ensure adequate pedestrian scale lighting is provided at mid-block crossing locations. Current Engineering, Design, and Construction Standards already address light spacing (not to exceed 200 ft); with additional lighting at intersections and mid-block locations; document includes language that "Development Services Department may add special lighting based on pedestrian activities."	LDC Section 8.15 Lighting and Town of Waxhaw Engineering Design and Construction Standards Procedures Manual - Street Lighting (p.16)

Development Standard or Guideline	Improvement Needed	Reference
Access Management and Street Entrances: Driveway consolidation	<p>Recommend modifying LDC and Engineering Standards to promote the consolidation of new driveways to minimize conflict points along mixed-use corridors with higher levels of pedestrian activity. Standards for minimum distances between curb cuts to be based upon the permitted travel speed of the road. For example, see below:</p> <p>30 mph - 100'</p> <p>35 mph - 150'</p> <p>40 mph - 200'</p> <p>45 mph - 250'</p> <p>50 mph - 300'</p> <p>55 mph - 350'</p> <p>Continue to coordinate with NCDOT on driveway access permits to reduce conflict points and promote access points for pedestrians.</p>	<p>LDC Section 7.2.1 Street Connectivity and 7.3 Driveways; Town of Waxhaw Engineering</p> <p>Design and Construction Standards Procedures Manual Appendix H Driveway Design Policy</p>
Speed and Operation of Vehicles: Modification of speed limits for specificized roadways	<p>Recommend modifying the Town Design Manual to include a list of Town-maintained roadways with 20 mph speed limit for roadways that are pedestrian-focused corridors in Downtown and other focus areas.</p>	<p>Town of Waxhaw Engineering Design and Construction Standards Procedures Manual</p>

Development Standard or Guideline	Improvement Needed	Reference
Building Setbacks and Parking	<p>Revise the LDC to clearly define parking minimums (e.g. "Parking minimums for all uses are equal to 20% of the parking maximum required per LDC section 7.5").</p> <p>Remove parking minimums from commercial zoning districts but maintain parking maximums.</p> <p>Section 7.5 of LDC currently spells out that NC (Neighborhood Center) District developments may reduce parking minimums by 50%. MS (Main Street) and TC (Town Center) districts infill development do not have required parking minimums and applicants in all districts may request a 20% reduction in parking minimums.</p>	LDC Section 7.5 Parking
Regulation of bicycle riding and electric scooter riding on Downtown sidewalk	Revise bicycle riding on town sidewalks policy to include electric scooters as part of the same policy. Consider expanding the list of Downtown sidewalks where riding a bicycle or an electric push scooter is prohibited to include additional streets in downtown. Current UDO in Sect. 66-65 allows bicycle riding on town sidewalks with the exception of the historic downtown: North Main Street commencing at Hicks Street and ending at Providence Road; and South Main Street commencing at Hicks Street and ending at a providence Road.	Waxhaw UDO Chapter 66-Traffic Section
Implementation		
Set aside a dedicated funding stream for sidewalk implementation	Set aside a dedicated funding stream for sidewalk implementation through a General Fund allocation, bond referendum, or other sources. Potential eligible projects for a pedestrian/greenway focused bond could derive from this Plan. Consider a 10-year funding level to achieve selected projects (total to be determined based on chosen projects).	N/A
Set aside a dedicated funding stream for public art to enhance the pedestrian realm (murals, sculptures). Target key locations that could benefit from additional activation of the pedestrian realm (vacant storefronts, underutilized lots).	Set aside a dedicated funding stream to allocate funding to public art projects on a regular basis. Public art criteria are included within LDC (6.5.3-4 Public art and ornamentation).	LDC 6.5.3 and 6.5.4

Table 10 - Six E's Recommendation Overview

Strategy	Target Audience	Lead Agency/ Stakeholder	Partnerships for Success	Time Frame	Duration	Cost
Encouragement						
Non-Infrastructure Transportation Alternatives Program	Schoolchildren, Parents	Town	County Department of Public Health, School District	Immediate	Ongoing	\$
Walking Maps	General Public	Pedestrian Committee	Town Staff, Volunteers	Near Future – Long-Range	Ongoing	\$ - \$\$
Self-Guided / Group Walking Tours	General Public	Pedestrian Committee	Town Staff, Arts Council, Volunteers	Near Future – Long-Range	Periodic	\$
Art Walks	General Public	Parks and Recreation	Town Staff, Arts Council, Main Street Committee, Volunteers, PAC	Near Future – Long-Range	Periodic	\$
Story Walks	Schoolchildren, Parents	Parks and Recreation	Town Staff, Union County Schools, Volunteers, PAC	Near Future – Long-Range	Periodic	\$
Wayfinding Signs	General Public	Pedestrian Committee	Town Staff, Tourism Bureau, Volunteers	Immediate	Ongoing	\$ - \$\$
Awareness Days/Events	General Public	Town	Pedestrian Committee, Volunteers, Union County DSS, Union County Schools	Immediate – Long-Range	Ongoing	\$

Strategy	Target Audience	Lead Agency/ Stakeholder	Partnerships for Success	Time Frame	Duration	Cost
Temporary Installations	General Public	Town, Pedestrian Committee	Volunteers, NCDOT	Near Future – Intermediate	Ongoing	\$-\$\$
Town Designations	General Public	Town	Pedestrian Committee	Long-Range	Ongoing	\$
Education						
Project-Related Efforts	General Public	Town	NCDOT	Immediate – Long-Range	Ongoing	\$
Driver Education	General Public	Town	NCDOT	Near Future – Long-Range	Ongoing	\$ - \$\$\$
Internal Education	Town staff/ representatives	Town	NCDOT, Regional, County staff	Immediate – Long-Range	Periodic	\$
Let's Go NC	General Public, schoolchildren	Town	NCDOT, Active Route to School Coordinator	Immediate	Periodic	\$
Eat Smart, Move More NC	General Public	Town	NCDPH, ESMM	Immediate	Ongoing	\$
Enforcement						
Watch for Me NC	Motorists	Town	Law Enforcement, NCDOT	Immediate – Long-Range	Periodic	\$
SeeClickFix	General Public	Town		Immediate – Long-Range	Ongoing	\$

Strategy	Target Audience	Lead Agency/ Stakeholder	Partnerships for Success	Time Frame	Duration	Cost
Speed Feedback Signs	Motorists	Town	Law Enforcement, NCDOT	Long-Range	Ongoing	\$\$ - \$\$\$
Motorist Enforcement	Motorists	Town	Law Enforcement	Immediate	Periodic	\$\$ - \$\$\$
Evaluation						
Pedestrian Committee	Town Staff / General Public	Pedestrian Advisory Committee	Town Staff, Steering Committee	Near Future – Long-Term	Ongoing	\$
Annual Pedestrian Count Program	General Public	Pedestrian Advisory Committee	Town Staff, Steering Committee	Near-Future – Long-Range	Periodic	\$ - \$\$\$
Road Safety Audits	Town Staff	Town of Waxhaw	Pedestrian Committee, NCDOT	Near-Future – Long-Range	Periodic	\$\$ - \$\$\$
Community Surveys	General Public	Pedestrian Advisory Committee	Town Staff, Steering Committee	Near Future – Long-Range	Periodic	\$\$ - \$\$\$
Facility Inspection/ Maintenance	Town Staff	Town of Waxhaw	Facilities	Near Future – Long-Range	Periodic	\$\$\$
Equity – Foundation of the Plan Elements, Included in All Activities						

Time Frame: Immediate = initial steps in Plan, short-term; Near Future = implementation phases; Long-Range = post-implementation, evaluation and maintenance phases

Duration: Ongoing = continual updates needed, no clear end; Periodic = occasional, non-specified milestones

Costs: \$ = Minimal costs/free; \$\$ = Moderate costs, may be available through local funds/investments; \$\$\$ = Requires investment, grants, additional funding resources



Credit: Town of Waxhaw

5

Implementation Plan

Following through on these recommendations will require persistence and leadership from the local community. Although local sources of funding can go a long way in achieving community aims, there are a variety of ways for the residents of Waxhaw to encourage walking in their community.

5.1 Implementation Overview

This section outlines the organizational structure and steps necessary to successfully achieve the goals set forth by this Plan. The recommendations within this section include:

- Organizational structure for administering programs.
- Action items for building a culture of active living.
- Methods for monitoring progress and continuing encouragement.
- Potential funding sources.

5.2 Organizational Framework for Implementation

Successful implementation of the Plan will require the cooperation of several agencies and organizations. Many of these partnerships already exist, such as between NCDOT, the Town, and CRTPO. Still other connections will be formed through the implementation of this Plan. These coalitions will likely be formed within the community itself, as the Town coordinates its efforts with local schools, athletic associations, and other community groups.

5.2.1 Role of NCDOT Funding and Programs to Support Implementation

As the administrator of the Bicycle and Pedestrian Planning Grant Initiative and the primary agency concerned with transportation planning, engineering, and construction in the State of North Carolina, NCDOT IMD will be an important partner in the implementation of this Plan. NCDOT IMD should continue to provide technical assistance and consulting regarding pedestrian transportation planning in Waxhaw. NCDOT Division 10 will be a key partner for the design and construction of recommended projects identified in this Plan after adoption.

NCDOT Spot Safety & Highway Safety Improvement Program (HSIP)

Implementation Strategy:

Near Term (1-5 years) | *Safety*

HSIP Investigations	Intersections	Multimodal Corridor
<ul style="list-style-type: none"> NCDOT initiated based on crash history or risk. NCDOT coordinates with Town as needs are reviewed. 	<ul style="list-style-type: none"> Consider locations with crash history or risk. Locations with existing or planned sidewalks should be higher priority Identify deficiencies and current conditions Contact Division and/or Regional Traffic Safety Engineer to discuss options (i.e. crosswalks, pedestrian signals) 	<ul style="list-style-type: none"> Identify high risk locations (may include crash history) with sidewalk. Locations with existing or planned sidewalks should be higher priority Document destinations and crossing behaviors Contact Division and/or Regional Traffic Safety Engineer to discuss options (i.e. sidewalk gaps, crossing treatments)

Pedestrian crash history is an indicator of need to improve safety for pedestrians crossing or walking along roadways. NCDOT screens the roadway network for locations where multiple pedestrian crashes have occurred within a 10-year span. These “hot spots” are often at mid-block locations or some distance away from the nearest intersection. Where NCDOT identifies a potentially hazardous location or section through the screening process, NCDOT will conduct a detailed crash analysis and field investigation to understand crash types and conditions that may contribute to the risk for pedestrian crashes. NCDOT puts emphasis on factors that may contribute to potential severe injury crashes, such as low visibility where pedestrians may cross or travel, and traffic speeds are high. The Town may also conduct its own screening that assesses 3-year or longer rolling windows on an annual basis to identify locations for safety improvements.

As NCDOT Traffic Engineering staff identify need, they develop recommendations (often referred to as “countermeasures”) to improve safety for pedestrians and all roadway users. Pedestrian safety projects are often programmed either through the federal Highway Safety Improvement Program (HSIP) or the state Spot Safety program. In some cases, NCDOT will implement the safety recommendations, after contacting the Town to discuss the nature of the project and maintenance responsibilities, at no cost to the Town.

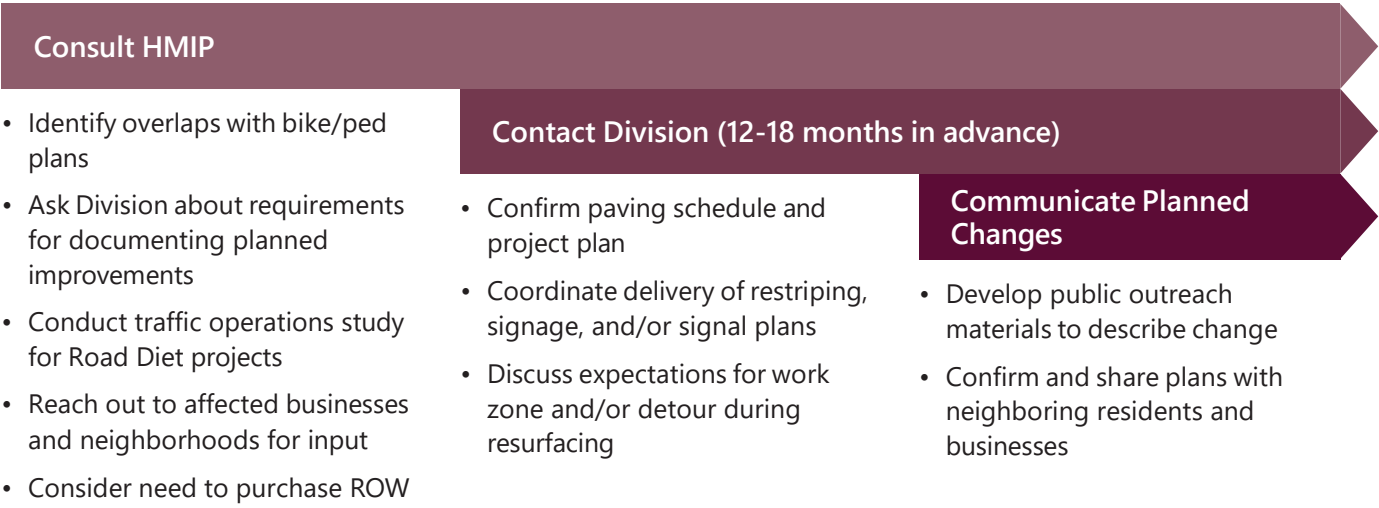
The Town of Waxhaw should routinely reach out to NCDOT Division 10 or Regional Traffic Engineering contacts to discuss sites with pedestrian crash history or where the Town has strong concerns about the risk to pedestrian safety. Risk may be most pronounced where traffic speeds and volumes are high, pedestrians have been noted to walk or cross, and multiple, nearby pedestrian-oriented destinations may induce walking trips. Convenience stores, job centers, parks, schools, and apartment complexes are examples of pedestrian-oriented destinations. Example locations in Waxhaw for potential discussion with NCDOT include sections of NC-16 scheduled for improvements, the Downtown street network and associated crossings, and East South Main St; all of these locations have recommended projects.

The Town and NCDOT may consider opportunities to improve safety across the existing pedestrian network, such as by connecting small gaps in the sidewalk path network, marking crosswalks, and installing pedestrian countdown signals. More robust countermeasures, such as flashing beacons and raised

medians may be considered where risk is highest due to current conditions. Pedestrian safety improvements may also be incorporated into safety projects primarily developed to address vehicle safety at intersections or segment locations. The Town of Waxhaw should monitor the NCDOT Highway Safety Improvement Program (HSIP) website for potential opportunities to incorporate pedestrian safety improvements. HSIP studies were conducted from 2018 through 2020 at locations along NC-16, East South Main St, and Cuthbertson Rd. NCDOT reevaluates projects proposed for the HSIP on a quarterly basis, so the Town should be in regular communication with Division or Regional Traffic Engineer staff and consider coordinating with CRTPO to participate in those discussions.

NCDOT Resurfacing Projects and Small Project Funding

Implementation Strategy: Near Term (2-5 years and ongoing) | *Resurfacing—Complete Streets*



NCDOT maintains a planned schedule, the Highway Maintenance Improvement Program (HMIP), for resurfacing or improving pavement condition for roads in each of the Divisions. Per the NCDOT Complete Streets Policy, pedestrian improvements should be considered for potential implementation as part of resurfacing projects. **The Town should contact NCDOT Division staff annually or otherwise monitor the HMIP for planned resurfacing activities and consider overlaps with pedestrian plan recommendations.** Pedestrian improvements that may be eligible for inclusion in a resurfacing project may include marked or improved crosswalks, narrowed, or eliminated travel lanes (i.e. Roadway Reconfiguration, marked setbacks between crosswalks, and on-street parking. Waxhaw’s five-year HMIP schedule is shown in Figure 22 in Section 2.4.

If lane reductions are proposed by the Town, NCDOT may request information about potential impacts to traffic operations and speeds. **The Town should consider proactively evaluating these impacts and developing conceptual striping and signal plans (as needed) where lane reduction and crosswalk markings may be requested as part of the resurfacing program.** Additionally, the Town should consider reaching out to affected business owners and nearby residents to discuss the potential impacts and benefits of the lane reductions and pedestrian improvements, before implementation through resurfacing projects. **The Town should also consider prioritizing other pedestrian improvements, such as new sidewalks, to be implemented adjacent to the resurfacing project.** If the Town commits to constructing the sidewalk prior to

or upon completion of the resurfacing project, NCDOT may coordinate to include additional crossing improvements at intersections and midblock locations as cited in the pedestrian plan. These additional pedestrian improvements may require the Town to acquire right-of-way or easements from property owners.

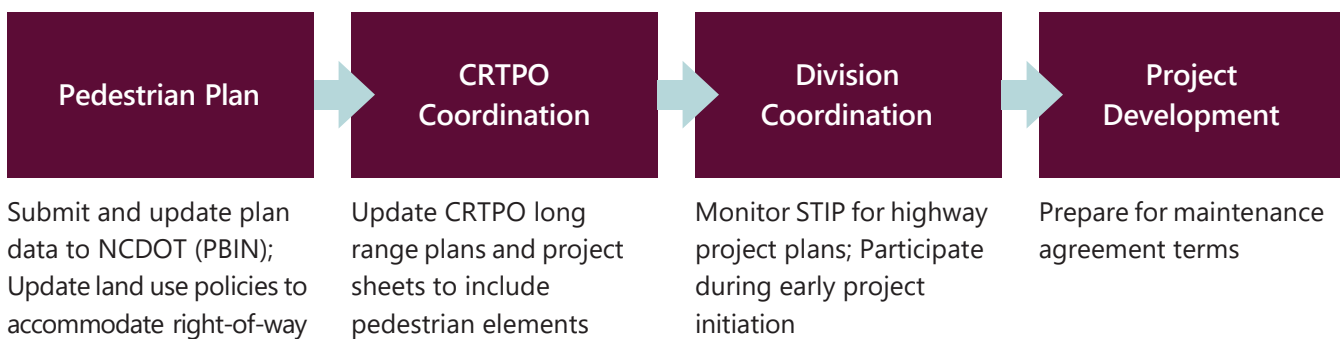
The Town and NCDOT should discuss the type of exhibits or design plans required to incorporate pedestrian improvements into resurfacing projects. For instance, NCDOT may request that the Town submit conceptual striping plans to indicate preferred dimensions for on-street parking, crosswalks, and travel lanes. The Town and NCDOT should also discuss expectations for accommodating pedestrians and traffic detours during resurfacing activities. Example opportunities to coordinate with the HMIP include planned resurfacing along Gray Byrum, Cuthbertson Rd, and NC-75.

NCDOT also manages other funding programs that may be eligible for pedestrian improvements recommended in this plan. NCDOT Division 10 may identify state funds for small construction projects (typically less than \$100,000 allocations for construction), such as small sidewalk improvements, that are not prioritized through the SPOT process. The Town should contact the Division and state legislative representatives to inquire about small construction funding opportunities for priority projects. The Town should also evaluate the use of the state Powell Bill funds apportioned annually for local transportation projects, including resurfacing, sidewalks, and greenway improvements. **The Town should prioritize using these small construction funds to build priority sidewalks, especially where these small sidewalk projects may support opportunities for NCDOT resurfacing and potential pedestrian safety projects.**

NCDOT Complete Streets Policy

Implementation Strategy:

Mid-Long Term (5-15 years) | *NCDOT Complete Streets*



The Town's Pedestrian Plan will become a key reference to NCDOT for future highway projects. The Town should coordinate with CRTPO to integrate the pedestrian plan recommendations into the CRTPO Comprehensive Transportation Plan (CTP). The Town should also submit updated GIS shapefiles representing constructed sidewalks and other pedestrian improvements to NCDOT on a regular basis (annually) to integrate into the Pedestrian Bicycle Infrastructure Network (PBIN). **By working to integrate the Pedestrian Plan information into these other documents and datasets, the Town is providing the best information to NCDOT for successful Complete Streets implementation.**

The Town should work with Division 10 to identify programmed and proposed highway projects that may align with the Pedestrian Plan. The Town will convey the intended pedestrian improvements to Division 10 and the CRTPO in the early stages of the development of highway projects, by working to include appropriate

pedestrian features in the cross section and highway project description submitted to SPOT and by responding to NCDOT requests for information during the initiation of highway projects. Example opportunities to consider integration of pedestrian improvements into highway projects include U5769A/B, the NC-16 widening, such as pedestrian crossing improvements and connections to planned sidewalk projects. **Unless the pedestrian improvement identified exceeds NCDOT standards for pedestrian facilities (such as wider or decorative sidewalks) or meets an exception for Complete Streets implementation per NCDOT policy, pedestrian improvements identified in this plan with a confirmed transportation need should be implemented as part of highway projects at no additional cost to the Town.**

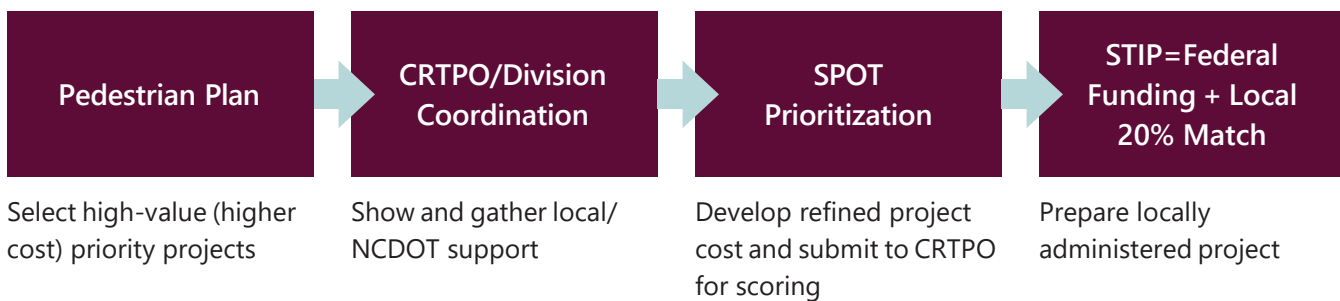
NCDOT will ask the Town to agree to maintain separated pedestrian facilities constructed as part of highway projects, and NCDOT may require the Town to support the acquisition of additional right-of-way or negotiating easements for pedestrian facilities. Cities and town do not generally have to program substantial funding to maintain pedestrian improvements built to current design standards. **The Town should consider setting up an overall capital program to maintain clear walkways for disabled pedestrians.**

NCDOT SPOT Pedestrian Projects

Pedestrian improvements that are independent of roadway improvements for motor vehicles can be submitted as projects through the NCDOT SPOT (Strategic Prioritization Office of Transportation) program. These types of pedestrian projects typically include sidewalks, shared-use paths, and infrastructure separated from the vehicle travel way. Funding received through the NCDOT SPOT program is federal, and local agencies are required to submit a non-federal match per requirements of the Strategic Transportation Investment (STI) law governing the SPOT process. STI provides three funding tiers for transportation projects: Statewide Mobility, Regional impact, or Division needs. Standalone pedestrian projects are eligible for funding as part of the Division Needs category. **Pedestrian projects compete against highway and other transportation projects through the SPOT process.**

Implementation Strategy:

Mid-Long Term (10-15 years) | *NCDOT STIP Bike/Ped Funding*



SPOT is a data-driven approach to project prioritization for all transportation mode projects, including bicycle and pedestrian project improvements. The approach used to identify priority projects in this plan closely matches the data-driven criteria for scoring pedestrian projects. Half of the SPOT score for pedestrian projects is based on data-centric methodology determined by NCDOT, including metrics describing safety conditions and destinations near the proposed projects. The other half of the SPOT score is dependent on local input from the NCDOT Division 10 office and the CRTPO. **Therefore, it is critical to work closely with the Division office and the CRTPO to garner support for local input points to increase chances for NCDOT funding for independent pedestrian projects.**

If the Town of Waxhaw is successful in having an independent pedestrian project programmed for funding by NCDOT through the SPOT process, the Town should identify non-federal funds (typically 20% of the total project costs and sourced from local budget allocation) to match the federal funds programmed by NCDOT. The Town will likely be asked or expected to administer the project, under the general oversight of NCDOT. Administration responsibilities include managing the survey and design of the project, developing, and submitting required environmental documents and right-of-way plans, and hiring contractors for the construction and inspection of the project. These tasks are subject to federal laws and NCDOT requirements, and the process can be time-consuming and complicated. **It is a best practice for the Town to pursue larger-scale and larger-budget projects through SPOT to maximize the effort put into administering federally funded pedestrian projects.**

The SPOT process works through MPOs and Divisions to solicit projects every 2 to 3 years. The Town should work closely with the CRTPO and Division to identify the best and refine the scope of proposed projects prior to submitting through SPOT. The Town should consider conducting feasibility studies for substantial projects such as larger-scale greenways or complicated road diet projects to refine cost estimates for design and construction. By evaluating the projects for implementation challenges such as availability of right-of-way, impacts to environmental features and utilities, and public support, the Town will be more prepared for a successful project. New projects will typically be programmed for funding award between 7 to 10 years after the close of the SPOT process. Federally funded projects often require an additional 2 to 3 years to administer. **The total timeline to implement independent pedestrian projects funded through NCDOT can require between 10 and 15 years.**

5.2.2 Role of MPO, County, and Town

Role of the Charlotte Regional Transportation Planning Organization

As the metropolitan planning organization (MPO) responsible for transportation planning within the greater-Charlotte region, the CRTPO should consider implementing the projects recommended in this Plan. For the infrastructure needs of Waxhaw to be met, CRTPO should continue to consider the multimodal transportation needs of the Waxhaw in the county's comprehensive transportation plan (CTP), last adopted in 2017 and updated in 2020. Opportunities to improve the pedestrian environment should be taken when roadways are scheduled for maintenance or construction. Many of the projects outlined in this report can be accomplished in unison with maintenance programs initiated by the CRTPO and funded in combination with state roadway improvement programs such as SPOT. The Town of Waxhaw should work with CRTPO to amend the CTP to include the recommendations in this Pedestrian Plan.

Role of Union County

Planning by Union County government has a direct and tangible connection to the Town of Waxhaw. Union County is predominant among the other jurisdictions that border Waxhaw for land use planning, transportation planning, and public health initiatives in and around the Town. With strong support from the Union County Department of Social Services and Department of Health, these plans can align with common goals that span municipal boundaries. While Union County is responsible for more than just Waxhaw, there are several crucial ways for the County to support this Plan:

- Support active transportation through regional trails and networks, such as the greenway network identified in the plan and the realization of the Carolina Thread Trail;

- Promote active transportation and public health through county-wide programming;
- Sponsor or lead public education and evaluation programs recommended in this plan.

Role of the Town of Waxhaw

Waxhaw is responsible for implementing this plan. Through its adoption, the Town will be more equipped

to make improvements in walkability throughout its jurisdiction. The Pedestrian Advisory Committee should continue to serve as champions for pedestrian planning in Waxhaw. The Committee should work towards full implementation of this plan. This includes advocating for the project and programmatic recommendations in this plan, as well as developing other events and programs as they work in the community.

5.3 Implementation Action Steps

This section outlines general steps to fully implement this Plan. Steps are assigned to three categories: policy, programming, and infrastructure. A timeline of these action items is provided in Table 11.

5.3.1 Policy Action Steps

Adopt This Plan & Integrate into Comprehensive Transportation Plans

Local adoption of this plan will build upon the existing regional plans and policies and will improve the Town's eligibility to receive priority funding for projects. Following the local adoption of the plan, the Town should approach the Union County Commissioners to amend the Union County CTP to incorporate the plan's recommendations and seek the CRTPO endorsement. This inclusion in the County's CTP would solidify the plan's recommendations for both Waxhaw and throughout the County and other localities.

Establish the Pedestrian Advisory Committee

The Town should take its existing Steering Committee—which was established for the development of this Plan—and transform it into a Pedestrian Advisory Committee (PAC). This committee would be the primary advocate for promoting pedestrian planning and events in Waxhaw and oversee event programming and encouragement within the community. Local champions should represent many different interests within the Town,

such as the elementary schools, Town staff, police, and many others, which share the common goal of making Waxhaw a safer place to walk. Other North Carolina communities, such as Mebane and Greenville, have established PACs that can serve as a model for Waxhaw.

Adopt a Complete Streets Policy

The Town of Waxhaw should adopt a local Complete Streets Policy. The Town may reference the 2019 NCDOT policy or develop language customized to meet the objectives of this plan *and* local stakeholders. This will support future pedestrian and bicycle improvements in both Town and NCDOT projects. Example model policies are included in the Appendix.

Modify LDC to Support Pedestrian Plan Implementation

The Town should review the recommended policy changes identified in Table 9 and adopt those that support the implementation of pedestrian projects, safety improvements, and the overall walkability of Waxhaw's streets.

Continue to Enforce State and Local Regulations

Ensuring that motor vehicles obey the speed limit, pedestrian signals, and other traffic regulations can improve the perception and desirability of walking

Waxhaw. Additionally, ensuring that pedestrians and other non-motorized road users are familiar with the operation of pedestrian signals and beacons and obey traffic laws themselves can ensure that these travelers stay out of harm's way. This creates an environment that is safe for all roadway users. The NCDOT Division of Integrated Mobility offers helpful links to many of these regulations through its website: <https://www.ncdot.gov/divisions/bike-ped/Pages/bike-ped-laws.aspx>

Develop Greenway and Blueways Plan

The Town should develop an active transportation plan that further studies this Plan's greenways and identifies potential locations for blueways and blueway access points. Both of these facility types follow water features and offer a range of transportation and recreation options for users of all ages and abilities and connect residents and visitors to Waxhaw's natural features. The Town may pursue a plan by itself with minimal resources or coordinate with other actors like Union County or the Carolina Thread Trail to create a regional plan. Key plan components could include continued refinements of greenway alignments, typical cross sections for greenways, greenway crossings, navigable blueway routes, blueway access points (i.e. canoe and kayak put in points), vehicle access and parking, and recommend facility type details.

5.3.2 Program Action Steps

Create Educational Outreach Programs

Education provides people of all ages the confidence to walk along Waxhaw's sidewalk, SUP, and local road network. Educational outreach should also extend to drivers of motor vehicles as well. Awareness of pedestrians is a skill that is learned and can be improved upon with active public engagement.

Create Encouragement Outreach Programs

Many of these encouragement programs serve to remind individuals how convenient and attainable an active lifestyle can be. Walk to work and school events

can illustrate how easy it is to complete daily activities through active transportation. Open streets events bring people together, build a sense of community, and allow them to engage with the community without needing to drive and find a parking space.

Establish a Monitoring and Benchmarking Program

The PAC should devise ways of monitoring pedestrian activity, as well as preferred routes and destinations. The needs and preferences of the community will evolve over time. To ensure that Town officials and planners can respond effectively, there should be an established methodology for tracking these changes, evaluating current programs, and generating new priorities. The benchmarking program should be designed to support the Plan's goals and associated performance measures noted in Section 5.4.

Become Registered as a Walk Friendly Community

The Town could choose to apply for the designations as a Walk Friendly Community through the University of North Carolina's Highway Safety Research Center (HSRC). This designation offers the opportunity for Waxhaw to assess its current conditions and receive feedback from third party perspectives. By undergoing this process, the Town may be more equipped to apply for future grant funding through organizing its existing conditions and refining its vision as a leading pedestrian friendly community. Other Walk Friendly-recognized communities in North Carolina include Charlotte, Davidson, Asheville, Cary, and Boone.

5.3.3 Infrastructure Action Steps

While there are several phases involved in infrastructure project implementation, the steps outlined in this section are fundamental for the Town to take as it implements the new infrastructure projects.

Identify Implementation Opportunities

Federal, state, and local funding sources will be necessary to implement this Plan. No one source should be relied upon to complete all of the proposed recommendations. The implementation strategy for each project depends on the cost, facility recommendation, roadway type, and other elements. The following are possible implementation opportunities the Town can seek:

- NCDOT SPOT Pedestrian Projects (10 to 15 years)
- NCDOT SPOT Highway Projects—Complete Streets/Pedestrian Improvements (5 to 15 years)
- NCDOT Pedestrian Safety Improvements (1 to 5 years)
- NCDOT Resurfacing Projects (1 to 5 years)

Refer to Section 5 for more detail on each NCDOT funding source and the process the Town should follow for each source.

Perform Road Safety Audits

NC-16, East South Main St, and Cuthbertson Rd were identified during the study as ideal candidates for a Road Safety Audit (RSA). An RSA is a formal examination of mobility safety performance to identify potential road safety issues and identifies opportunities for improvements in safety for all road users. The FHWA works with State DOTs and local jurisdictions to encourage RSAs along existing roads and intersections. The goal of an RSA is to identify elements of the road that may present a safety concern and recommend a standard approach to elimination or mitigation.

Prioritize Projects

The most highly scored projects in Section 3 should be considered for implementation in the near to mid-term. However, should opportunities arise to implement this Plan's projects concurrent with related capital, NCDOT, or private improvements, the Town should pursue those options to support completion of its pedestrian network. As the Town progresses on project implementation, it should re-prioritize the list of projects on a semi-annual basis (e.g. two or three year cycle) with updated costs, facility specifications (as needed), and meeting the community's need, especially for those with persistent transportation barriers.

Review the Applicability of Future Projects

Many of the projects in this Plan, as well as others concerning transportation in Waxhaw, will need to undergo more detailed site-specific evaluation as future revisions are made. Waxhaw's priorities will change over time, and projects should be constantly re-evaluated for future needs. For example, the previous plan identified equestrian trails as facility options, while those were not cited during the development of the current plan. Town staff and the PAC should work jointly to this end. The priority projects should be the Town's focus as it works with the County and the CRTPO for funding and implementation through local and regional plans. This Plan should be regularly revisited every five (5) years or more frequently.

5.3.4 Action Item Timeline

Table 11 - Plan Implementation Action Timeline

Strategy	Contributing Stakeholders	Lead Agency/ Stakeholder	Time Frame	Duration
Policy				
Adopt this Plan	Town Council	Town Staff	Immediate	Initial
Amend the CTP	Town Council, Union County Commissioners, CRTPO	Union County Commissioners	Near Future	Once
Finalize the Pedestrian Advisory Committee	Town Staff, Pedestrian Advisory Committee	Town Staff	Immediate	Periodic
Adopt a Complete Streets Policy	Town Council, Town Staff, Pedestrian Advisory Committee	Town Council	Near Future	Once
Update LDC/Engineering Manual	Town Staff, Town Council	Town Council	Near Future	Periodic
Continue to Enforce State and Local Regulations	Town Staff, Law Enforcement, Pedestrian Advisory Committee	Police	Near Future – Long-Range	Ongoing
Develop Greenway and Blueways Plan	Pedestrian Advisory Committee, Town Staff, Trail-based Organizations	Town Staff	Near Future	Once
Program				
Create Educational Outreach Programs	Pedestrian Advisory Committee	Town Staff	Near Future – Long-Range	Ongoing
Create Encouragement Outreach Programs	Pedestrian Advisory Committee	Town Staff	Near Future – Long-Range	Ongoing
Establish a Monitoring and Benchmarking Program	Town Staff, Pedestrian Advisory Committee	Town Staff	Immediate – Long-Range	Ongoing
Become Registered as a Walk Friendly Community	Town Staff, Pedestrian Advisory Committee	Town Staff	Near Future – Long Range	Periodic
Infrastructure				
Identify Funding Sources	Town Staff, Pedestrian Advisory Committee	NCDOT & Town Staff	Immediate – Long-Range	Periodic

Strategy	Contributing Stakeholders	Lead Agency/ Stakeholder	Time Frame	Duration
Perform a Road Safety Audit	NCDOT Transportation Safety & Mobility Unit, FHWA Division Office, Town Staff	NCDOT & Town Staff	Near Future – Intermediate	Once
Build the Priority Projects Outlined in this Plan	NCDOT, Union County, Town Staff, CRTPO	NCDOT	Near Future – Intermediate	Ongoing
Review the Applicability of Future Projects	NCDOT, CRTPO, Union County, Town Staff, Pedestrian Advisory Committee	NCDOT	Long Range	Periodic

5.4 Performance Measures

Performance measures should be developed to evaluate this Plan's action items and programs. Baseline conditions, such as pedestrian counts and event attendance, should be gathered before any of the action items are implemented (see Section 4.3.4 for information on counts programs). This allows the Town and the PAC to track the progress of successful programs as they grow and mature. Determining which programs are effective and which ones are less effective within the Waxhaw context will be critical in making future decisions regarding the full implementation of this Plan.

Potential performance measures should connect directly to the Plan's goals as identified in Section 1.2. These could include:

Goal 1: Connect the Town through, between, and within its neighborhoods



- Miles of new sidewalk connection of Plan segments completed annually or on a multi-year cycle.
- Integration of updated LDC language from the Plan that supports pedestrian-friendly design.
- Survey responses from Waxhaw residents that indicate increased satisfaction with the pedestrian network.

Goal 2: Foster activity Downtown and in Future Neighborhood Centers



- Number of programs and related attendance in Downtown and other focus areas.
- Number of new walking routes and tours through the Downtown and focus areas.

Goal 3: Make Waxhaw more accessible



- Progress towards or completion of the Town's ADA Transition Plan.
- Miles of sidewalk and SUP connections and similar low stress and accessible pedestrian facilities, such as wide sidewalks and SUPs.

Goal 4: Improve walking conditions along the NC-16 corridor



- Inclusion of the Plan's crossing improvements in NC-16 corridor improvement projects.
- Miles of sidewalk installed along the NC-16 corridor.

Goal 5: Improve walking conditions along the NC-16 corridor



- Identification and incorporation of blueway routes and greenway connections into the Town's plans.
- Number of historic, natural, and cultural sites accessible by pedestrians.

Goal 6: Improve walking conditions along the NC-16 corridor



- Reduction in number or rate of vehicular-pedestrian crashes, especially severe injury and fatal crashes. The Town could consider developing a baseline Pedestrian Danger Index (PDI) and track progress on a rolling basis; the $PDI = ((\text{Pedestrian Deaths} / \text{Population}) \times 100,000) / \text{Percentage of Walking Trips}$.²²
- Number of enhanced or controlled crossings along Town and NCDOT roadways.
- Miles of low speed roadways (e.g. operational speed if known or posted speed of 20 mph or less) throughout the Town.

Goal 7: Promote healthier lifestyles



- Percentage of adults who walk to work as reported by local surveys or through the Census.
- Participation level of adults and children in Parks and Recreation programming.
- Number of health and activity-focused Town events held annually.

22. The Pedestrian Danger Index is described in the Smart Growth America report series, "Dangerous by Design." <https://smartgrowthamerica.org/>



5.5 Funding Sources

Funding sources to consider moving forward include, but are not limited to, the following. Refer to the Appendix for more funding source options.

- **State Transportation Improvement Program (STIP)**¹ The Town may consider coordination with NCDOT to integrate pedestrian safety improvements and Complete Streets elements within programmed local STIP projects and developing future projects for prioritization in the STIP.
- **Congestion Mitigation and Air Quality funding (CMAQ)**² See entry below.
- **Surface Transportation Program-Direct Allocation funding (STP-DA)**³ CRTPO holds a competitive call for discretionary transportation projects funding on a regular basis-this includes STBG-DA funds allocated to the Charlotte region, Transportation Alternatives Program (TAP-DA) funds as well as Congestion Mitigation and Air Quality Improvement Program (CMAQ) funds and a portion of toll proceeds. A local match of at least 20 percent is required.
- **State Street-Aid (Powell Bill) Program**⁴ Powell Bill funds may be used to construct and maintain sidewalks, crossings, greenways, roadways, and bicycle facilities.
- **NCDOT HSIP Hazard Elimination Program**⁵ Safety grant program utilizing federal and state funding to address safety and potential safety issues. Projects are selected based on a cost-benefit ratio with safety benefits being classified in terms of crashes reduced. The Town may consider identifying high-crash areas and segments and intersection within the Plan's RSA corridors for discussion with the Division 10 for HSIP candidates.
- **Governor's Highway Safety Program Grant**⁶ Safety grant program specifically related to preventing crashes on North Carolina roads.
- **Eat Smart, Move More NC**⁷ Provides a variety of links and resources, including potential funding sources for public health initiatives.
- **Non-Infrastructure Transportation Alternatives Program**⁸ This NCDOT grant program is intended to support programs and activities that focus on education, enforcement, encouragement and evaluation elements of a Safe Routes to School (SRTS) initiative. The Town may consider applying to support walking access and walking safety for the Kensington and Waxhaw Elementary Schools and the Cuthbertson Middle and High Schools.
- **NC Parks and Recreation Trust Fund PARTF Program**⁹ Provides dollar-to-dollar matching funds for the creation of parks and recreational facilities.
- **HUD State Community Development Block Grant Program**¹⁰ Provides assistance for community projects for smaller communities that benefit low to middle income households.
- **American Hiking Society's National Trails Fund Grant**¹¹ Organization that offers micro-grants (\$500-\$3,000) to active members of the alliance of hiking organizations to improve hiker access or hiker safety. Recipient organization must be a 501(c)(3) non-profit.
- **NC Regional Trails Program**¹² Provides funding for trails projects that are construction ready for grant funding and leverage local funds to meet recreational trail and trail-needs.
- **AARP Community Challenge**¹³ A 'quick-action' grant to fund projects that improve transportation and public spaces through either a permanent physical improvement or a temporary demonstration that leads to long-term change.

- **National Association of Realtors Placemaking Grant¹⁴:** The Placemaking Grant funds the creation of new, outdoor public spaces and destinations in a community, and it is accessible through state and local REALTOR® Associations. Potential funded projects include demonstration projects like parklets, pop-up parks, pedestrian plazas, bike lanes, and amenities like street furniture, paint, signage, materials, landscaping, and murals.
- **Better Block Foundation¹⁵:** The Better Block Foundation is a 501(c)3 nonprofit that educates, equips, and empowers communities and their leaders to reshape and reactivate built environments to promote the growth of healthy and vibrant neighborhoods. Its services support the reimagination of public spaces to include active transportation like walking and bicycling.
- **Bond Funding¹⁶** Local revenues may be raised through issuing bonds for general or specific purposes. Mounting a successful bond campaign is like similar to running a any other campaign: strong citizen support and participation by local officials and business leaders are critical for successful passage of a bond. North Carolina communities like Raleigh and Wilmington have successfully passed numerous greenway, parks, and multimodal transportation pedestrian-focused bonds that build new projects and acquire land for future developments. The PAC or a similar entity is typically charged with identifying the projects for bond funding prior to voting on the bond to build public interest and support.
- **Carolina Thread Trail Regional Trail Implementation Grant Program¹⁷** The Carolina Lands Conservancy is a local non-profit conservation group leading the Carolina Thread Trail implementation efforts. The Town should consider applying for a Regional Trail Implementation grant in support of planning for and building sections of the Thread Trail. The following project types with expected funding amounts were designated in recent calls for projects:
 - Trail Construction (to complete construction of segments of the Carolina Thread Trail that may include varying trail types, such as natural surface, unpaved aggregate or stone material, and asphalt or concrete pavement); maximum grant request: \$50,000;
 - Trail Project Design (to conduct site due diligence, permitting, construction budgeting, and drawing for segments of the Carolina Thread Trail); maximum grant request: \$30,000;
 - Land Acquisition (to acquire land or purchase easements or development rights for segments of trail that align with the Carolina Thread Trail Master Plan. Land acquired may include open space for viewsheds, riparian buffers, wildlife habitat, or recreation along the trail); maximum grant request: \$30,000;
 - Detailed Corridor Planning (to identify trail alignment on parcel by parcel basis by working with landowners on a specific segment of the Carolina Thread Trail Master Plan and develop the scope of work necessary to successfully implement the plan and construct the trail); maximum grant request: \$15,000;
 - Canoe/Kayak Launch Construction (to complete construction of canoe or kayak launches into designated Carolina Thread Trail Blueways, though the Town would have to first successfully designate a blueway); maximum grant request: \$5,000.

References

1. NCDOT Strategic Transportation Investments (STI) <https://www.ncdot.gov/initiatives-policies/Transportation/stip/Pages/strategic-transportation-investments.aspx>
2. Congestion Mitigation and Air Quality Improvement (CMAQ) https://www.fhwa.dot.gov/environment/air_quality/cmaq/
3. Surface Transportation Block Grant Program (STBG) <https://www.fhwa.dot.gov/specialfunding/stp/>
4. State Street-Aid (Powell Bill) Program <https://connect.ncdot.gov/municipalities/State-Street-Aid/Pages/default.aspx>
5. NCDOT Highway Safety Improvement Program (HSIP) <https://connect.ncdot.gov/resources/safety/Pages/NC-Highway-Safety-Program-and-Projects.aspx>
6. Governor's Highway Safety Program <https://www.ncdot.gov/initiatives-policies/safety/ghsp/Pages/default.aspx>
7. Eat Smart, Move More NC <https://www.eatsmartmovemorenc.com/>
8. Non-Infrastructure Transportation Alternatives Program <https://connect.ncdot.gov/projects/BikePed/Pages/Non-Infrastructure-Alternatives-Program.aspx>
9. NC Parks and Recreation Trust Fund PARTF Program <https://www.ncparks.gov/more-about-us/parks-recreation-trust-fund/parks-and-recreation-trust-fund>
10. NC Department of Commerce – Community Development Block Grants <https://www.nccommerce.com/grants-incentives/public-infrastructure-funds/infrastructure-federal-cdbg-economic-development>
11. American Hiking Society <https://americanhiking.org/national-trails-fund/>
12. NC Regional Trails Program <https://trails.nc.gov/trail-grants>
13. AARP Community Challenge <https://www.aarp.org/livable-communities/community-challenge/>
14. National Association of Realtors <https://realtorparty.realtor/community-outreach/placemaking>
15. Better Block Foundation <https://www.betterblock.org/>
16. City of Raleigh Parks and Greenway Bond Projects <https://raleighnc.gov/SupportPages/parks-and-greenway-bond-projects>
17. Carolina Thread Trail Grant Funding Program <https://www.carolinathreadtrail.org/resources/grant-program-funding-sources/>

