URS DIN 01616

Visual and Aesthetics Technical Report

Durham-Orange Light Rail Transit Project

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July 24, 2015

The NEPA Preferred Alternative for the D-O LRT Project would generally follow NC 54, I-40, US 15-501, and the North Carolina Railroad (NCRR) Corridor in downtown Durham and east Durham. The alignment would begin at UNC Hospitals, parallel Fordham Boulevard, proceed east on NC 54, travel north on I-40, parallel US 15-501 before it turns east toward the Duke University campus along Erwin Road, and then follow the NCRR Corridor parallel to NC 147 through downtown Durham, before reaching its eastern terminus near Alston Avenue. The alignment would consist of at-grade alignment, fill and cut sections, and elevated structures. In two sections of the alignment, Little Creek and New Hope Creek, multiple Light Rail Alternatives are evaluated in the DEIS.

This technical report contains information for all alternatives analyzed in the DEIS. However, pursuant to MAP 21, the Moving Ahead for Progress in the 21st Century Act (P.L. 112-141), a NEPA Preferred Alternative has been developed, which recommends C2A in the Little Creek section of the alignment, NHC 2 in the New Hope Creek section of the alignment, the Trent/Flowers Drive station, and the Farrington Road Rail Operations and Maintenance Facility.

Table of Contents

List of Figures

List of Tables

List of Appendices

List of Acronyms and Abbreviations

Acronym/Abbreviation	Definition
AA	Alternatives Analysis
DBAP	Durham Bulls Athletic Park
DEIS	Draft Environmental Impact Statement
D-O	Durham-Orange
D-O LRT	Durham-Orange Light Rail Transit
DPAC	Durham Performing Arts Center
DTCC	Durham Technical Community College
DUMC	Duke University Medical Center
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
GIS	Geographic information systems
I-40	Interstate 40
LPA	Locally Preferred Alternative
LRT	light rail transit
NC	North Carolina
NCCU	North Carolina Central University
NCRR	North Carolina Railroad
NEPA	National Environmental Policy Act
NHC	New Hope Creek
NRHP	National Register of Historic Places
ROMF	rail operations maintenance facility
TPSS	traction power substations
UNC	University of North Carolina
US	United States
USACE	US Army Corps of Engineers
VA	Veterans Affairs

1. Introduction

Triangle Transit, in cooperation with the Federal Transit Administration (FTA), has prepared a Draft Environmental Impact Statement (DEIS) to evaluate a potential high-capacity transit improvement in the Triangle region, within the Durham-Orange (D-O) Corridor, between Chapel Hill and Durham. This technical appendix focuses on the potential effects of the alternatives to visual and aesthetic resources in the study area.

The National Environmental Policy Act (NEPA), as well as other regulations concerning projects with a federal nexus, identifies aesthetics as one of the factors in the human environment that must be considered in an Environmental Impact Statement (EIS). This report describes how the proposed D-O LRT Project is expected to change the visual character of the study area and how those changes are expected to be perceived by viewers. Two categories of viewers are considered in the impact analysis: neighbors and other people who would view the transportation project from the surrounding streets and buildings, and travelers and other people who would use the transportation project and view it from adjacent land uses.

Visual impacts, or changes to visual character, associated with the D-O LRT Project are described in this technical report. The methods used and applicable laws and regulations are explained first, followed by a description of existing conditions, anticipated visual impacts, and recommended mitigation for each landscape unit.

1.1 Description of the Study Corridor

The D-O Corridor is located within the Triangle region. It extends roughly 17 miles from southwest Chapel Hill to east Durham, and includes several educational, medical, and other key activity centers which generate a large number of trips each day. The land uses in the D-O Corridor are supported by a network of major highways including NC 54, I-40, US 15-501, Erwin Road, and NC 147. Additional detail regarding the study corridor is included in the *Durham-Orange Light Rail Transit Project DEIS*, chapters 1 and 2.

1.2 Alternatives Considered

- No-Build Alternative
- Light Rail Alternatives

In addition to the Light Rail Alternatives, the DEIS considers a No-Build Alternative comprised of the existing and programmed transportation network improvements without the planned rail improvements and associated bus network modifications. Additional detail regarding the alternatives considered is included in the *Durham-Orange Light Rail Transit Project DEIS,* chapter 2.

1.2.1 No-Build Alternative

The No-Build Alternative includes the existing and planned transportation programs and projects scheduled to be built and implemented before forecast year 2040 and contained in the 2040 MTP, excluding only the Light Rail Alternatives, rail transit improvements, and related bus transit modifications that would be associated with the proposed D-O LRT Project.

1.2.2 Light Rail Alternatives

Through the Alternatives Analysis and Scoping process, a majority of the proposed D-O LRT Project alignment was identified. However, there are a few areas where different alternatives were retained for further evaluation. As a result, multiple alignments crossing Little Creek and New Hope Creek are evaluated in the *Durham-Orange Light Rail Transit Project DEIS*.

- Four potential crossings of Little Creek between Hamilton Road and the proposed Leigh Village Station (Alternatives C1, C1A, C2,and C2A)
- Three potential crossings of New Hope Creek and Sandy Creek between Patterson Place and South Square (Alternatives NHC LPA, NHC 1, and NHC 2)
- Station alternatives at Duke/VA Medical Centers (Duke Eye Center and Trent/Flowers Drive)
- Five proposed locations for the Rail Operations and Maintenance Facility (Leigh Village ROMF, Farrington Road ROMF, Patterson Place ROMF, Cornwallis Road ROMF, and Alston Avenue ROMF)

The Light Rail Alternatives would generally follow NC 54, I-40, US 15-501, and the North Carolina Railroad (NCRR) Corridor in downtown Durham and east Durham. The alignment would begin in Chapel Hill at UNC Hospitals, parallel Fordham Boulevard, proceed eastward adjacent to NC 54, travel north along I-40, parallel US 15-501 before it would turn east toward Duke University and run within Erwin Road, and then follow the NCRR Corridor that parallels the Durham Freeway (NC 147) through downtown Durham, before reaching its eastern terminus in Durham near Alston Avenue. The alignment would consist of at-grade alignment, fill and cut sections, and elevated structures. A total of 17 stations are planned, and up to 5,100 parking spaces would be provided along the Light Rail Alternatives. In addition, a ROMF would be constructed to accommodate the D-O LRT fleet (initially 17 vehicles, with the ability to accommodate up to 26 vehicles without needing expansion).

Bus routes would be modified to feed into the D-O LRT stations, and headways would be adjusted to provide more frequent bus service and minimize transfer waiting times. These services would also connect light rail passengers with other area transportation hubs, including park-and-ride lots and transfer centers.

2. Legal and Regulatory Framework

NEPA identifies aesthetics as one of the factors in the human environment that must be considered in determining the effects of a project. The information and analysis presented in this technical report will be used in the evaluation of other topic areas. For example, Federal regulations require that visual impacts be addressed for compliance with Section 106 of the Historic Preservation Act and with Section 4(f) of the USDOT Act for the protection of publicly owned parks, recreational areas, wildlife and waterfowl refuges, or public and private historical sites.

3. Methodology

3.1 Overview

This visual impact assessment generally follows the Federal Highway Administration's (FHWA) visual quality and aesthetics assessment methodology (FHWA methodology) as the FTA has not issued specific guidance on the visual quality and assessment methodology. The FHWA methodology has become an accepted framework for conducting visual impact assessments. Some aspects of the approach have been adjusted for the scope of this project.

Under the No-Build Alternative, there would be no visual or aesthetic impacts due to the proposed D-O LRT Project. The No-Build Alternative includes other transportation projects that are presumed to be constructed – even if the proposed D-O LRT Project is not built. Impacts are expected with the future implementation of those planned roadway and transportation projects. The sponsor(s) of those projects will perform environmental studies as required by law.

3.2 Data Used

The following data were used to identify and document visual and aesthetic resources within the study area:

- Observations and photographs collected during field visits
- Aerial photographs of the study area
- Google Earth Street View and Bing Maps Bird's Eye View to supplement field visits
- Elevation data in raster image format
- A visual simulation "flyover" video based on the conceptual design and produced to illustrate change in views and viewpoints providing a sense of the surrounding land uses and elevation changes from the perspective of someone traveling along the transit alignment
- Project plans including conceptual drawings and elevated alignments
- Geographic information systems (GIS) data noting the study area, alignment, stations, and elevated segments
- GIS data from the *Neighborhoods and Community Resources Technical Report,* including neighborhood boundaries and community facilities
- Findings from the other technical reports prepared for this project, including the *Neighborhoods and Community Resources Technical Report*

Federal, state, and local plans and policies that encourage the protection of visual and aesthetic resources were examined as they relate to the proposed project. In addition, regulations and plans that might influence the design or appearance of a proposed project were identified, including comprehensive plans for the Town of Chapel Hill, Orange County, Durham County, and the City of Durham; master plans for UNC and Duke University; small area plans; and design manuals. Appendix A includes a summary of applicable federal, state, and local plans and policies that could apply to the proposed D-O LRT Project.

3.3 Project Context

The proposed D-O LRT Project is located in the northwestern portion of the North Carolina Research Triangle Region (Triangle), which includes Chatham, Durham, Franklin, Granville, Harnett, Johnston, Orange, and Wake counties. This area of North Carolina is part of the Piedmont physiographic province, characterized by gently rolling terrain and an abundance of streams and wetlands. The Triangle Region is comprised generally of suburban development with concentrated urbanized areas in downtown Durham and Raleigh.

The project extends from Chapel Hill to Durham and roughly follows NC 54 beginning at the UNC Hospitals to I-40, then parallels I-40 north to US 15-501, following US 15-501 northeast to Duke University Campus where it turns east to downtown Durham and parallels NC 147 to NC 55 (Alston Avenue). Numerous activity centers are located along the alignment and contribute to the visual character of the project area, including UNC Hospitals, UNC campus, the Friday Center, Duke University and Duke University Medical Center, and downtown Durham.

3.4 Project Methodology

As FTA does not have visual assessment guidelines, Triangle Transit used publications from FHWA for guidance in conducting analyses related to visual and aesthetic conditions and impacts of the proposed D-O LRT Project. The publications consulted for this analysis include FHWA's *Visual Impact Assessment for Highway Projects* (FHWA 1988); *Guidance for Preparing and Processing Environmental and Section 4(f) Documents* (Technical Advisory T 6640.8A, 1987); and *Esthetics and Visual Quality Guidance Information* (August 1986). In January 2015, FHWA issued a new guidance manual, *Guidelines for the Visual Impact Assessment of Highway Projects*; however, the visual impact assessment for this project was largely completed by that point and will not be updated based on the new guidance. The methodology for identifying visual and aesthetic effects generally follows this guidance and includes the following steps:

- Establish the viewshed and landscape units
- Identify existing visual environment, character, and quality
- Identify viewers, viewer preferences, and viewer exposure to areas where the project would be visible
- Describe the likely visual changes and visual impacts of the project
- Summarize significant changes in visual quality that would occur
- Develop potential mitigation measures for significant changes in visual quality

The following subsections describe the methods used for each of these steps.

3.4.1 Viewshed and Landscape Units

The D-O LRT **viewshed** generally includes the land within a 200-foot buffer on either side of the proposed alignment alternatives. In areas where the project's alignment is proposed to be elevated, the viewshed is expanded to a 1,000-foot buffer.

Viewshed: The aggregate landscape formed by the area that can be seen from the project alignment and the areas from which the proposed project can be seen. This is the study area for visual impacts.

Landscape units: Subareas of the viewshed that have distinctive visual character and a specific geographic location, also described as an outdoor room.

The project's viewshed was divided into 10 **landscape units** for the purposes of classifying the viewshed into areas of similar land uses and visual characteristics. The ten landscape units were determined through a combination of field visits and through referencing the *Neighborhood and Community Resources Technical Report*, which provided information on land use and neighborhood boundaries. Important visual features used to determine these landscape units included land use, architectural characteristics of development, highways, recreational facilities, and natural features. A brief description of each of the 10 landscape units is provided in Table 1. The viewshed and landscape units are shown on Figure 1.

Figure 1: Viewshed and Landscape Units

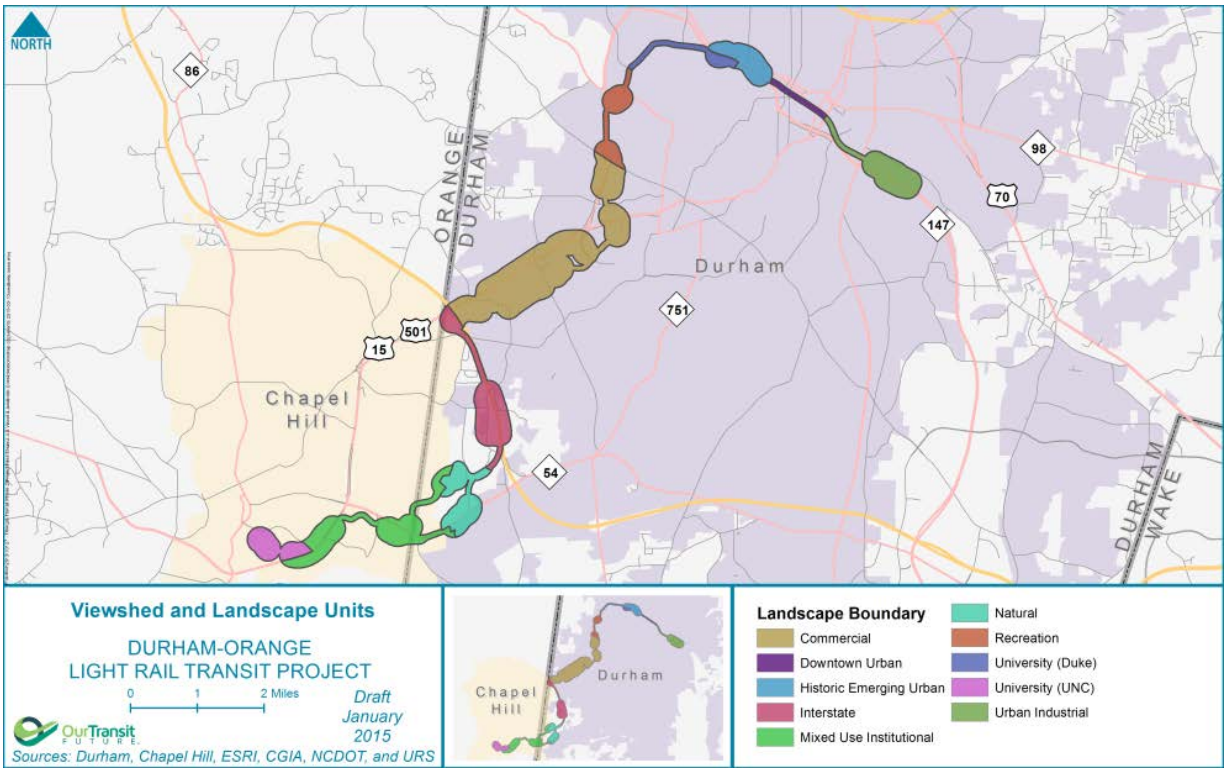


Table 1: Landscape Units

Landscape Unit	General Description
#1 University (UNC)	UNC's main campus, downtown Chapel Hill's business district on Franklin and Rosemary Streets, and residential neighborhoods
#2 Mixed Use/Institutional	UNC's Finley Golf Course and athletic fields to the west, the Glen Lennox and Meadowmont neighborhoods, and UNC's Friday Center (event center)
#3 Natural	Little Creek corridor and George King Road area
#4 Interstate	I-40 from NC 54 to US 15-501
#5 Suburban Commercial	US 15-501 corridor with mix of single-family and multi-family residential neighborhoods and suburban commercial development and shopping centers
#6 Recreational	Includes Duke University Golf Club and Duke Forest
#7 University (Duke)	Duke University's West Campus and mixed residential and commercial land uses west and north of the campus
#8 Historic Emerging Urban	Old West Durham neighborhood, commercial district on Ninth Street, Duke University's East Campus and surrounding historic neighborhoods
#9 Downtown Urban	Warehouse District and Central Park neighborhoods, downtown Durham, Morehead Hill, and the Southside/St. Teresa neighborhoods
#10 Urban Industrial	Edgemont, Golden Belt, and Eastway Village neighborhoods, North Carolina Central University, and Durham Technical Community College

3.4.2 Existing Visual Environment, Character, and Quality

After identifying the viewshed and landscape units, a description of existing conditions in each landscape unit was prepared that addresses **visual resources**, **visual character**, and **visual quality**. Definitions for each of these elements are provided in the side bar. Field visits, photographs, elevation data, and adopted local plans were used to document visual and aesthetic resources within the visual assessment study area.

Where there is high visual quality, it is important to evaluate and understand the potential visual impacts of the project. Visual quality is subjective, but is generally described in terms of vividness, intactness, and unity. Definitions of these terms, and a qualitative scale for rating high, moderate, and low visual quality, are provided in Table 2.

Visual resources: Features that make up the visible landscape.

Visual character: A description of what a landscape unit looks like based on the order of the patterns composing the landscape. The elements of these patterns are the form, line, color, and texture of the visual resources. Their relationships can be described in terms of dominance, diversity, and continuity.

Visual quality: Describes the excellence of the visual character and the viewer's experience

Table 2: Criteria and Scale for Rating Visual Quality

Criteria	High	Moderate	Low
Vividness The visual power or memorability of landscape components as they combine in striking and distinctive visual patterns	Highly memorable Elements combine in striking visual patterns Presence of distinct focal points	Somewhat memorable Elements form perceivable patterns	Not vivid Elements appear random with no perceivable pattern
Intactness The visual integrity of the natural and man-built landscape and its freedom from encroaching elements	Lack of man-made development Minimal to no visible encroachment of elements to the landscape	Man-made development disturbs the natural landscape and encroaches on the visual setting	The landscape has encroaching elements that create an eyesore to viewers
Unity The visual coherence and compositional harmony of the landscape considered as a whole	Man-made development blends with the natural landscape providing an integrated design with its setting	Some visual relation between man-made and natural setting	Man-made and natural patterns do not reinforce each other and visually look chaotic and jumbled

Source: FHWA 1988

The descriptions of existing conditions are based on assessments of field visits, adopted local plans, and other resources provided by local planners, aerial photography, GIS information, community resources, and neighborhoods mapping. Photographs of visual resources are included in appendix B.

3.4.3 Viewers, Exposure, and Sensitivity

Viewers are the people who look upon the current viewshed, and their preferences and sensitivity to change need to be identified and understood prior to assessing visual impacts of the project. Viewers were identified during field visits based on the land uses within each landscape unit and through the *Neighborhood and Community Resources Technical Report*. Viewer goals and preferences related to views were identified through the review of the plans listed in appendix A and validated based on public comments received during public meetings related to concerns about project visual elements.

Viewers: Neighbors and travelers with views of the project or from the project.

Exposure: The physical location of each viewer group, the number of viewers, and the duration of their view.

Sensitivity: The viewers' variable receptivity to the visible environment, affected by their awareness, activity, values and goals, and the view's cultural significance.

The scale used to characterize the exposure and sensitivity of viewers is provided in Table 3. As projects have a wide range of visual resources and project elements, a contextual, project-based typical rating is developed. The typical rating of exposure and sensitivity by viewer-type is provided in Table 4. Careful consideration of any changes to the view is important where there are viewers with high exposure and high sensitivity.

Table 3: Scale for Viewer Exposure and Sensitivity

Exposure	Sensitivity
High: Many viewers, consistent exposure for long periods of time, close proximity, unobstructed line of sight.	**High**: Viewers' activity draws them to the view. View is important to the values and goals of the viewers or has cultural significance.
Moderate: Some viewers, regular exposure for a short period of time, moderate proximity to the view, some obstructions to the view.	**Moderate**: Viewers' activity may cause some distraction from the view. View is of some importance but is not culturally significant.
Low: Few viewers, short duration, far from the view, obstructed view.	**Low**: Viewers' activity distracts them from the view. Views are not supported by the values and goals of the viewers and does not have cultural significance.

Table 4: Typical Exposure and Sensitivity by Viewer Type

Viewer Type	Exposure	Sensitivity
Residents – single- and multi-family housing	High	High
Residents and visitors in historic districts	High	High
Business owners	High	High
Golf course players	High	High
Bike and pedestrian trail users	Moderate	High
Nature enthusiasts, hikers, and hunters	Moderate	High
Children and teachers – school	Moderate	Moderate
University visitors, student, professors, staff	Moderate	Moderate
Church members	Moderate	Moderate
Hospital visitors, patients and staff	Moderate	Moderate
Shoppers	Moderate	Moderate
Office workers	Moderate	Low
Motorists	Moderate	Low
Transit riders	Moderate	Low
Performing arts patrons, conference attendees, and attendees at sporting events	Low	Moderate
Attendees at festivals	Low	Moderate

3.4.4 Visual Changes and Visual Impacts

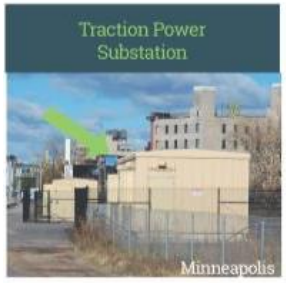
Visual impacts are the combination of changes to visual resources and viewers' responses to those changes associated with construction and operation of the transit project. Changes may be perceived as detracting from or enhancing visual resources.

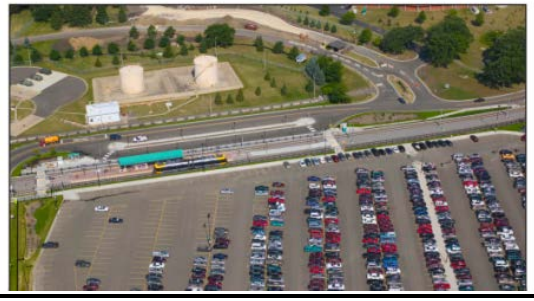
Visual Impact = Visual Resource Change + Viewer Response

There are two general ways the project can change visual resources in each landscape unit: (1) remove or alter existing visual resources and (2) alter the visual character in the viewshed by introducing new elements. The first step of the impact assessment was to identify the potential new visual elements that could result in a change in the visual quality and to identify the location of the element within each landscape unit. These elements are described in Table 5.

Table 5: Potential New Visual Elements

Typical Visual Element	Description	Examples	
Light rail vehicles and trackway	Light rail vehicles and the trackway on which the vehicles would operate.	 **Minneapolis, MN**	 **Norfolk, VA**
Station platforms	To accommodate passenger boarding and deboarding, typical station platforms would be 270 feet long with canopies that would be approximately 12 feet high; stations could have landscaping and design elements to enhance visual compatibility with the surrounding area.	 Portland	
Sidewalk, ramps and pedestrian bridges	To accommodate access to the station platforms, sidewalk, ramps and pedestrian bridges may be necessary. These accommodations may require modifications to the existing right-of-way.		

Typical Visual Element	Description	Examples
Overhead catenary system (OCS)	Light rail vehicles would be electrically powered by an overhead catenary system that would require construction of poles to support overhead wires.	 **Overhead catenary – Poles**  **Overhead catenary – Wires**
Traction power substations, communications cabinets, signal houses, and crossing cases	To provide electricity throughout the proposed D-O Corridor, electric substations would need to be located within the rail right-of-way or at station locations; substations would be one-story, corrugated metal, approximately 40 feet wide by 60 feet long. Signal houses would be approximately 10 feet wide by 30 feet long by 10 feet high and located close to tracks. Crossing cases would be at each at-grade crossing to operate lights and switches.	  

Typical Visual Element	Description	Examples
Existing right-of-way modifications	Street widening and modifications to existing right-of-way, including removal of vegetation or business signage or other physical alterations to private property.	
Bridges and retaining walls	Bridges to cross over existing roads or water features and retaining walls that are either approaches to these bridges or needed to hold back an existing slope to minimize property impacts.	
Park-and-ride lots	The number of parking spaces at each proposed park-and-ride lot would vary depending on the forecasted ridership and land availability. Parking could be provided as either surface lots or structured parking in a parking garage.	 

Typical Visual Element	Description	Examples
ROMF	The ROMF would provide maintenance, repair, cleaning, inspection, and storage of light rail vehicles. Five ROMF alternative sites are being considered (Leigh Village, Farrington Road, Cornwallis Road, Patterson Place, and Alston Avenue).	 

The proposed D-O LRT Project would introduce new visual elements to the viewshed. These new elements could negatively affect visually sensitive resources by altering the view to and/or from the resource, or by adding an element that would be out of scale or character to the existing visual context. These new visual elements would include the light rail vehicles and trackway; station platforms and canopies; sidewalk, ramps and pedestrian bridges; the overhead catenary system (OCS) that powers the electric light rail vehicles; traction power substations (TPSS), communications cabinets, signal houses, and crossing cases; existing right-of-way modifications; bridges and retaining walls; park-and-ride lots and parking deck; and the ROMF.

Visual changes were characterized as substantial, moderate, or minor using the scale in Table 3. The final locations of substations, signal houses, and crossing cases have not been determined, and these structures would have little impact on the visual character of the viewshed, as they would typically be concealed from view or located in areas that are not visually sensitive. These elements are not discussed further in this report.

Finally, an overall rating of the visual impact of the project on the landscape unit was made based on the level of visual change, and the viewer preferences and response within the unit. The assessment considered a variety of factors, including the visual character of the area and the project element, and the sensitivity and exposure of viewers.

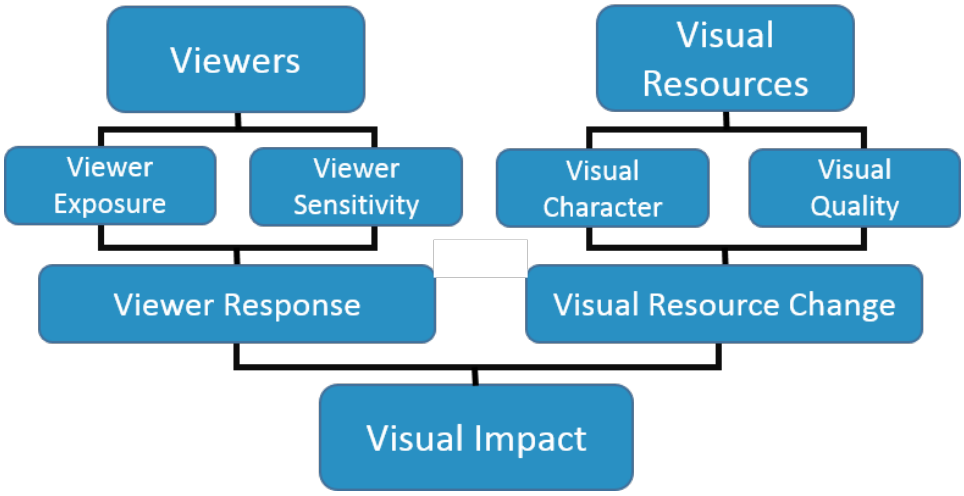


Table 6: Potential Degree of Change for New Visual Elements

Substantial Change	Moderate Change	Minor Change
Definitions		
A significant impact would be made to the visual quality and existing character of the study area	Notable changes would take place and affect the visual quality and existing character of the study area	Few or very specific instances can be noted that would have an effect on the visual quality and character of the study area
Associated Elements and Changes		
Introduction of transit infrastructure	Expanding existing scale of transit infrastructure	Adjacent to similarly scaled transit infrastructure
Prominent new elevated structure(s)	Moderate new grade separation	At grade / below grade
Substantial displacement of structures	Moderate displacement of structures	Low displacement of structures
Substantial new parking areas	Moderate new parking areas	Few new parking areas
View disruption	Moderate view disruption	Low view disruption
Removal of existing screens to residential uses	Partial removal of existing screens to residential uses	Limited removal of existing screens to residential uses
Substantial visual change to public parks or open space	Moderate visual change to public parks and open space	Limited visual change to public parks and open space
Blocks scenic features	Disrupts scenic features	Minimal disruption of scenic features
Substantial changes to streetscape	Moderate change to streetscape	Limited change to streetscape
Substantial removal of vegetation	Moderate removal of vegetation	Limited removal of vegetation
Substantial changes to National Register of Historic Places (NRHP) historic districts	Moderate changes to NRHP historic districts	Limited changes to NRHP historic districts
Substantial new night lighting	Moderate new night lighting	Low new night lighting

3.4.5 Potential Mitigation Measures

Mitigation measures are the product of coordination with other disciplines and overall project goals to ensure that the measures are feasible and integrated with the entire mitigation program. Potential mitigation measures for adverse visual and aesthetic impacts were identified during the evaluation process a. Final mitigation measures will be outlined in the Record of Decision (ROD).

4. Affected Environment and Environmental Consequences

The following sections describe the existing conditions, assessment of potential visual impacts associated with the D-O LRT Project, and mitigation measures. Through extensive public outreach conducted for the proposed D-O LRT Project, input has been received regarding potential visual impacts from the introduction of new visual elements such as the LRT trackway (elevated and at-grade), stations (elevated and at-grade), and overhead catenary system (poles and wires). Specific areas of concern include UNC Chapel Hill Campus; the North Carolina Botanicals Gardens; UNC Finley Golf Course; residences at East 54, Meadowmont, Woodmont, Oak Creek Apartments, Leigh Village and Farrington Road; Duke University; Downtown Durham; and East Durham.

The assessment for the Light Rail Alternatives is described by landscape unit, and subdivided by Light Rail Alternatives when appropriate. The exception to this is the discussion of the ROMF alternatives, as the characteristics and nature of these facilities warrant a separate analysis and are described in section 4.12. Short-term impacts that would be associated with construction are addressed in section 4.11.

4.1 Landscape Unit #1: University (UNC Campus Area)

The University (UNC Campus Area) landscape unit begins at the western end of the viewshed and continues east along the proposed alignment to include the area north of NC 54 and west of Mason Farm Road, including the portions of UNC campus and UNC Hospitals that are within the viewshed.

4.1.1 Existing Conditions and Viewers

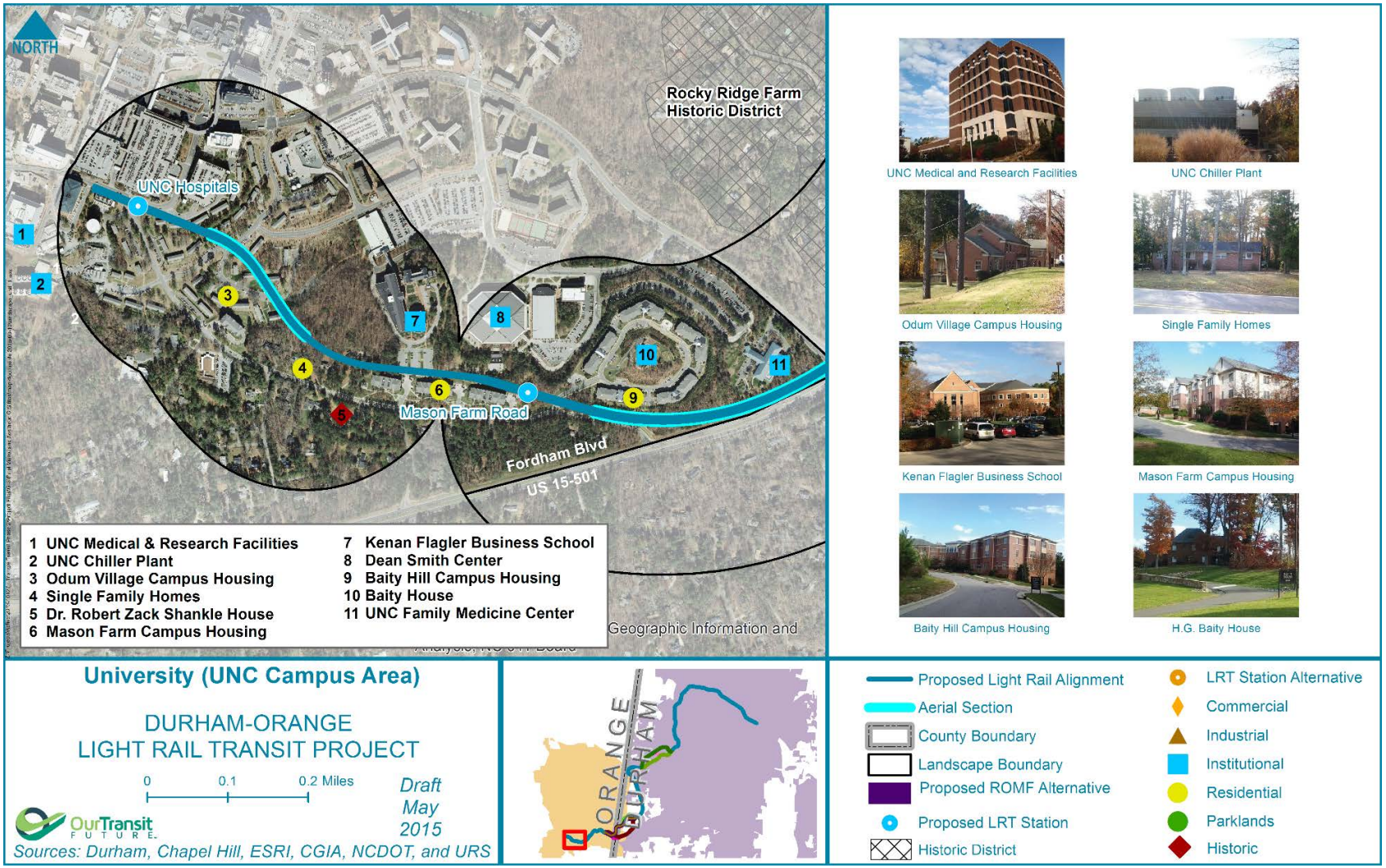
The visual character of this unit consists of a typical university campus setting. There is a mix of university academic, research, residential buildings, parking structures, and open space. Though the buildings differ in scale, material, and styles, they are related by their association with the university as well as common landscaping and signage. The most prominent visual resources in this area are the UNC Hospitals and Dean Smith Center due to their large scale relative to other structures. A summary of existing conditions for Landscape Unit #1 is provided in Table 7; visual resources are shown on Figure 2.

Table 7: Landscape Unit #1 – University (UNC Campus Area) Existing Visual Conditions

Visual Character	Visual Resources
University campus with academic, research, residential buildings, and open space. *Vividness*: Moderate *Intactness*: Moderate *Unity*: Moderate **Visual quality**: Moderate	UNC Hospitals and research facilities UNC Chiller Plant UNC student housing (Odum Village, Mason Farm, and Baity Hill) Single-family homes Kenan Flagler Business School Dean Smith Center H.G. Baity House*

* Visually-sensitive resource

Figure 2: Landscape Unit #1: University (UNC)



4.1.2 Impacts Assessment

Viewers in this area include students, faculty, staff, and university visitors coming onto campus to park in one of the many structured parking garages; residents living in Odum Village, Mason Farm, and Baity Hill campus housing or single-family homes in the area; those attending events at the Dean Smith Center and other facilities on campus; motorists; and transit riders. Viewer exposure and sensitivity for these viewer groups is consistent with the scale described in Table 3 and would generally be low to moderate; residents are the only viewers in this area anticipated to have high exposure and high sensitivity. This area is part of UNC's south campus area, which according to UNC's master plan, will undergo numerous changes in the future. This includes demolition of some existing structures (Odum Village residences), addition of new structures and redevelopment of existing structures, changes in road patterns, landscaping and streetscaping. Viewers in this area anticipate changes to the evolving campus environment.

Visual changes in this area would include addition of LRT trackway and light rail vehicles, the OCS poles and wires, new stations (UNC Hospitals Station and Mason Farm Road Station), intersection improvements, pedestrian facilities, including a pedestrian bridge at the UNC Hospital Station, and retaining walls and bridges where the LRT transitions between at-grade and aerial structures. These new visual elements would be added on new transportation right-of-way through this unit from the UNC Hospitals to Fordham Boulevard, where the common segment of the Light Rail Alternative alignment would be within the right-of-way for US 15-501.

Table 8: Landscape Unit #1 – University (UNC Campus Area) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
University visitors, student, professors, staff	Moderate
Hospital visitors, patients, staff	Moderate
Motorists	Low
Transit riders	Low
Performing arts patrons, conference attendees, attendees at sporting events	Low

Visual Change	
Change in Viewshed	**Degree of Change for Visual Elements**
Transit infrastructure	Substantial
Elevation	Substantial
Displacement of structures	Minor*
Parking area	Minor
View disruption	Minor
Removal of existing screens to residential uses	Moderate
Visual changes to parklands	Minor
Blocks scenic features	Minor
Changes to streetscape	Moderate
Removal of vegetation	Moderate
Visual changes to historic resources	Minor
New night lighting	Moderate

Viewer Response: Moderate + Visual Change: Moderate = Visual Impacts: Moderate

**Does not include displacement of buildings at Odum Village, as these would be demolished even in the No-Build Alternative.*

Overall, visual changes in the UNC University landscape unit are anticipated to be moderate. The rail infrastructure would impact the vegetated buffers between different campus land uses and would be visible from several surrounding areas. The existing area is largely urban and developed, and the light rail system would not be out of character for the setting, where elements such as pedestrian bridges, retaining walls, and overhead wires exist today. Viewer sensitivity would range from low to high, but as noted, most viewers expect changes in the campus environment over time.

The following sections describe the potential visual impacts in this unit in more detail.

4.1.2.1 Common Segment of the Light Rail Alternative Alignment: UNC Hospital Station

The introduction of the UNC Hospital Station in this area is a moderate visual change. A depiction of the potential station configuration is provided in Figure 3. The station would be located along Mason Farm Road, adjacent to existing parking structures and large-scale campus buildings and facilities. The station would include an approximately 12-foot wide by 270-foot long platform, as well as a multilevel structure with stairs and an elevator to access a new pedestrian bridge over Mason Farm Road. The UNC campus has a number of existing pedestrian bridges and this would be considered a typical visual occurrence on campus. Overall, the station is consistent with the campus setting and viewer expectations in this area.

Figure 3: UNC Hospitals Station – Sample Design

In the vicinity of Odum Village, the common segment of the Light Rail Alternative alignment would be elevated and would cross over Hibbard Drive and some campus parking areas. There will be retaining walls where the LRT would move from at-grade to an elevated structure. It is likely that existing and future landscaping and trees on campus would shield views of the LRT from surrounding structures, as well as views of the campus from the LRT. A rendering of what the D-O LRT Project would be expected to look like in this area is shown on Figure 4.

Figure 4: UNC Hibbard Drive – Sample Design

4.1.2.2 Common Segment of the Light Rail Alternative Alignment: Kenan Flagler Business School/ Mason Farm Road Apartments

Leaving Odum Village, the LRT would return to an at-grade condition, and travelers on Mason Farm Road would experience intermittent views of the LRT between buildings and trees. Students and visitors at the Kenan Flagler Business School would cross the LRT tracks when entering the parking lot for the school. They would see the at-grade trackway and OCS poles and wires with the Kenan Flagler Business School building in the background.

The LRT would pass through a wooded area between the UNC Dean Smith Center and Mason Farm Road apartments. Residents of the apartments would experience open sight lines with the removal of vegetation behind the apartments that currently screen parking lots and structures from the apartments. Visitors to the Dean Smith Center would now have views of nearby residential structures.

The Dr. Robert Jack Shankle House historic property is located about 925 feet southwest of the LRT, but the line, its catenary system, and the Mason Farm Road Station would not be visible from the House due to the house's distance from the facilities, its wooded lot, and the location of the Mason Farm Road Apartments.

4.1.2.3 Common Segment of the Light Rail Alternative Alignment: Mason Farm Road Station

The Mason Farm Road Station would have a vegetated buffer along Mason Farm Road but will require major earthwork to construct the station, which would result in associated retaining walls and changes in landscaping. Portions of this structure may be blocked from the campus view by existing vegetation along the downhill slope towards the Dean Smith Center parking lots. The Mason Farm Road station is located close to one corner of a student residential building, and there may be views into apartments that would require on-site modification to maintain visual privacy for residents. The residents would also have prominent views of the station. This station location would also introduce additional lighting into the residential area.

4.1.2.4 Common Segment of the Light Rail Alternative Alignment: Fordham Boulevard

The common segment of the Light Rail Alternative alignment would cross Baity Hill Drive, introducing views of the trackway and OCS infrastructure to those entering the residential buildings. As the LRT transitions to structure, retaining walls and other structural elements would be visible from both Mason Farm Road and residents of Baity Hill Apartments. The vegetated buffer between the apartments and Mason Farm Road would be removed, making Mason Farm Road visible from the closest apartment buildings. The majority of those living in the Baity Hill Apartments would not have direct views to the light rail system as the other buildings would block the view except between buildings and along the entrance drive. The H.G. Baity House historic property is located within the ring of apartment buildings, which would largely screen the LRT, its catenary system, and the Mason Farm Road Station from the historic house.

The elevated light rail structure would follow Fordham Boulevard, an existing multi-lane transportation corridor, and would be grade separated from Manning Drive. The elevated structure would create a visual gateway approximately 30 feet high over Manning Drive and visually mark an entrance onto the UNC campus. This would be highly visible to those driving or riding transit, as well as to bicyclists and pedestrians. Since major sporting events are typical on this side of campus, a large number of campus visitors would view this elevated structure.

4.2 Landscape Unit #2: Mixed Use/Institutional (East Chapel Hill)

4.2.1 Existing Conditions and Viewers

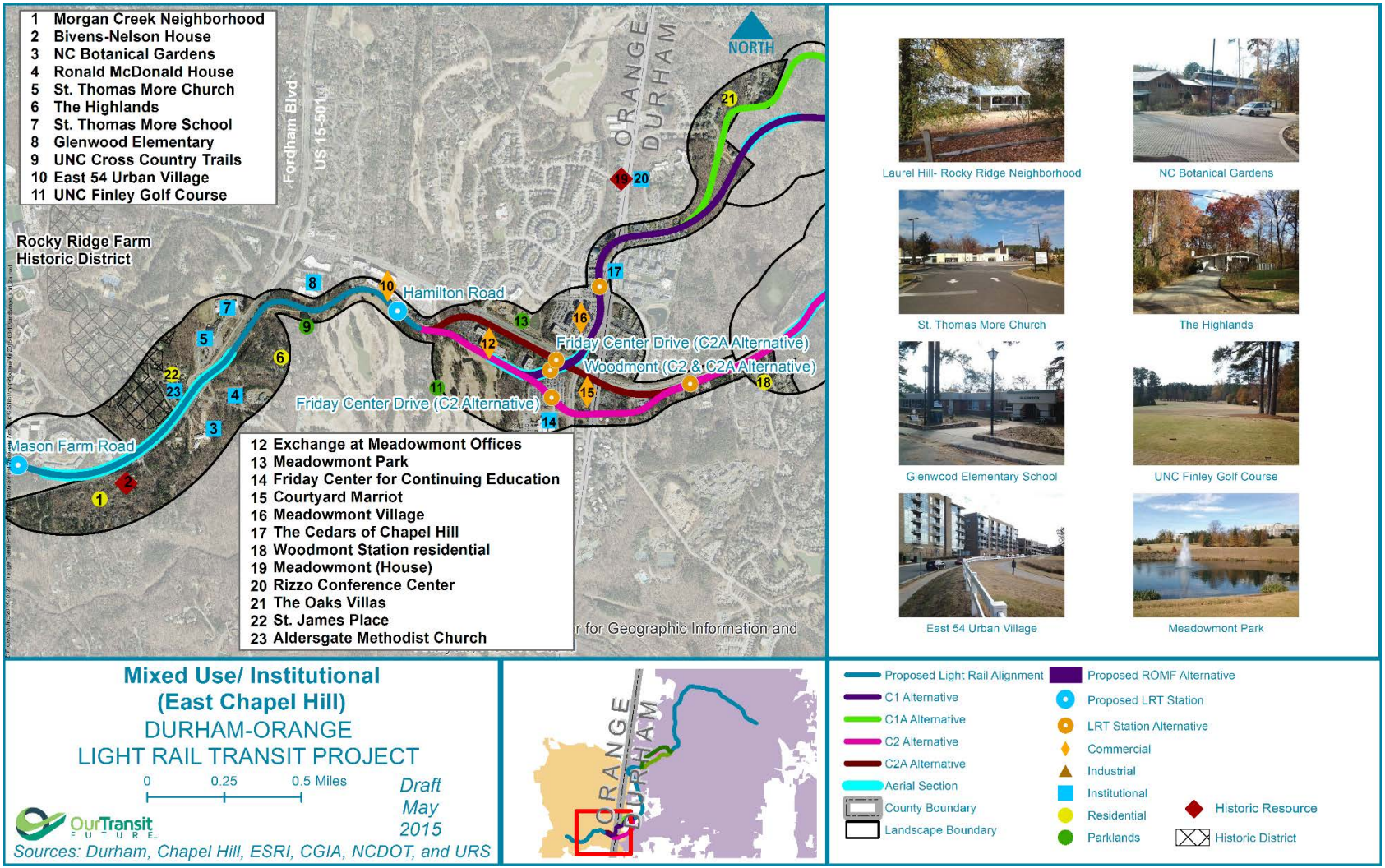
The mixed-use/institutional landscape unit extends from Manning Drive to the western edge of the natural area surrounding Little Creek and generally follows US 15-501 and NC 54. The visual character of this unit is defined by roadside development typical of a suburban college town. The land use is a mix of commercial development, institutional facilities, and residential. Commercial development within the viewshed includes the East 54 mixed-use urban village. Institutional resources include churches (Aldersgate United Methodist Church and St. Thomas More), schools (St. Thomas More School and Glenwood Elementary School), and the Friday Center. Residential areas in this unit are single- and multi-family home subdivisions that are buffered from major roads and other land uses by wooded areas. Although not visible from existing roadways, Meadowmont Park, North Carolina Botanical Gardens, Finley Golf Course, and UNC Cross Country Trails are located within the viewshed and are visually-sensitive resources. A summary of existing conditions for Landscape Unit #2 is provided in Table 9; visual resources are shown on Figure 5.

Table 9: Landscape Unit #2 – Mixed Use/Institutional (East Chapel Hill)
Existing Visual Conditions

Visual Character	Visual Resources
Alternatives C1 and C1A: Mix of commercial or institutional development along roadways with some newer mixed-use development; Meadowmont Village mixed-use community *Vividness*: Moderate *Intactness*: Moderate *Unity*: Moderate **Visual quality**: Moderate	Laurel Hill - Rocky Ridge Farm neighborhood and historic district* North Carolina Botanical Gardens* Churches (Aldersgate, St. Thomas More) St. Thomas More School Highland Woods neighborhood / historic district* Glenwood Elementary School Finley Golf Course* UNC Cross Country Trails* Mixed use at East 54 Meadowmont Village* Meadowmont Park* The Cedars of Chapel Hill* DuBose House/Rizzo Conference Center
Alternatives C2 and C2A: Mix of commercial or institutional development along roadways with some newer mixed-use development; residential subdivisions with single-family homes on wooded lots that are not visible from existing major roadways *Vividness*: Moderate *Intactness*: Moderate *Unity*: Moderate **Visual quality**: Moderate	Laurel Hill - Rocky Ridge Farm neighborhood and historic district* North Carolina Botanical Gardens* Churches (Aldersgate, St. Thomas More) St. Thomas More School Highland Woods neighborhood / historic district* Glenwood Elementary School Finley Golf Course* UNC Cross Country Trails* Mixed use at East 54 Exchange at Meadowmont Friday Center for Continuing Education Sherwood Forest neighborhood*

* Visually-sensitive resource

Figure 5: Landscape Unit #2: Mixed Use/Institutional



4.2.2 Impacts Assessment

Viewers in the East Chapel Hill area include motorists on US 15-501 (Fordham Boulevard) and NC 54; North Carolina Botanical Gardens' visitors and nature enthusiasts; residents of Laurel Hill, Rocky Ridge, the Highlands, Meadowmont, East 54, and other nearby neighborhoods; church members at St. Thomas More Church and Aldersgate United Methodist Church; students at St. Thomas More School, shoppers along NC 54 and in Meadowmont Village; office workers, runners and joggers using the UNC cross country trails, golfers at Finley Golf Course, conference attendees at UNC's Friday Center or DuBose House/Rizzo Conference Center; and transit riders.

Representatives of the Botanical Gardens have expressed concerns over the visual sensitivity of the Gardens and potential visual impacts that the proposed elevated LRT trackway along Fordham Boulevard would have on the Gardens and its visitors. Residents and representative of the Finley Golf Course have also expressed concerns regarding visual impacts that would be related to the introduction of new visual elements, such as the light rail OCS poles and wires and the lighting from the nearby station.

Area residents, students, church members, shoppers, and office workers would have moderate sensitivity to visual changes. Golfers, North Carolina Botanical Gardens' visitors, runners, joggers, and pedestrians would be highly sensitive to visual changes. Motorists would have low to moderate sensitivity to the visual changes due to the speed at which they would be traveling and the short duration they would be exposed to them.

Visual changes would include LRT trackway and light rail vehicles, the OCS infrastructure, new stations (Hamilton Road Station, Friday Center Station, and Woodmont or Meadowmont Station), intersection improvements, pedestrian facilities, and retaining walls and bridges where the LRT transitions between at-grade and aerial structures. Roads would be realigned and /or portions of existing surface parking lots would be removed at Aldersgate United Methodist Church and St. Thomas More Church/School, the Exchange at Meadowmont, and the Friday Center for Continuing Education. Existing vegetation would be removed in various locations, including the wooded area behind Glenwood Elementary School, adjacent to the UNC cross country trails, and areas along the Finley Golf Course. There would be no visual impacts to historic resources in this unit that would result in an adverse effect to the historic resources; these resources include the Rocky Ridge Farm Historic District, Meadowmont (historic house), Bowers-Nelson House, or Highland Woods Historic District.

Visual changes in this landscape unit would range from minor to substantial, and viewer sensitivity would range from low to high. Therefore, the overall visual impacts within this unit would be moderate for the C1, C1A, and C2, and low to moderate for C2A.

Table 10: Landscape Unit #2 – Mixed use/Institutional (East Chapel Hill) Visual Impacts Summary

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Business owners	High
Golf course players	High
Bike and pedestrian trail users	High
Children and teachers – school	Moderate
Church members	Moderate
Shoppers	Moderate
Office workers	Moderate
Motorists	Low
Transit riders	Low
Conference and attendees at sporting events	Low

Visual Change				
Visual Elements	**Degree of Change for Visual Elements**			
	C1	**C1A**	**C2**	**C2A**
Transit infrastructure	Substantial	Substantial	Substantial	Substantial
Elevation	Substantial	Substantial	Moderate	Moderate
Displacement of structures	Minor	Minor	Minor	
Parking area	Moderate	Moderate	Substantial	Moderate
View disruption	Substantial	Substantial	Minor	Minor
Removal of existing screens to residential uses	Minor	Minor	Moderate	Minor
Visual changes to parklands	Moderate	Moderate	Minor	Minor
Blocks scenic features	Minor	Minor	Minor	Minor
Changes to streetscape	Substantial	Substantial	Substantial	Substantial
Removal of vegetation	Moderate	Moderate	Moderate	Minor
Visual changes to historic resources	Minor	Minor	Minor	Minor
New night lighting	Substantial	Substantial	Substantial	Substantial

Viewer Response: <u>Moderate</u> + Visual Changes: <u>Minor to Substantial</u> =
Visual Impacts: <u>Low to Moderate</u> (C2A) / <u>Moderate</u> (C1, C1A, C2)

The following sections describe the potential visual impacts in this unit in more detail.

4.2.2.1 Common Segment of the Light Rail Alternative Alignment: Fordham Boulevard/NC Botanical Gardens

The elevated structure of the common segment of the Light Rail Alternatives would be complimentary to the existing large-scale transportation corridor (US 15-501, known in Chapel Hill as Fordham

Boulevard). However, there are a variety of land uses, such as residential, mixed-use development, institutional uses, and botanical gardens. These land uses are likely to include observers sensitive to the visual change of introducing elevated structures. The proposed project would require removal of vegetated area within the Fordham Boulevard right-of-way and landscaping from an adjacent church property. With less vegetated buffer between homes and Fordham Boulevard, residents of the single-family homes adjacent to Carmichael Street would have views of Fordham Boulevard. Aldersgate United Methodist Church may lose a minor amount of landscaping with the realignment of Carmichael Street, which would result in a moderate impact from loss of aesthetic landscaping.

The North Carolina Botanical Gardens are located on the east side of Fordham Boulevard, on the opposite side of the road from where the proposed elevated light rail guideway would be located. In this area, Fordham Boulevard is a four-lane roadway, with a landscaped median separating the north and south bound travel lanes. A wood fence, approximately 10 feet high, as well as trees that average approximately 30 to 40 feet tall, separate the Fordham Boulevard right-of-way from the botanical gardens. This vegetation would likely be tall enough to obstruct the botanical garden visitors' view of the elevated rail alignment. There are fewer trees boarding the parking lot of the botanical garden, where visitors would have less obstructed view of the LRT alignment.

The alignment would cross Fordham Boulevard, passing over lanes of traffic with structured support in the median. The appearance would be similar to a bridge overpass and is a typical condition seen along major roadways in the area. The elevated rail alignment would be a substantial change to the visual environment and would be visible from Aldersgate United Methodist Church and St. Thomas More Church and school.

4.2.2.2 Common Segment of the Light Rail Alternative: Glenwood Elementary School/Hamilton Road

The elevated common segment of the Light Rail Alternative alignment would follow the east side of Fordham Boulevard within the right-of-way past the Highland Woods neighborhood and historic district but would be screened from the neighborhood by an extensive existing vegetated buffer. The buffer area contains the UNC cross country trails that parallel Fordham Boulevard. Vegetation within the Fordham Boulevard right-of-way would be removed by the rail line, and have a moderate impact to the UNC cross country trail users from the potential for views of the elevated rail guideway. The Highland Woods neighborhood homes are elevated by topography, allowing for views down or across to the rail alignment at some points through the vegetated buffer from these single-family homes, thus having a low impact that would not diminish the historic characteristics of the historic district. The rail alignment would pass at-grade south of Glenwood Elementary School, and continue to be adjacent to the recreational trail in this area. Security fencing would be constructed between the school and the rail alignment. Due to topography and vegetation, the rail alignment and fencing may be slightly visible, if at all, from the school grounds.

4.2.2.3 Common Segment of the Light Rail Alternative Alignment: Finley Golf Course and Friday Center Drive Station

Figure 6: Finley Golf Course – Sample Design

The fencing, OCS poles and wires, and light rail vehicle may be visible from the 14th Hole on the Finley Golf Course through a break in the vegetated buffer; the topography is anticipated to minimize the visibility. The at-grade LRT would emerge from a wooded buffer along Prestwick Road (Figure 6). The LRT would be visible and viewed by golfers as they play Hole 16 of the course. At Hole 17, the LRT would be adjacent to the tee boxes.

The Hamilton Road Station would be located along Prestwick Road and adjacent to Hole 17. Views of the station from the golf course would be obscured and buffered by existing vegetation in the direction of Finley Golf Course.

The station canopies would be substantially blocked from the view of those travelling on NC 54 by the existing buildings of the East 54 development. The station would add canopies with lighting as well as pedestrian-level lighting to the area. Residents, employees, and patrons within the buildings that face Prestwick Road would have a view towards or looking down onto the rail alignment, OCS poles and wires, the station, and protective netting.

While views of the infrastructure in and around the station will be limited by the existing vegetation, the protective netting around the station, OCS poles and wires, station canopies with lighting, as well as the pedestrian-level lighting, would all be new visual elements. However, for residents, employees, and patrons of these buildings, the views of these new visual elements would not be out of character with the streets and surrounding parking. Prestwick Road is currently lined with wooden utility poles for cobra head street lights, which are visible from the existing buildings of the East 54 development that face Prestwick Road. These wooden utility poles are topped with street lights, which emit lighting at night. They are similar in height or taller than the OCS poles.

Although these elements are similar in character to streets and surrounding parking, residents of the East 54 development have noted their concern with these new visual elements. Residents also noted concern with the station canopy lighting, as well as the pedestrian-level lighting leading to the station. Light pollution associated with these elements is not anticipated to be greater than the light pollution associated with the existing cobra-head street lights. Further, the pedestrian lighting would be located at a lower height, where the lighting output would be more concentrated to the pedestrian level.

Little Creek Alternatives C1 and C1A: Finley Golf Course to Friday Center Station

For Little Creek Alternatives C1 and C1A, the LRT would follow the existing parking lot/entrance drive from the Meadowmont Exchange office building, eliminating a portion of the wooded buffer between the Meadowmont Exchange office building, parking lots, parking deck structure, and Finley Golf Course Hole 3. Access between the western and eastern portions of the UNC cross country trails would be maintained as they are today, using the golf cart paths. Direct access to the eastern portion of the UNC cross country trails would be at Hamilton Station. Runners and joggers using this portion of the UNC cross country trails would have views of the station and LRT infrastructure to and from the trails.

Workers or patrons of adjacent office buildings or parking lots would have views of the LRT infrastructure. Transit riders may have views onto the golf course, and golfers would be adjacent to the

LRT while queuing or teeing off at Hole 3. Existing vegetated buffers and office buildings would block the majority of views of the LRT from motorists traveling along NC 54.

The Alternatives C1 and C1A would then transition to an elevated alignment on a bridge structure parallel to The Exchange Drive, crossing over the Marriott Hotel driveway. The Friday Center Drive Station would be elevated approximately 25 feet above grade with views from the station overlooking parking lots, landscaped areas, and across to office buildings and NC 54. The elevation of the station would substantially modify the visual environment and would have moderate impacts overall. It would create shadows and space beneath the facility that would be filled with support structures, mechanical systems, and means of access for transit riders would include stairs and elevators. Lighting at this station would also be required at these multiple levels. The elevated structure could also be visible from the walking paths located in the open space next to the Meadowmont mixed-use development.

Little Creek Alternative C2: Finley Golf Course to Friday Center Station

The C2 Alternative would follow the existing parking/driveway for the Exchange as in the C1 and C1A Alternatives, resulting in the same visual changes in the area of the office buildings and golf course. The Friday Center Drive Station would be located within the existing park-and-ride lot and would be consistent with the existing transportation use of the area.

Little Creek Alternative C2A: Finley Golf Course to Friday Center Station

In the C2A Alternative, the alignment would cross Finley Golf Course Road and then cross a wooded area to align with NC 54. The alignment would follow NC 54 in front of the Exchange at Meadowmont building, Marriott Hotel, and Friday Center. Viewers in this area include office workers and service providers arriving at the Exchange office building, as well as hotel guests and conference attendees. From inside the office buildings and hotel, views looking toward the at-grade LRT would be substantially blocked by a vegetated buffer that exists between the buildings and NC 54. A portion of the existing vegetated buffer between NC 54 and the pedestrian path would be removed, leaving pedestrians on the path with views of the LRT and NC 54.

The Friday Center Drive Station would be located along NC 54 and would be highly visible to motorists and pedestrians, but would be consistent with the existing transportation system and adjacent development. It would have a low to moderate visual impact

4.2.2.4 Meadowmont Station/Woodmont Station

Four alternatives are being considered in this area. C1/C1A Alternatives would travel through the Meadowmont neighborhood and include a station on Meadowmont Lane, known as the proposed Meadowmont Station. The C2/C2A Alternatives would travel along NC 54 and would include a station at Woodmont, known as the proposed Woodmont Station.

Little Creek Alternatives C1 and C1A: Meadowmont

For the C1 and C1A Alternatives, the elevated LRT structure would cross NC 54 and align with Meadowmont Lane before returning to grade. The elevated section would pass over pedestrian paths and sidewalks in this area. This elevated structure would be similar to an overpass bridge typically seen along a transportation corridor and therefore have a low visual impact. The LRT would be at grade along the west side of Meadowmont Lane from south of Barbee Chapel Road to Green Cedar Lane. New visual elements, including LRT infrastructure, OCS poles and wires, would be visible to those entering Meadowmont, including residents, visitors, shoppers, recreation center patrons, and those attending

meetings at the Rizzo conference center or DuBose House. These alternatives would also impact a small portion Meadowmont Park and changes views for park users. Transit riders would have views of the landscaped streets and mixed uses along Meadowmont Village Circle, Barbee Chapel Road, and Sprunt Street.

The Meadowmont Lane Station would be located on Meadowmont Lane and would eliminate some landscaping. The station would be visible from all sides and viewed from surface parking lots, those driving along Meadowmont Lane, offices, and retail establishments, and by residents living in nearby single-family homes and taller multi-unit buildings. The station would add canopy lighting and pedestrian-level lighting to the area that is already lit at night.

North of the Meadowmont Station, the LRT would follow Green Cedar Lane, which is lined with single-family homes to the south and an assisted living building to the north. Due to topography the single-family homes would be located below the light rail guideway, and those in the light rail vehicles would have views down onto the backyards and roofs of single-family homes. The light rail would be at the same elevation as the assisted living facility, and residents would have views of the LRT from their rooms and porches. Transit riders would also have views of the assisted living facility.

Little Creek Alternatives C2/C2A: Woodmont

The C2 and C2A Alternatives would come together near Barbee Chapel Road and follow NC 54. The Woodmont Station would be located in a median between NC 54 and Stancell Drive (Figure 7). The light rail would be compatible with the existing transportation corridor. The addition of lighting at this station would be shielded by the canopies and directed away from the roadways to avoid impacting drivers on NC 54 and Stancell Drive.

Figure 7: Woodmont Station – Sample Station Design

4.3 Landscape Unit #3: Natural (East Chapel Hill)

4.3.1 Existing Conditions and Viewers

The Natural landscape unit is characterized by large wooded areas and lack of development. Three alternatives for the alignment are being considered for crossing Little Creek through this unit - the C2/C2A Alternative (the alignment is common to both alternatives within this area), Alternative C1, and Alternative C1A.

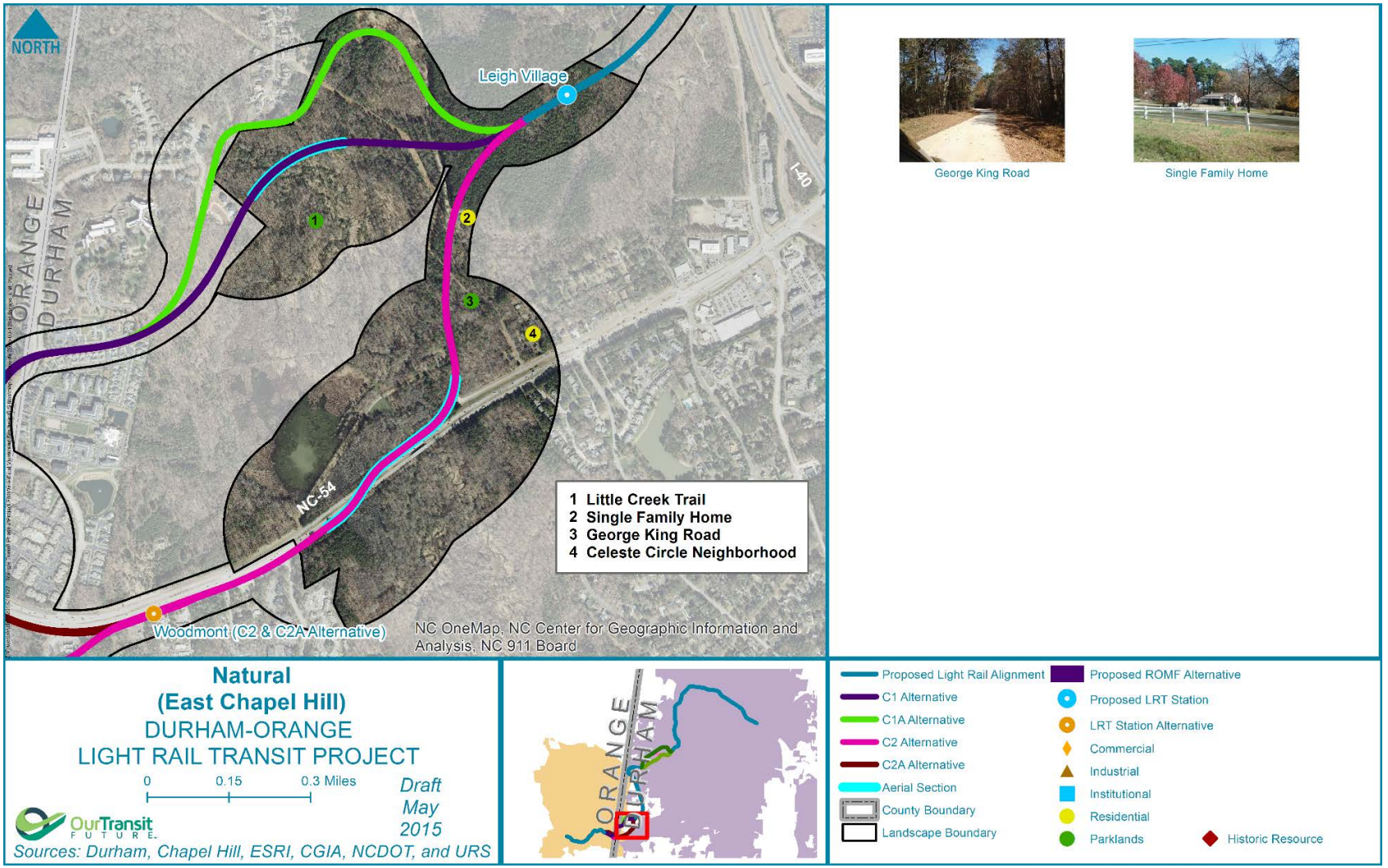
The C2/C2A Alternative parallels NC 54 and then turns north to follow George King Road. George King Road consists of mostly wooded land and a few single-family homes and horse pastures along the gravel road. The C1 Alternative viewshed stretches from the northern edge of Meadowmont Village through an undeveloped wooded area managed by the US Army Corps of Engineers (USACE), and the C1A Alternative extends slightly farther north to avoid federal lands. The majority of the landscape unit cannot be developed due to regulations by the USACE, as the property owner, protecting the Jordan Lake watershed and Upper Little Creek Waterfowl Impoundment. The wooded area is comprised of wetlands, trees, and a small body of water. A summary of existing conditions for Landscape Unit #3 is provided in Table 11; visual resources are shown on Figure 8.

Table 11: Landscape Unit #3 – Natural (East Chapel Hill) Existing Visual Conditions

Visual Character	Visual Resources
C1 and C1A: Wooded area owned and regulated by USACE comprised of wetlands, trees, and water resources *Vividness* - Moderate *Intactness* - High *Unity* – High **Visual quality**: High	USACE's land/Upper Little Creek Waterfowl Impoundment* Little Creek Trail and proposed extension*
C2 and C2A: Wooded area bordering NC 54; unpaved, gravel road with adjacent horse pastures and scattered single-family homes *Vividness* - Moderate *Intactness* - High *Unity* – High **Visual quality**: High	USACE's land/Upper Little Creek Waterfowl Impoundment* George King Road residences/horse pastures*

* Visually-sensitive resource

Figure 8: Landscape Unit #3: Natural (East Chapel Hill)



4.3.2 Impacts Assessment

Viewers in this area include motorists and transit riders, residents of George King Road, and users of the waterfowl impoundment and wooded area (nature enthusiasts, hikers, and hunters). Motorists and transit riders would have low sensitivity; however, residents of George King Road and those using the wooded area would be highly sensitive to changes in the visual environment.

Visual changes would include the introduction of LRT tracks, vehicles, retaining walls, and bridges. Substantial amounts of vegetation would be removed in various areas. Visual changes would be substantial for the C1 Alternative, which would cross through the Upper Little Creek Waterfowl Impoundment on a new transportation right-of-way. The C1A Alternative would have similar effects to the C1 Alternative, as it also crosses the wooded area as well as the Little Creek Trail. The C2/C2A Alternatives would result in substantial visual change because the light rail system would introduce new infrastructure, including an elevated bridge structure adjacent to NC 54 that would transition to at-grade tracks following George King Road, which is an unpaved road lined with single-family residences.

Table 12: Landscape Unit #3 – Natural (East Chapel Hill) Visual Impacts

Viewer Response	
Viewers	Viewer Response
Residents – single- and multi-family housing	High
Nature enthusiasts, hikers, and hunters	High
Motorists	Low
Transit riders	Low

Visual Change				
Visual Elements	Degree of Change for Visual Elements			
	C1	C1A	C2	C2A
Transit infrastructure	Substantial	Substantial	Substantial	Substantial
Elevation	Substantial	Moderate	Moderate	Moderate
Displacement of structures	Minor	Minor	Moderate	Minor
Parking area	Moderate	Moderate	Substantial	Moderate
View disruption	Substantial	Substantial	Minor	Minor
Removal of existing screens to residential uses	Minor	Minor	Moderate	Minor
Visual changes to parklands	Substantial	Moderate	Minor	Minor
Blocks scenic features	Minor	Minor	Minor	Minor
Changes to streetscape	Substantial	Substantial	Substantial	Substantial
Removal of vegetation	Moderate	Moderate	Moderate	Minor
Visual changes to historic resources	Minor	Minor	Minor	Minor
New night lighting	Substantial	Substantial	Substantial	Substantial

Viewer Response: Moderate + Visual Changes: Substantial (C1, C1A) / Moderate (C2, C2A) = Visual Impacts: High (C1, C1A) / Moderate (C2, C2A)

The overall visual impacts for this segment would be high for the C1 and C1A Alternatives and moderate for the C2/C2A Alternatives.

The following sections describe the potential visual impacts in this unit in more detail.

4.3.2.1 Little Creek C1 Alternative: Meadowmont to Leigh Village

Leaving Meadowmont, the C1 Alternative would cross the USACE property and Upper Little Creek Waterfowl Impoundment on new location. The alignment would follow the existing topography as much

as possible. There is an approximately 60-foot drop in elevation from Cedar Pond Lane to the creek. The alignment would be on a structure to minimize direct effects to the stream and surrounding wetlands; however, there would be substantial removal of trees to allow for the construction of the light rail. This alternative would introduce a variety of man-made structures, including the LRT trackway, bridges, retaining walls, overhead catenary system, and LRT vehicles, into a natural area. Transit riders would have views of the forest, wetlands, and stream. Hunters and other recreational users of the natural area would have limited views to the light rail through the remaining trees which would act as a visual barrier. The C1 Alternative would cross George King Road at-grade and continue through a wooded area to the proposed Leigh Village Station. Residents and vehicular traffic along George King Road would have a brief view of the light rail vehicle as it crosses the roadway.

4.3.2.2 Little Creek C1A Alternative: Meadowmont to Leigh Village

The C1A Alternative was developed to avoid impacts to federal property surrounding Little Creek and would generally follow the property boundary to the north and then east before crossing George King Road. This alignment would cross an undeveloped portion of Meadowmont on Park Bluff Drive and Iron Mountain Road and would pass east of existing single-family residences. Along the northern edge of the USACE property, the light rail would pass over Little Creek and along the edge of Meadowmont Park, crossing a primitive nature trail on a bridge, then would return to be at-grade through a wooded area, with a grade-separated crossing of the Little Creek Trail, and at-grade crossing of George King Road. The alignment then continues through woods to the proposed Leigh Village Station. Transit riders would experience consistently wooded views and may see some single-family homes as the alignment enters Meadowmont. Residents of single-family homes located on Millingport Court and Helmsdale Drive would have views of the light rail vehicles as they pass behind these residences. Alternative C1A would have a high impact on users of the Little Creek Trail, as well as future users of proposed trail extensions, who would experience a significant change in the visual environment from the new transit infrastructure. Residents and vehicular motorists along George King Road would experience a moderate impact from a brief view of the light rail vehicle as it crosses the roadway.

4.3.2.3 Little Creek C2/C2A Alternative: Woodmont to Leigh Village

The C2/C2A Alternative would leave the Woodmont Station and cross NC 54 on a bridge structure. The C2/C2A Alternative would cross the median of NC 54 on bridge, and cross over the existing NC 54 bridge at Little Creek. Motorists would have views of the bridge piers and underside of the LRT track structure. Transit riders would have views of the surrounding wooded areas over the cars on NC 54.

The light rail would turn north to follow George King Road at-grade. Along George King Road, the transit infrastructure and trains would be viewed from remaining single-family residences, automobiles, and potentially those using the Jordan Lake watershed for recreation. As a transit rider, the views would be consistently wooded with a few brief views of single-family homes and open lots.

4.4 Landscape Unit #4: Interstate (Leigh Village)

4.4.1 Existing Conditions and Viewers

The Interstate landscape unit contains either undeveloped parcels or single-family residential developments of varying age on large lots adjacent to the I-40 corridor. Views are limited to I-40 and its right-of-way, which is bordered by a wooded buffer between the highway and adjacent residential or undeveloped areas. The viewshed widens near the eastern end of this landscape unit where the alignment is proposed to be elevated. Here there are low-density residential properties along Pope Road

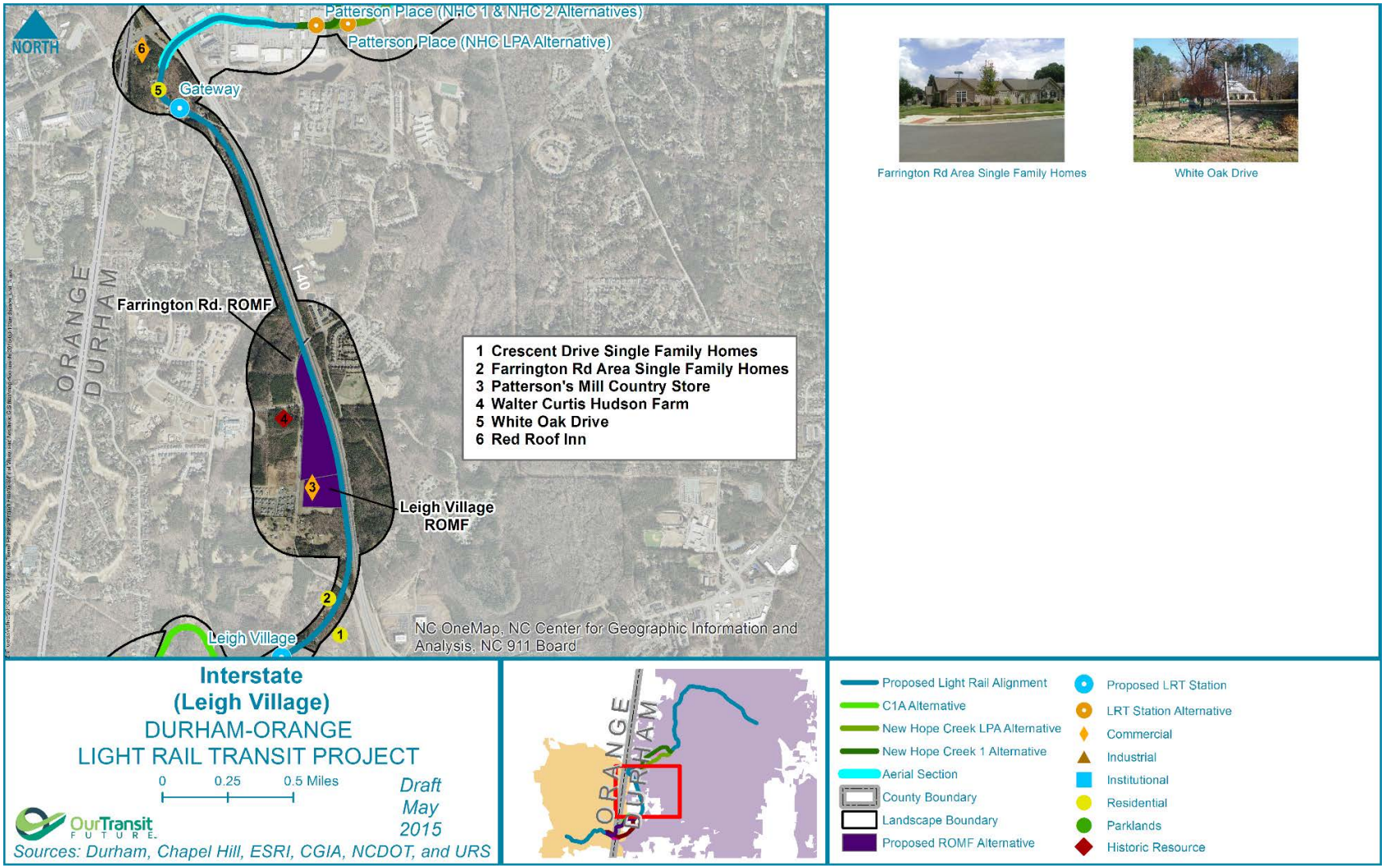
west of the I-40/US 15-501 interchange. A summary of existing visual conditions for Landscape Unit #4 is provided in Table 13; visual resources are shown on Figure 9.

Table 13: Landscape Unit #4 – Interstate (Leigh Village) Existing Visual Conditions

Visual Character	Visual Resources
Interstate highway and interstate right-of-way lined by a wooded buffer *Vividness* - Low *Intactness* - Moderate *Unity* - Moderate **Visual quality**: Moderate	Crescent Drive single-family homes* Farrington Road/Pope Road residential area* White Oak Drive area* Walter Curtis Hudson Farm historic property* Patterson's Mill Country Store I-40 Wooded buffer along highway

* Visually-sensitive resource

Figure 9: Landscape Unit #4: Interstate (Leigh Village)



4.4.2 Impacts Assessment

Viewers in this area include motorists, residents, and transit riders. The majority of viewers in this unit would be motorists traveling on I-40. Motorists would have short duration views of the Light Rail Alternatives where the alignment parallels the interstate, and motorists would have low sensitivity to visual changes. The Light Rail Alternatives would pass several residences near Crescent Drive, Pope Road, and White Oak Drive, and these residents would have high sensitivity due to the close proximity and constant views of the visual changes.

Visual elements that would be introduced by the Light Rail Alternatives in this unit would include light rail trackway and vehicles, overhead catenary system, bridges, and retaining walls. The proposed Leigh Village Station would include a platform, canopy, and lighting, and would be located in an area that is currently wooded. The degree of change in this unit would be minor to substantial with a moderate overall impact.

Table 14: Landscape Unit #4 – Interstate (Leigh Village) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Motorists	Low
Transit riders	Low

Substantially Affected Viewers: Residents of Crescent Drive, Pope Road, and White Oak Drive

Visual Change	
Visual Elements	**Degree of Change for Visual Elements**
Transit infrastructure	Substantial
Elevation	Minor
Displacement of structures	Moderate
Parking area	Substantial
View disruption	Minor
Removal of existing screens to residential uses	Substantial
Visual changes to parklands	Minor
Blocks scenic features	Minor
Changes to streetscape	Moderate
Removal of vegetation	Moderate
Visual changes to historic resources	Minor
New night lighting	Moderate

Viewer Sensitivity: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

Overall visual impacts within the Interstate landscape unit would be moderate. The following sections describe the potential visual impacts in this unit in more detail.

4.4.2.1 Common Segment of the Light Rail Alternative: Leigh Village Station

The Leigh Village Station would introduce a built structure into a heavily wooded setting next to Hudson Road and a small residential subdivision with single-family homes. The residents along Hudson Road would have views of the station structure, at-grade trackway, and overhead catenary system as the alignment passes through the subdivision. The topography around the station would require earthwork in this area, removal of vegetation, and potential use of retaining walls. The station would add lighting

to an area in which there is currently only residential lighting. Transit riders would have views of the wooded area and scattered single-family residences.

4.4.2.2 Common Segment of the Light Rail Alternative: Farrington Road and I- 40

The Light Rail Alternatives would cross Farrington Road at-grade and then parallel I-40 on the west side. The transit infrastructure and light rail vehicles would be visible from I-40. In addition, there would be some removal of the vegetated buffer between the interstate and other properties, potentially introducing views of the interstate to properties that are currently buffered. Transit riders would have views overlooking the interstate to one side and a largely wooded area to the other side.

The alignment would be just east of the Walter Curtis Hudson Farm, a National Register-eligible historic resource; however, its line and catenary system would not be visible through the mature trees that currently separate and buffer the farm from the interstate highway.

This area is also being evaluated as two potential sites for a ROMF. Depending on the future decision including the design and final location of the ROMF, visual impacts could result. These are discussed in section 4.12.

4.4.2.3 Common Segment of the Light Rail Alternative: Gateway Station and Old Chapel Hill Road

The Gateway Station would introduce a station in a seemingly suburban/rural setting, and would impact some existing vegetation around that station. It is likely that the station would still be buffered by existing vegetation along Old Chapel Hill Road, but this station would add lighting at a scale that is out of character with the existing site. The Light Rail Alternatives would be visible to motorists traveling along Old Chapel Hill Road, Pope Road, and White Oak Drive.

The transit riders would have views of wooded areas and some suburban/rural residences in the vicinity of the proposed station.

4.5 Landscape Unit #5: Suburban Commercial (US 15-501 Corridor)

4.5.1 Existing Conditions and Viewers

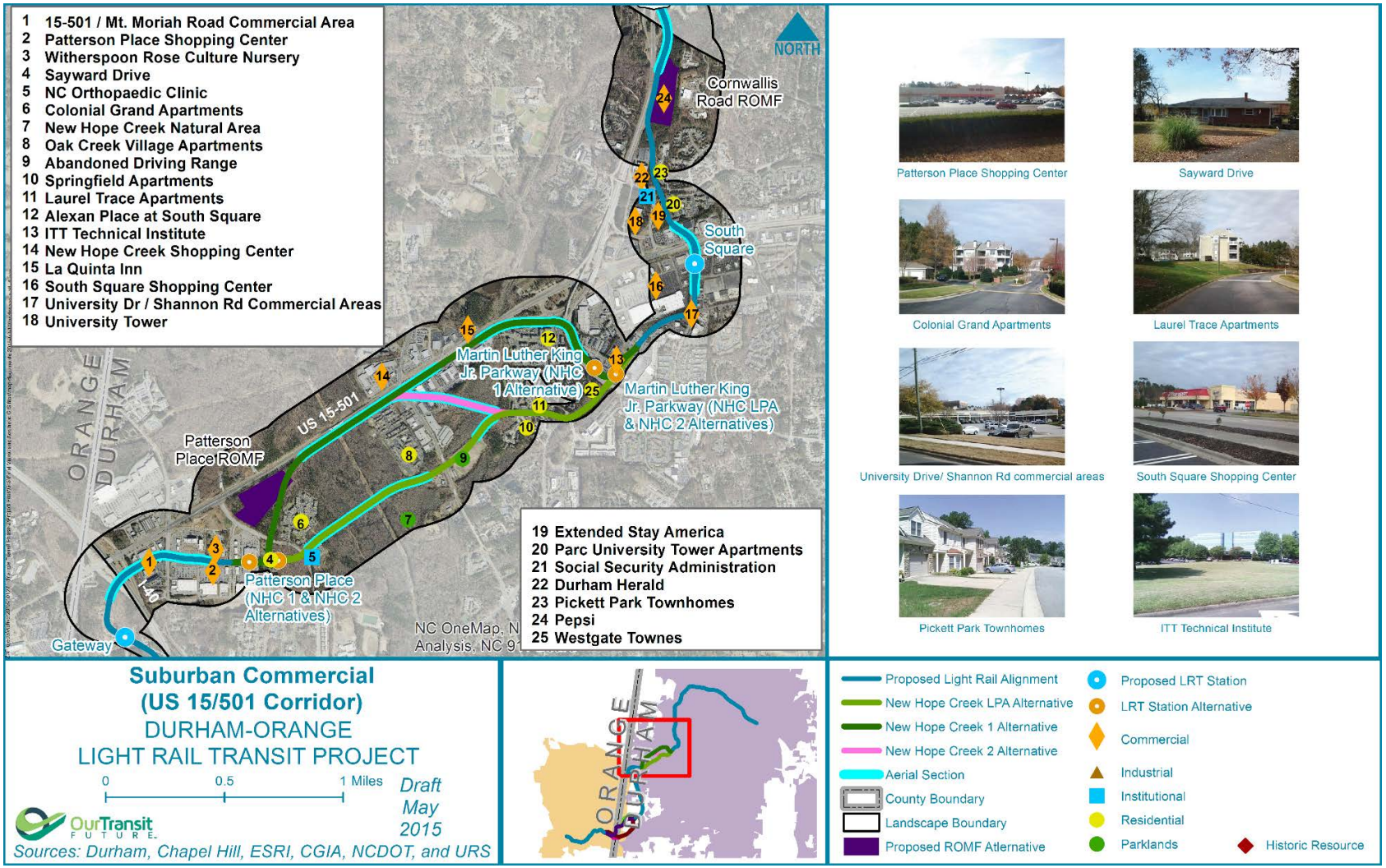
The Suburban Commercial landscape unit is the largest unit in the project viewshed. The visual character of the area is typical of suburban development, though the segment of the viewshed through New Hope Creek natural area provides a visual break between two highly developed commercial areas. The ITT Technical Institute building and the University Tower are also worth noting, considering their size, prominence, and proximity to the proposed alignment. A summary of existing conditions for Landscape Unit #5 is provided in Table 15; visual resources are shown on Figure 10.

Table 15: Landscape Unit #5 – Suburban Commercial (US 15-501 Corridor) Existing Visual Conditions

Visual Character	Visual Resources
New Hope Creek LPA: New development at Patterson Place; natural area surrounding New Hope Creek; undeveloped area along Garrett Road *Vividness* - Moderate *Intactness* - Moderate *Unity* – Low **Visual quality**: Moderate	Commercial area at Patterson Place Sayward Drive residences* New Hope Creek natural area and New Hope Preserve Trail* Apartment complexes* University Tower ITT Technical Institute University Drive/Shannon Road commercial area Herald Sun Building Former Pepsi plant Levin Jewish Community Center*
New Hope Creek Alternatives 1 and 2: Typical suburban development with a mix of new and aging commercial shopping centers, apartment complexes, and office/institutional uses made up of many different architectural styles, developed and built over time *Vividness* - Moderate *Intactness* - Low *Unity* - Low **Visual quality**: Low	Commercial areas (Patterson Place, New Hope Commons, Oak Creek, South Square) Sayward Drive residences* Apartment complexes* New Hope Creek University Tower ITT Technical Institute University Drive/Shannon Road commercial area Herald Sun Building Former Pepsi plant Levin Jewish Community Center*

* Visually-sensitive resource

Figure 10: Landscape Unit #5: Suburban Commercial



4.5.2 Impacts Assessment

The Light Rail Alternatives through this unit begins at I-40 and US 15-501 and continue northeast through the Patterson Place commercial area before splitting into three alternatives – the New Hope Creek Locally Preferred Alternative (NHC LPA), New Hope Creek 1 Alternative (NHC 1), and New Hope Creek 2 Alternative (NHC 2).

Viewers in this area include motorists and transit riders, shoppers, office workers, apartment residents, business owners, and those using the New Hope Creek wooded area (pedestrians, nature enthusiasts, and hikers). Motorists, transit riders, and office workers would have low sensitivity to visual changes; shoppers would be moderately sensitive to the visual changes; while apartment residents, business owners, pedestrians, nature enthusiasts, and hikers would be highly sensitive to changes that affect the visual environment.

Visual changes in this area would include the construction of new bridges and retaining walls, stations, park-and-ride lots, and lighting around the stations and park-and-ride lots. There would be several at-grade crossings, as well as some grade-separated crossings and areas where the light rail and stations are on structure. University Drive would be widened. Vegetation and landscaping would be removed in various areas.

The three alternatives would have similar visual elements; however, their locations would result in visual impacts to different viewers and resources. The NHC LPA would have minor to substantial levels of visual change – minor in areas along existing transportation corridors, moderate in the vicinity of New Hope Creek and the existing utility corridor and shopping areas, and substantial near apartment/condominium complexes and residences. As with the NHC LPA Alternative, the NHC 1 and NHC 2 Alternatives would have minor to substantial levels of visual changes, depending on location.

The segment from University Drive to Cornwallis Road is common to all Light Rail Alternatives. Visual changes through this area would be moderate to substantial, with the introduction of the light rail system in the median of University Drive, elevated trackway, a station along Shannon Road, and behind residential areas near Pickett Road.

Table 16: Landscape Unit #5 – Suburban Commercial (US 15-501 Corridor) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Business owners	High
Nature enthusiasts and hikers (NHC LPA)	High
Church members	Moderate
Shoppers	Moderate
Office workers	Moderate
Motorists	Low

Visual Change			
Visual Elements	**Degree of Change for Visual Elements**		
	NHC LPA	**NHC 1**	**NHC 2**
Transit infrastructure	Substantial	Substantial	Substantial
Elevation	Substantial	Substantial	Substantial
Displacement of structures	Minor	Minor	Minor
Parking area	Minor	Minor	Minor
View disruption	Moderate	Moderate	Moderate
Removal of existing screens to residential uses	Substantial	Minor	Moderate
Visual changes to parklands	Substantial	Minor	Minor

Viewer Response	
Viewers	Viewer Response
Transit riders	Low

Visual Change			
Visual Elements	Degree of Change for Visual Elements		
	NHC LPA	NHC 1	NHC 2
Blocks scenic features	Minor	Moderate	Moderate
Changes to streetscape	Moderate	Substantial	Moderate
Removal of vegetation	Substantial	Substantial	Substantial
Visual changes to historic resources	-	-	-
New night lighting	Moderate	Moderate	Moderate

Viewer Response: Moderate + Visual Changes: Moderate to Substantial = Visual Impacts: Moderate to High

Overall visual impacts resulting from all three Light Rail Alternatives in this segment would be moderate to high for each alternative.

The following sections describe the potential visual changes in this unit in more detail.

4.5.2.1 I-40 Interchange/Patterson Place

The Light Rail Alternatives would span I-40 and the exit ramps accessing US 15-501. While this would introduce a large, new visual element in this area, it would not be out of character with the existing interchange and overpass. The Light Rail Alternatives would remain elevated and pass behind businesses, including an office building, hotel, and restaurants before crossing Mount Moriah Road into the Patterson Place development.

The Light Rail Alternatives would be grade separated from Mount Moriah Road, McFarland Road, and Honeycutt Drive, returning to grade through Patterson Place development, passing retail, hospitality, and dining establishments. Vehicles and pedestrians would travel under the elevated Light Rail Alternatives. Transit riders would have views overlooking surface parking lots, as well as retail and hospitality businesses and small landscape areas.

This area is also being evaluated as a potential site for a ROMF. If the area were to be selected for the ROMF, visual impacts would result from the introduction of the ROMF. These are discussed in section 4.12 of this technical report.

New Hope Creek NHC LPA Alternative: I-40 Interchange/Patterson Place

The Patterson Place Station would be introduced into a residential area and adjacent wooded property between Sayward Drive and Southwest Durham Drive. Sayward Drive would be closed as a result of the project. Currently there is a defined edge and fencing that separates the commercial retail development of Patterson Place and the single-family residential parcels located along Sayward Drive. Some residences would be displaced by the project and vegetation would be removed, and remaining residents would experience a high change in visual character of the area.

New Hope Creek NHC 1 and NHC 2 Alternatives: I-40 Interchange/Patterson Place

The Patterson Place Station would be sited near the rear of an existing “big box” retail structure and would not be out of character with the outparcel structures built along Witherspoon Boulevard. The

station would add lighting to this area similar to lighting found within the commercial development and would be a minor addition. These alternatives would displace several residences on the west side of Sayward Road. Remaining residences on the east side of Sayward Road would have views of the LRT; however, these parcels are heavily wooded, screening the Light Rail Alternatives from direct views from the homes. In addition, the light rail would be visible from Sayward Road.

4.5.2.2 New Hope Creek/US 15-501

New Hope Creek NHC LPA Alternative: New Hope Creek/US 15-501

The Light Rail Alternatives would pass at-grade between the Colonial Grand Apartments and a multi-tenant office building. Much of the vegetation along the entry drive areas to these complexes would be displaced by earthwork to bring the grade up. Those working in the offices or visiting for appointments, residents living in the apartments, and motorists moving along Southwest Durham Drive would all have views of the LRT. Transit riders would have views overlooking the landscaped entry drive, apartment buildings, an office building, and surface parking lots.

Figure 11: Light Rail passing through Utility Corridor (NHC LPA) – Sample Design

The Light Rail Alternatives would cross New Hope Creek and an adjacent wooded area approximately 1,500 to 2,000 feet south of US 15-501. The LRT would be primarily on structure through this area, and the New Hope Creek Bottomland Trail would pass under the structure at two different points. A utility corridor with towers and overhead wires parallels New Hope Creek and crosses US 15-501 and is a dominant visual feature in this area. While the LRT would be a new visual element in the wooded area (Figure 11), there is an existing utility corridor so the overall change in visual character of the area would be moderate. Transit riders would have views of the trees surrounding New Hope Creek, the utility corridor, and of US 15-501 through the utility corridor. Motorists on US 15-501 would also have a brief view of the NHC LPA through the utility corridor.

Figure 12: Light Rail west of Garrett Road (NHC LPA) – Sample Design

Coming out of the wooded area, the Light Rail Alternatives would cross large vacant parcels along Garrett Road (Figure 12). A vegetated buffer to the north of the alignment would block views of the NHC LPA from Oak Village apartments and US 15-501. The NHC LPA would pass behind businesses located along US 15-501 at-grade and then on an aerial structure through the wooded area around Sandy Creek, following the property line between Springfield Apartments and Laurel Trace Apartments. A portion of the wooded buffer between the apartment complexes would be removed; however, it appears that sufficient buffer would remain to screen most of the NHC LPA Alternative from the adjacent apartments. The NHC LPA would intersect with University Drive at Ivy Creek Boulevard.

NHC 1 Alternative: New Hope Creek/US 15-501

The NHC 1 Alternative would pass the northwest side of the Colonial Grand Apartments before following US 15-501 across New Hope Creek (Figure 13) and in front of the Oak Creek Village apartments. The light rail system would be elevated along US 15-501 east of Garrett Road (Figure 14), passing Oak Creek Apartments approximately two stories in the air. It would then follow the service road (Lyckan Parkway) east of Garrett Road, where the service road would be shifted to the south and cause the loss of parking spaces. There are large retail stores along Lyckan Parkway, including furniture stores and multiple car dealerships. The NHC 1 Alternative would be viewed by motorists, shoppers, and residents in this area. Views of businesses from US 15-501 would be blocked to some extent by the light rail structure, and it is likely that businesses would relocate signage to maximize visibility from US 15-501. Transit riders would have views overlooking US 15-501, Lyckan Parkway, and multiple surface parking lots and retail businesses. There is the potential for riders to also be looking down onto the Oak Village apartment community in the vicinity of US 15-501 and Garrett Road.

Figure 13: Light Rail along US 15-501 near New Hope Creek looking East (NHC 1 and NHC 2) – Sample Design

Beginning in the vicinity of Larchmont Road, the alignment would be elevated over Sandy Creek and follow the existing exit ramp from US 15-501 to Martin Luther King, Jr. Parkway, returning to grade at the proposed station location on the east side of the Martin Luther King, Jr. Parkway, north of the intersection with University Drive. Transit riders would have views overlooking roadway infrastructure, surface parking areas, and office buildings. There is the potential for riders to also be looking down onto an apartment community in the vicinity of the US 15-501 and Martin Luther King, Jr. Parkway interchange in areas where the vegetated buffer is thin or below the elevation of the LRT due to a steep slope.

Figure 14: NHC 1 west of Garrett Road – Sample Design

NHC 2 Alternative: New Hope Creek/US 15-501

The NHC 2 Alternative would be the same as NHC 1 from Southwest Durham Drive to east of Garrett Road (Figure 15). However, then the Light Rail Alternatives alignment would crossover business parcels along Lyckan Parkway, and businesses may be displaced to accommodate the light rail. The NHC 2 Alternative would be on structure approximately 25 feet above grade and would be highly visible from surrounding remaining businesses and nearby roadways. Views of remaining businesses would be blocked to some extent by the LRT structure, and it is likely that businesses would relocate signage to maximize visibility from US 15-501. Transit riders would overlook surface parking lots and commercial structures, as well as have views across US 15-501 of additional retail development.

Figure 15: NHC 2 east of Garret Road – Sample Design

The NHC 2 Alternative would continue on an aerial structure across the wooded area around Sandy Creek and follow the property line between Springfield Apartments and Laurel Trace Apartments, with the same impacts as described in the NHC LPA.

The Martin Luther King Jr. Parkway Station would be located near the intersection of Martin Luther King Jr. Parkway and University Drive, in the median of University Drive. The station would be viewed by those traveling along Martin Luther King Jr. Parkway and University Drive, shoppers and office workers, including those in the ITT Technical Institute mid-rise tower.

4.5.2.3 Common Segment of the Light Rail Alternative: University Drive and South Square Station

After the NHC alternatives merge, the Light Rail Alternatives would be located in the median of University Drive, which would be widened to accommodate the median-running rail. This widening would require removal of trees and landscaping in front of buildings along the road. Transit riders would overlook office and commercial buildings and surface parking lots.

The Light Rail Alternatives would be elevated on structure along Shannon Road, blocking views to and from businesses along the east side of the road. The introduction of the elevated structure would result in decreased visibility of businesses behind the light rail structure and would require businesses to relocate signing and advertising. Additionally, some driveway entrances would be removed or consolidated and require additional signing to direct customers. The proposed South Square Station would be elevated on structure near the intersection of Shannon Road and Durham Chapel Hill Boulevard, over what is currently surface parking associated with a car dealership. The station would overlook retail development, including outparcel structures, linear "big box" commercial structures, and large surface parking lots. Views from the elevated platform would include building roofs, surface parking, small landscaped areas, and highway infrastructure. This station would be viewed from all sides by motorists, shoppers, and nearby residents. The elevated position of the station would also require access via stairs and elevators. This additional structure would likely be located beneath or adjacent to

the station and would be visible along Shannon Road. This station location would include additional lighting to an already well-lit area.

Overall, the introduction of the elevated rail line and station along Shannon Road would be a substantial visual change for the area (Figure 16). Most of the existing structures in this area are single-story buildings, and the elevated light rail would be highly visible.

Figure 16: Shannon Road looking north to South Square Station – Sample Design

4.5.2.4 Common Segment of the Light Rail Alternative: Durham Chapel Hill Boulevard/Western Bypass

A grade-separated crossing of Durham Chapel Hill Boulevard would add a bridge over the roadway; this feature would be a common visual element in this area. However, the Light Rail Alternatives would pass through parcels occupied by businesses on the north side of Durham Chapel Hill Boulevard, including the Precision Tune Auto Care and parking for the Durham Rescue Mission Thrift Store. The light rail structure could obstruct views and reduce visibility of these businesses from Durham Chapel Hill Boulevard and Shannon Road. The light rail system would be viewed by motorists traveling in this area, as well as by business owners, shoppers, residents, and those in the University Tower.

The Light Rail Alternatives would pass at-grade across the entrance to the Parc at University Tower Apartments and behind the Extended Stay America hotel, and would be visible by residents, particularly in the apartment buildings closest to the entrance. The entrance to the Parc at University Tower is currently landscaped with trees and shrubs, and includes a gated entrance to the apartment complex. The introduction of the light rail tracks and overhead catenary system would be a substantial visual change in this area. The alignment would also pass the Pickett Park community, introducing a new visual element in that area; although the Light Rail Alternatives would be mostly screened by trees, it would likely be visible in areas where the trees are not as dense and during the winter months.

Transit riders would overlook vegetated areas, buildings, and surface parking lots. The University Tower would be visible from most of the alignment through this unit. The occupants of the University Tower would also have a bird's eye perspective overlooking the Light Rail Alternatives, which would likely be visible from back towards I-40 to near Duke University.

Western Bypass, the service road parallel to US 15-501 that provides access to the Herald Sun building and former Pepsi plant, would be relocated to accommodate the Light Rail Alternatives. A ROMF site is under consideration at the former Pepsi plant (see section 4.12). The alignment and ROMF site would be viewed by motorists on US 15-501 and Western Bypass, as well as occupants of University Tower.

A grade separation at Cornwallis Road is in close proximity to the Levin Jewish Community Center and could result in visual impacts to the center, which also houses a pre-school/elementary school.

4.6 Landscape Unit #6: Recreational (Duke West Campus)

4.6.1 Existing Conditions and Viewers

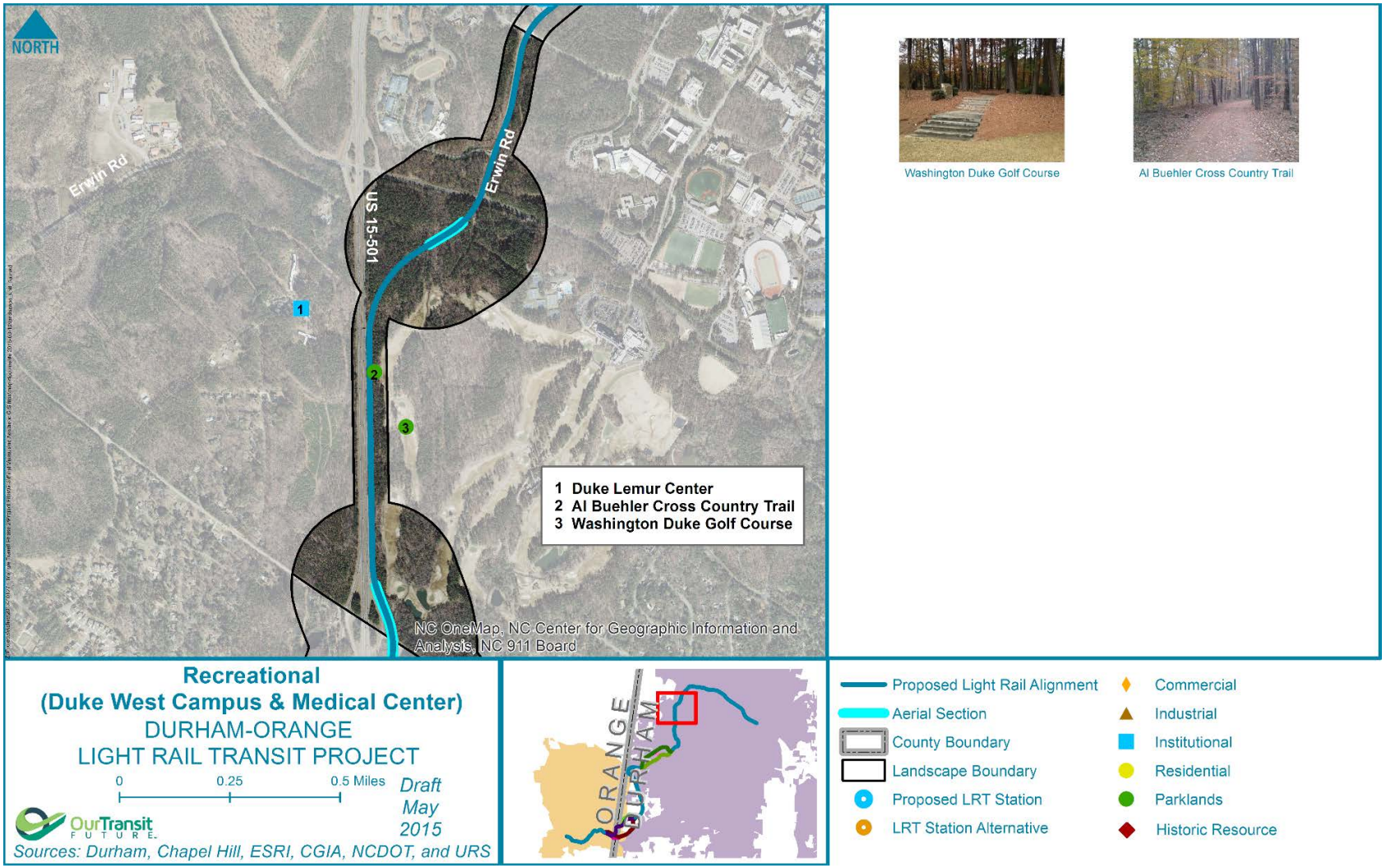
The Recreational landscape unit parallels US 15-501 from Cornwallis Road to Cameron Boulevard before crossing Duke University property to Erwin Road. The visual character of this unit is characterized by the US 15-501 highway and its right-of-way and the surrounding Duke Forest and Washington Duke Golf Course. Wooded areas generally block views of other nearby resources. A summary of existing conditions for Landscape Unit #6 is provided in Table 17; visual resources are shown on Figure 17.

Table 17: Landscape Unit #6 – Recreational (Duke West Campus) Existing Visual Conditions

Visual Character	Visual Resources
Highway right-of-way with wooded buffer and adjacent recreational areas (golf course, cross country trails, and forest) *Vividness* - Moderate *Intactness* - Moderate *Unity* – High **Visual quality**: Moderate	US 15-501 highway Washington Duke Golf Course* Al Buehler Cross Country Trail* Duke Forest*

* Visually-sensitive resources

Figure 17: Landscape Unit #6: Recreational



4.6.2 Impacts Assessment

Viewers in this area include motorists and transit riders, golfers, and users of Al Buehler Cross Country Trail and Duke Forest (pedestrians, nature enthusiasts, and hikers). Viewers would range from low to high sensitivity, as defined in Table 4.

The Light Rail Alternatives in this area would be located on the east side of US 15-501, between the existing roadway and the Duke University Golf Course and trails. The Light Rail Alternatives would be visible from vehicles traveling on US 15-501, as well as from the trail and golf course that parallels the highway. Traffic on US 15-501 can be heard, but the roadway is generally not visible, from the golf course and trails due to a wide vegetated buffer in the area. Some of these trees and shrubs would be removed by construction of the LRT system. Views to and from the golf course of the Light Rail Alternatives would be minimal in areas where the existing vegetated buffer is widest between the highway and golf course; however, in a few instances where the vegetated buffer currently is narrower, the removal of vegetation may open up a viewshed between the Light Rail Alternatives and golf course.

The Light Rail Alternatives would cross the trail with pedestrian underpasses. Trail users would see the structures in the area of the crossing. However, there are several existing man-made infrastructure features that trail users are accustomed to seeing, including overhead wires, a sewer line, and sewer manholes. Transit riders would overlook US 15-501 and the adjacent wooded areas.

Table 18: Landscape Unit #6 – Recreational (Duke West Campus) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Golf course players	High
Nature enthusiasts, hikers, and hunters	High
Motorists	Low
Transit riders	Low

Visual Change	
Visual Elements	**Degree of Change for Visual Elements**
Transit infrastructure	Substantial
Elevation	Moderate
Displacement of structures	Minor
Parking area	Minor
View disruption	Moderate
Removal of existing screens to residential uses	Minor
Visual changes parklands	Substantial
Blocks scenic features	Moderate
Changes to streetscape	Moderate
Removal of vegetation	Moderate
Visual changes to historic resources	Minor
New night lighting	Minor

Viewer Sensitivity: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

As viewed from US 15-501, the Light Rail Alternatives would be a minor visual change to the existing transportation corridor; however, the Light Rail Alternatives would be a substantial visual change to the golf course and wooded areas. Therefore, overall visual impacts would be moderate.

4.7 Landscape Unit #7: University (Duke West Campus & Medical Center)

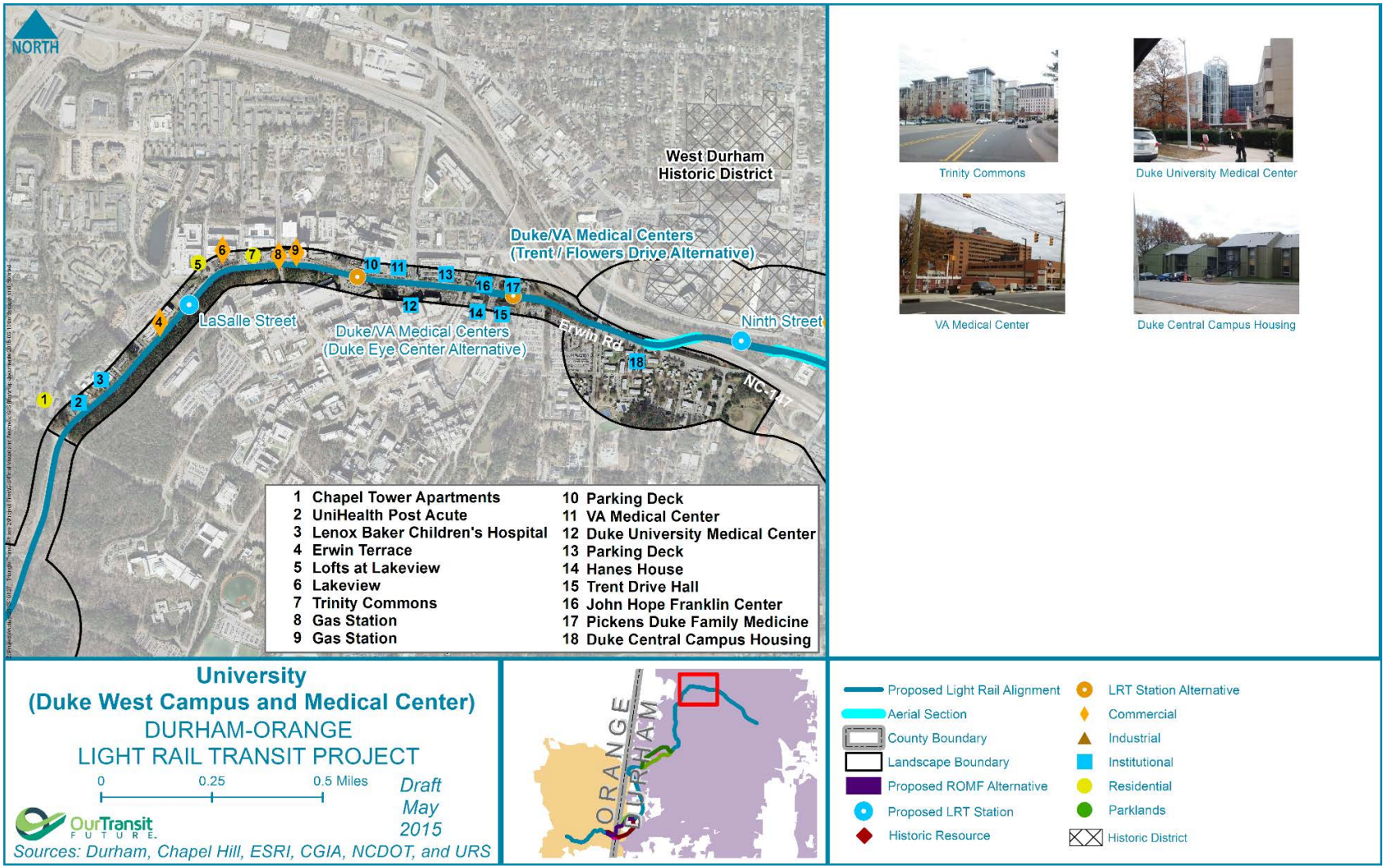
4.7.1 Existing Conditions and Viewers

This University landscape unit includes portions of the viewshed that parallel Erwin Road between Morreene Road and Durham Freeway. This University landscape unit, as with landscape unit #1, is characterized by a major university and medical campus and surrounding support services, including a mix of retail, restaurants, and apartments. Structures along this corridor vary in age and architectural style. The Duke University Medical Center, Duke Eye Care Center, and Durham VA Medical Center are large medical complexes that have been constructed and expanded over many years. Mixed use developments with ground level retail and apartments above have been recently built, while older buildings along the corridor house other medical and university support services. Duke's Central Campus is along the eastern portion of Erwin Road and includes a large surface parking lot and aging campus housing. The overall magnitude of the medical facilities, in particular the Duke University Medical Center and Durham VA Medical Center, and associated parking structures dominate the visual character of the unit. A summary of existing conditions for Landscape Unit #7 is provided in Table 19; visual resources are shown on Figure 18.

Table 19: Landscape Unit #7 – University (Duke West Campus & Medical Center) Existing Visual Conditions

Visual Character	Visual Resources
Blend of mixed-use development, older medical support buildings, parking decks, and surface lots, dominated by large hospital complexes *Vividness* - Moderate *Intactness* - Low *Unity* – Moderate **Visual quality**: Moderate	Duke University undeveloped property Mixed-use development along Erwin Road Duke University Medical Center Duke Eye Center Durham VA Medical Center Medical support service buildings Duke University Central Campus

Figure 18: Landscape Unit #7: University (Duke)



4.7.2 Impacts Assessment

Viewers in this area include motorists and transit riders; pedestrians, shoppers, office workers, and apartment residents; Duke University students, staff, and faculty; and medical center staff and patients. The Light Rail Alternatives would be located primarily at-grade and within existing transportation corridors through this unit. These viewers would have low to high sensitivity to changes in visual character, as defined in Table 4.

Visual changes in this unit would include introduction of light rail trackway and overhead catenary system, light rail vehicles, retaining walls, removal of vegetation, and elimination of some surface parking. Erwin Road would be widened and the light rail and stations would be located in the median. Two stations would be added in this unit, the LaSalle Street Station and a station at either Duke Eye Center or between Trent Drive and Flowers Drive, with associated infrastructure and lighting. Overall visual change would be minor to moderate.

Table 20: Landscape Unit #7 – University (Duke West Campus & Medical Center) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Business owners	High
University visitors, student, professors, staff	Moderate
Hospital visitors, patients staff	Moderate
Shoppers	Moderate
Office workers	Moderate
Motorists	Low
Transit riders	Low
Performing arts patrons, conference attendees, attendees at sporting events	Low

Visual Change	
Visual Elements	**Degree of Change for Visual Elements**
Transit infrastructure	Substantial
Elevation	Minor
Displacement of structures	Minor
Parking area	Minor
View disruption	Minor
Removal of existing screens to residential uses	Minor
Visual changes to parklands	Minor
Blocks scenic features	Minor
Changes to streetscape	Substantial
Removal of vegetation	Minor
Visual changes to historic resources	Minor
New night lighting	Moderate

Viewer Sensitivity: Moderate + Visual Changes: Minor = Visual Impacts: Low to Moderate

Visual impacts would be low to moderate, as the Light Rail Alternatives would generally be consistent with other visual elements along this corridor, including the roadway, overhead utility lines, and relatively modern, institutional structures.

The following sections describe the potential visual impacts in this unit in more detail.

4.7.2.1 Common Segment of the Light Rail Alternative: Erwin Road/La Salle Street Station

The Light Rail Alternatives would be located in the median of Erwin Road through this area. Erwin Road would be widened along both sides of the existing roadway, resulting in removal of vegetated buffers, particularly between Cameron Boulevard and Towerview Road, as well as existing landscaping and mature trees in front of the Lenox Baker Children's Hospital and mixed-use development closer to LaSalle Street. A small surface parking lot at the corner of Erwin Road and LaSalle Street would be removed.

The LaSalle Street Station would be located in the median (Figure 19), with the westbound station west of LaSalle Street and the eastbound station east of LaSalle Street. Station infrastructure, as well as lighting and pedestrian accommodations would be added. Office buildings along Erwin Road would have views of the LaSalle Street Station. Transit riders would have views of traffic along Erwin Road, as well as buildings, sidewalks, and trees adjacent to the road.

Figure 19: LaSalle Street Station – Sample Design

4.7.2.2 Common Segment of the Light Rail Alternative: Duke University and Durham VA Medical Centers

The Light Rail Alternatives would continue to be in the median of Erwin Road through this area. Two station location alternatives are being considered in the vicinity of the Duke University and the Durham VA Medical Centers – Duke Eye Care Center Station Alternative and Trent/Flowers Station Alternative.

Duke Eye Care Center Station Alternative

The Duke Eye Care Center Station Alternative would include a station in the median of Erwin Road between the Duke Eye Center and Durham VA Medical Center. Additional widening of Erwin Road would be required to accommodate the station, which would result in removal of some surface parking spaces from the lot in front of the Durham VA Medical Center. Around Duke University Medical Center the widening of Erwin Road would remove vegetated buffer in front of a parking deck, landscaped areas,

and surface parking spaces at multiple locations. This area would also see the introduction of medians and retaining walls that would impact the existing streetscape in front of the parking area next to Emergency Drive. Concrete medians would be added between Trent Drive and east of Flowers Drive to control turning movements.

Patients and staff at the Durham VA Medical Center and Duke Eye Center would have views overlooking the station. From Duke University Medical Center, views would be of the road with transit in the median. Removal of vegetation along the surface parking at the hospital and from in front of the parking structure opposite Erwin Road would make the street and parking structure more visible from the hospital. Near the Trent Drive intersection, the Duke University Medical Center Family Care Program and the John Hope Franklin Center buildings would be removed as a result of road widening, and landscaping would be eliminated from the front of most remaining buildings. The remaining structures would be adjacent to the road. Transit riders would have views of medical buildings, office buildings, parking decks, surface parking lots, and a few remaining landscaped areas.

From this point, the Light Rail Alternatives and impacts would be the same as those described in the Trent/Flowers Station Alternative.

Trent/Flowers Station Alternative

Approaching the Trent/Flowers Station the widening of Erwin Road would impact properties along this stretch. Near the Trent Drive intersection, the Duke University Medical Center Family Care Program and the John Hope Franklin Center buildings would be removed as a result of road widening, and landscaping would be eliminated from the front of most remaining buildings. The remaining structures would be adjacent to the road. Currently, the existing buildings in this area have landscaped areas around the perimeter and are setback from the street but these buildings would have very little to no setback from the street's edge due to the widening along Erwin Road. Mature trees in the area would be removed along Erwin Road, revealing the built structures that were once buffered. The removal of trees would also reveal surface parking lots and potentially views towards NC 147. Those working in or visiting buildings between Emergency Drive and Flowers Drive would have views overlooking Erwin Road that had previously been blocked. The two buildings between Trent Drive and Flowers Drive would overlook the station at street level as well as from above. Motorists would see the station from all sides as they move around the structure sited in the center of Erwin Road. Transit riders would have views of structures in this area ranging from medical facilities, office buildings, parking decks, surface parking lots, and a few vegetated buffers and landscaped areas.

The Light Rail Alternatives continue at-grade in the median of Erwin Road before crossing to the area between Erwin Road and NC 147 just east of Anderson Street. This alignment would require the removal of trees that currently buffer views between Erwin Road and NC 147. The Light Rail Alternatives would cross NC 147 on structure and would be visible alongside and crossing NC 147 by motorists but would not be out of context with other bridges and overpasses along the highway. Students residing on Duke's Central Campus would also see the aerial structures; however, this part of Central Campus has plans to be redeveloped using more transit-oriented development principles.

4.8 Landscape Unit #8: Historic / Emerging Urban (Old West Durham/Duke East Campus)

4.8.1 Existing Conditions and Viewers

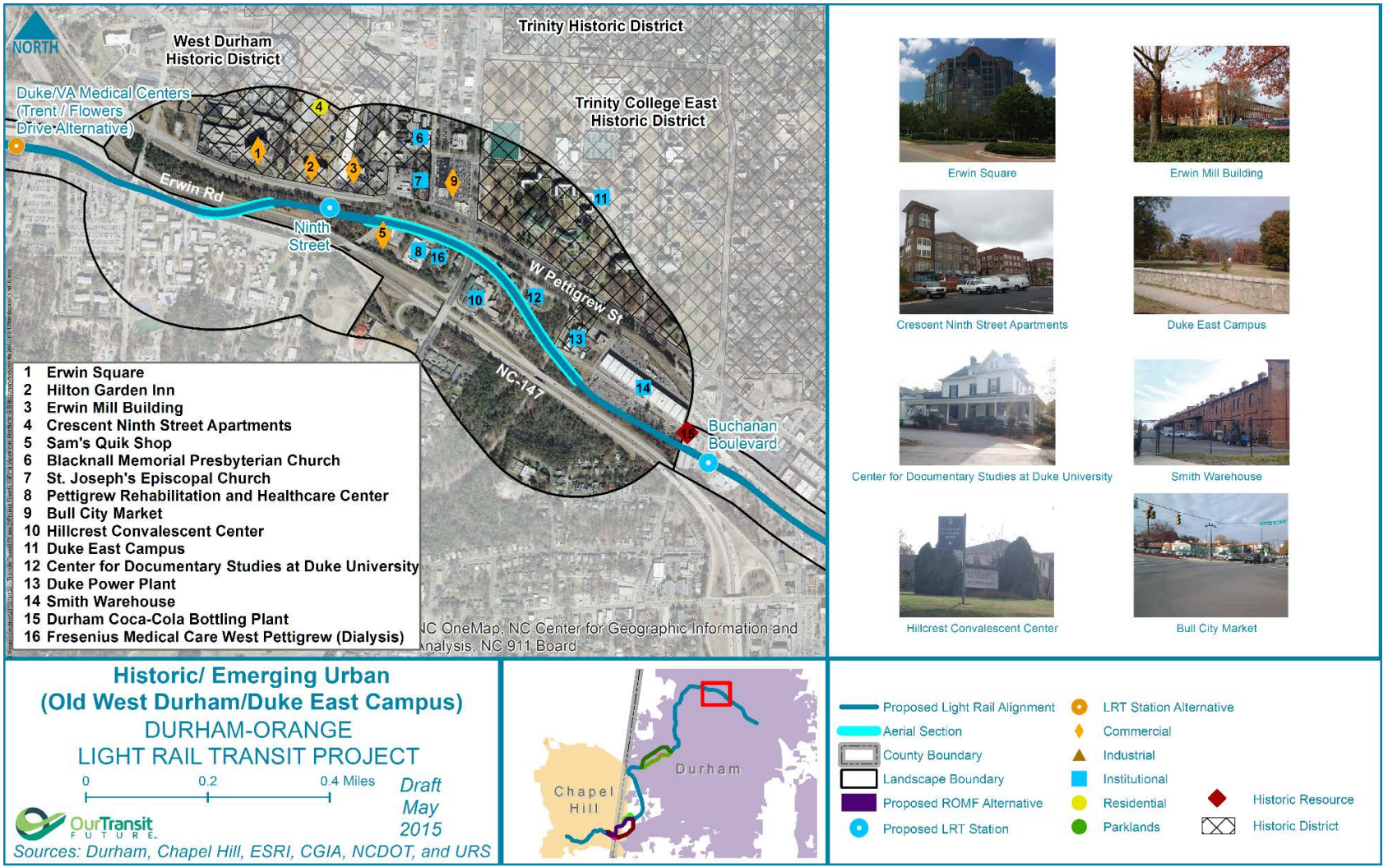
The Historic/Emerging Urban landscape unit begins at NC 147 and follows the existing railroad tracks, passing the Ninth Street historic urban retail corridor and adjacent redevelopment projects, as well as Duke University's East Campus. The viewshed in this unit includes a variety of uses, including commercial retail, medical, multi-family residential, historic single-family homes, large churches, and historic Duke East Campus. Although there are a variety of uses, most of the unit makes use of complementary architectural elements, a notable exception being the modern, multi-story Erwin Square. Redevelopment, either through renovation of existing structures or through construction of new buildings, is ongoing in this unit or is creating a denser, more urban character in the area. A summary of existing conditions for Landscape Unit #8 is provided in Table 21; visual resources are shown on Figure 20.

Table 21: Landscape Unit #8 – Historic/Emerging Urban (Old West Durham/Duke East Campus) Existing Visual Conditions

Visual Character	Visual Resources
Architecturally cohesive historic buildings and redevelopment within the Ninth Street, East Campus, and Trinity Park neighborhood areas *Vividness* - Moderate *Intactness* - Moderate *Unity* – High **Visual quality**: Moderate	Erwin Square West Durham Historic District* Mixed-use redevelopment Ninth Street retail and Bull City Market shopping center Churches (St. Joseph's Episcopal Church, Blacknall Memorial Presbyterian Church) Medical facilities (Pettigrew Rehabilitation and Healthcare Center*, Hillcrest Convalescent Center*) Duke University East Campus and historic district* Duke Center for Documentary Studies Smith Warehouse* Trinity Historic District*

* Visually-sensitive resource

Figure 20: Landscape Unit #8: Historic/Emerging Urban



4.8.2 Impacts Assessment

Viewers in this area include motorists and transit riders, residents of neighboring mixed-use developments and historic districts, Duke East Campus students and staff, shoppers, patients and staff at medical facilities, church members, and pedestrians. Viewer sensitivity would range from low to high depending on proximity and duration of exposure to visual changes, as defined in Table 4. Motorists, transit riders, with limited exposure would have low sensitivity, while residents would be highly sensitive to visual changes. Others, including pedestrians, church members, and shoppers, who view the changes on a limited but regular basis, would be moderately sensitive.

Visual changes from the Light Rail Alternatives would include introduction of light rail trackway and the overhead catenary system, light rail vehicles, stations and associated improvements and lighting, retaining walls, and bridges. There would be a bridge over NC 147 and an elevated station on retained fill near the intersection of Erwin Road and Pettigrew Street. East of Erwin Road, the Light Rail Alternatives would be on elevated structure along the south side of West Pettigrew Street, with aerial crossings of Swift Avenue, Powe Street, and Campus Drive. Some surface parking at Pettigrew Rehabilitation and Healthcare Center, West Pettigrew Dialysis, and E.K. Powe House would be eliminated or reconfigured. East of Swift Avenue, the Light Rail Alternatives would turn south away from Pettigrew Street on new transportation right-of-way, crossing the entrance to Hillcrest Convalescent Center, parking for Duke's Center for Documentary Studies, and Campus Drive, then returning to ground level and following the property line between the Smith Warehouse property and NC 147, and crossing Buchanan Boulevard. The proposed Buchanan Boulevard Station would be located on a site that currently contains warehouses and parking used by Duke University Transportation Services. These changes would result in moderate to substantial changes in views from adjacent land uses.

There are several historic resources in this unit, including West Durham Historic District, Trinity College East Campus Historic District, Smith Warehouse, and Trinity Historic District; however, the would be no visual impacts to historic resources in this unit that would result in an adverse effect that would diminish the historic integrity of the resource.

Table 22: Landscape Unit #8 – Historic/Emerging Urban (Old West Durham/Duke East Campus) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Residents and visitors in historic districts	High
Business owners	High
University visitors, student, professors, staff	Moderate
Church members	Moderate
Hospital visitors, patients and staff	Moderate
Shoppers	Moderate
Office workers	Moderate
Motorists	Low
Transit riders	Low

Visual Change	
Visual Elements	**Degree of Change for Visual Elements**
Transit infrastructure	Substantial
Elevation	Substantial
Displacement of structures	Minor
Parking area	Minor
View disruption	Moderate
Removal of existing screens to residential uses	Minor
Visual changes to parklands	Minor
Blocks scenic features	Minor
Changes to streetscape	Moderate
Removal of vegetation	Moderate
Visual changes to historic resources	Minor
New night lighting	Moderate

Viewer Response: Moderate + Visual Changes: Moderate = Visual Impacts: Moderate

Overall visual impacts would be moderate. The following sections describe the potential visual impacts in this unit in more detail.

4.8.2.1 Common Segment of the Light Rail Alternative: NC 147/Ninth Street Station

From this point to the eastern terminus of the project, the Light Rail Alternatives would be constructed on the south side of existing railroad tracks. The proposed Ninth Street Station would be located in the southwest corner of the Ninth Street/Erwin Road and Pettigrew Street intersection (Figure 21). Due to topography in this area, the Ninth Street Station would be elevated on retained fill above the current grade of Erwin Road but would be at a similar height as the adjacent existing railroad tracks. From Erwin Road, motorists would see the retaining walls for the station, stairs and an elevator to allow pedestrians to access the station from this lower level, and the aerial structure over Erwin Road. Large trees that currently block views to the west from Erwin Road would be removed.

The project would be located about 150 feet south of the southern edge of the West Durham Historic District; however, this is within an urban setting historically served by the rail line and would therefore have low visual impacts on the district.

Figure 21: Ninth Street Station – Sample Design

The Light Rail Alternatives would bridge over Erwin Road. East of Ninth Street, the Light Rail Alternatives would follow the south side of West Pettigrew Street. The Light Rail Alternatives would be on elevated structure, crossing parking associated with Pettigrew Rehabilitation and Healthcare Center, West Pettigrew Dialysis Center, and E.K. Powe House. Some parking would be eliminated or reconfigured.

The Light Rail Alternatives would be on elevated structure across Swift Avenue, just south of the intersection with Pettigrew Street. The alignment would turn south, away from Pettigrew Street, crossing parking and a driveway for the Hillcrest Convalescent, Powe Street, a parking lot behind the Center for Documentary Studies at Duke, and a wooded area between Powe Street and Campus Drive.

The existing vegetated buffer on the north side of the existing rail line would continue to act as a screen from Main Street and Duke East Campus; however, brief views would be possible between trees, particularly in the winter. The project would be located near the southern edge of the Trinity College East Campus Historic District; however, the area is an urban setting historically supported by the rail line and now additionally served by NC 147, a major modern highway; therefore, there would be low visual impacts on the historic district. Transit riders would have views of the railroad tracks, Main Street, and the Ninth Street commercial area.

4.8.2.2 Common Segment of the Light Rail Alternative: Duke East Campus and Smith Warehouse

The Light Rail Alternatives would be on structure across Campus Drive just south of Maxwell Street, and return to grade near the surface parking lot south of the Smith Warehouse building, a renovated historic structure that houses offices. The alignment would be at-grade along the property line between the Smith Warehouse and NC 147. Some surface parking associated with the Smith Warehouse will be removed or reconfigured. The Light Rail Alternatives would be visible across the parking lot from offices on the south side of the warehouse but these low visual impacts would not diminish the historic integrity of the resource.

The Light Rail Alternatives would cross Buchanan Avenue at-grade, approximately 100 feet north of NC 147. Transit riders would have views of NC 147, surface parking lots, and the Smith Warehouse. Motorists on NC 147 would have views of the Buchanan Boulevard Station and Light Rail Alternatives.

4.9 Landscape Unit #9: Downtown Urban (Downtown Durham)

4.9.1 Existing Conditions and Viewers

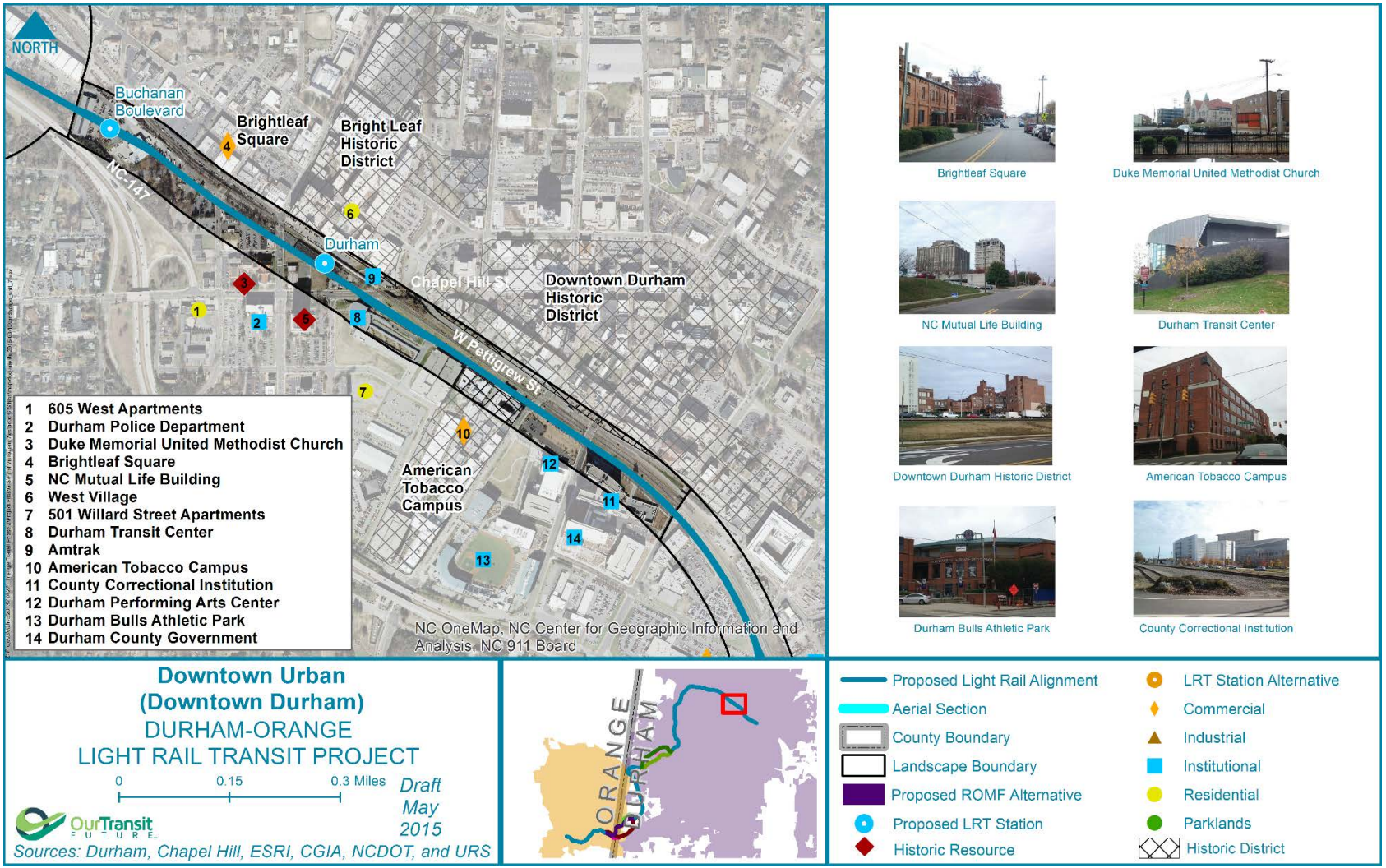
The Downtown Urban landscape unit extends from east of Buchanan Boulevard to South Roxboro Street and includes the historic portion of downtown that developed around the railroad tracks. The unit is a mixture of historic commercial buildings, renovated tobacco warehouses, government buildings, cultural and entertainment facilities, and transit facilities. There are a number of retail/dining/nightlife establishments in the Brightleaf Square, American Tobacco Campus, and the historic downtown Durham districts. There are also numerous government and institutional land uses including Durham City Hall, Durham County Courthouse, and the Durham County Jail. This landscape unit also has the highest concentration of cultural facilities including the Carolina Theater, Durham Performing Arts Center, Durham Bulls Athletic Park, and Museum of Durham History. The visual character is typical of an urban downtown environment with dense development, gridded street, and large-scale complexes for government, sports, and entertainment. Notable visual features are the high rise Mutual Life building and SunTrust Tower. A summary of existing conditions for Landscape Unit #9 is provided in Table 23; visual resources are shown on Figure 22.

Table 23: Landscape Unit #9 – Downtown Urban (Downtown Durham) Existing Visual Conditions

Visual Character	Visual Resources
Mixture of historic commercial buildings, renovated tobacco warehouses, government buildings, cultural and entertainment facilities dense development, gridded streets, and large-scale complexes for government, sports, and entertainment *Vividness* - High *Intactness* - Moderate *Unity* – Moderate **Visual quality**: Moderate	Downtown skyline Renovated tobacco warehouses (Brightleaf Square and West Village)* Duke Memorial United Methodist Church* Mutual Life Building* Durham Transit Center and Amtrak station Downtown Durham Historic District* American Tobacco Campus* and Durham Bulls Athletic Park Durham Performing Arts Center Durham County Justice Center

* Visually-sensitive resource

Figure 22: Landscape Unit #9: Downtown Urban



4.9.2 Impacts Assessment

Viewers in this area include motorists and transit riders, pedestrians, office workers, church members, residents of converted warehouses and historic districts, sporting event attendees, performing arts patrons, and shoppers enjoying dining, nightlife, and other entertainment alternatives. These viewers would have low to high sensitivity, consistent with descriptions in Table 4.

Visual changes from the Light Rail Alternatives would include introduction of light rail trackway and the overhead catenary system, light rail vehicles, stations and associated improvements and lighting, and retaining walls. The Light Rail Alternatives would be located along Pettigrew Street. From West Chapel Hill Street to Dillard Street, Pettigrew Street would be reconfigured for one-way (eastbound) traffic with the Light Rail Alternatives between the travel lanes and the existing railroad track. The Light Rail Alternatives would be at-grade through this unit, with crossings of Gregson Street, Duke Street, Chapel Hill Street, Blackwell Street, South Mangum Street, and South Roxboro Street.

Stations would be added at Buchanan Boulevard Station and Durham Station, with associated infrastructure, pedestrian accommodations, and lighting. Light rail vehicles would pass more frequently than the railroad trains do currently.

Table 24: Landscape Unit #9 – Downtown Urban (Downtown Durham) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Residents and visitors in historic districts	High
Business owners	High
Church members	Moderate
Shoppers	Moderate
Office workers	Moderate
Motorists	Low
Transit riders	Low
Performing arts patrons, conference attendees, attendees at sporting events	Low
Attendees at festivals	Low

Visual Change	
Visual Elements	**Degree of Change for Visual Elements**
Transit infrastructure	Moderate
Elevation	Minor
Displacement of structures	Minor
Parking area	Minor
View disruption	Minor
Removal of existing screens to residential uses	Minor
Visual change to parklands	Minor
Blocks scenic features	Minor
Changes to streetscape	Moderate
Removal of vegetation	Minor
Visual changes to historic resources	Minor
New night lighting	Minor

Viewer Response: Moderate + Visual Changes: Minor = Visual Impacts: Low

There would be visual changes to several historic resources in this area, including the Watts and Yuille Tobacco Warehouses, Duke Memorial Unity Methodist Church, Bright Leaf Historic District, Downtown Durham Historic District, and American Tobacco Company Manufacturing Plant; however, there would not be visual impacts to these resources that would diminish their historic integrity. Overall visual

impacts in the Durham Downtown Urban landscape unit would be low. The following sections describe the potential visual impacts in this unit in more detail.

4.9.2.1 Common Segment of the Light Rail Alternative: Buchanan Boulevard Station

The visual character transitions in this area, from historic neighborhoods to more urban downtown business and entertainment district. At the proposed Buchanan Boulevard Station, the Light Rail Alternatives and proposed station would impact structures associated with the Duke University Parking and Impound Lot and Transportation Services Department. Two warehouse buildings would be demolished to accommodate the LRT system and station. This would open up views from Buchanan Boulevard of the proposed station and parking areas.

The Buchanan Boulevard Station would be visible from all sides by motorists on adjacent roadways, office workers, Duke East Campus staff and students, and other visitors to downtown Durham. From the Buchanan Boulevard Station, the Light Rail Alternatives would cross surface parking lots between Wilkerson Avenue and Gregson Street, Gregson Street, surface parking lots for the Tobacco Workers International Union and a law office, and Duke Street.

4.9.2.2 Common Segment of the Light Rail Alternative: Durham Station

East of West Chapel Hill Street, the proposed Durham Station would be located between the Durham Station Transportation Center and the existing railroad track, on the north side of Pettigrew Street (Figure 23). Transit riders would overlook urban buildings, streets, and parking areas. The station and light rail infrastructure would be consistent with the existing uses in this area, which include the Durham Station Transportation Center, as well as the Amtrak station.

Figure 23: Durham Station – Sample Design

The project, including Durham Station, would be located at-grade south of the southern boundaries of the Bright Leaf Historic District and Downtown Historic District, both of which front the existing rail line, but the visual changes from the project would not diminish the historic integrity of these districts.

4.9.2.3 Common Segment of the Light Rail Alternative: American Tobacco Campus/Durham Performing Arts Center

Currently, this area is divided by railroad tracks, which are located at-grade between Ramseur Street and Pettigrew Street, with the downtown business district on the north side and the American Tobacco Campus, Durham Performing Arts Center (DPAC), Durham Bulls Athletic Park (DBAP), and Durham County Justice Center and detention center to the south. While the railroad tracks do not impede north-south views between these areas, they do detract from the visual quality of the area, as they are often littered with garbage and other debris, ponded water, and overgrown grass and weeds.

The Light Rail Alternatives would continue to follow Pettigrew Street, between one-way, eastbound automobile travel lanes and the existing railroad tracks. Viewers in the area would see the roadway travel lanes, light rail trackway and overhead catenary system, and existing railroad tracks (Figure 24). The additional infrastructure would not impede views, and would be consistent with the existing transportation infrastructure in the corridor.

Transit riders would have views of downtown Durham buildings and skyline, the modern DPAC and Durham justice center, converted historic tobacco warehouses, parking structures, and adjacent roadways.

Figure 24: Pettigrew Street at Mangum Street looking west – Sample Design

The project would be located at-grade immediately north of the American Tobacco Company Manufacturing Plant historic property. This property is located in a dense urban setting that already includes a long-established rail line that once served the facility. Given the property's historic and current setting and industrial character, the D-O LRT Project would not impact its historic integrity.

4.10 Landscape Unit #10: Urban Industrial (East Durham)

4.10.1 Existing Conditions

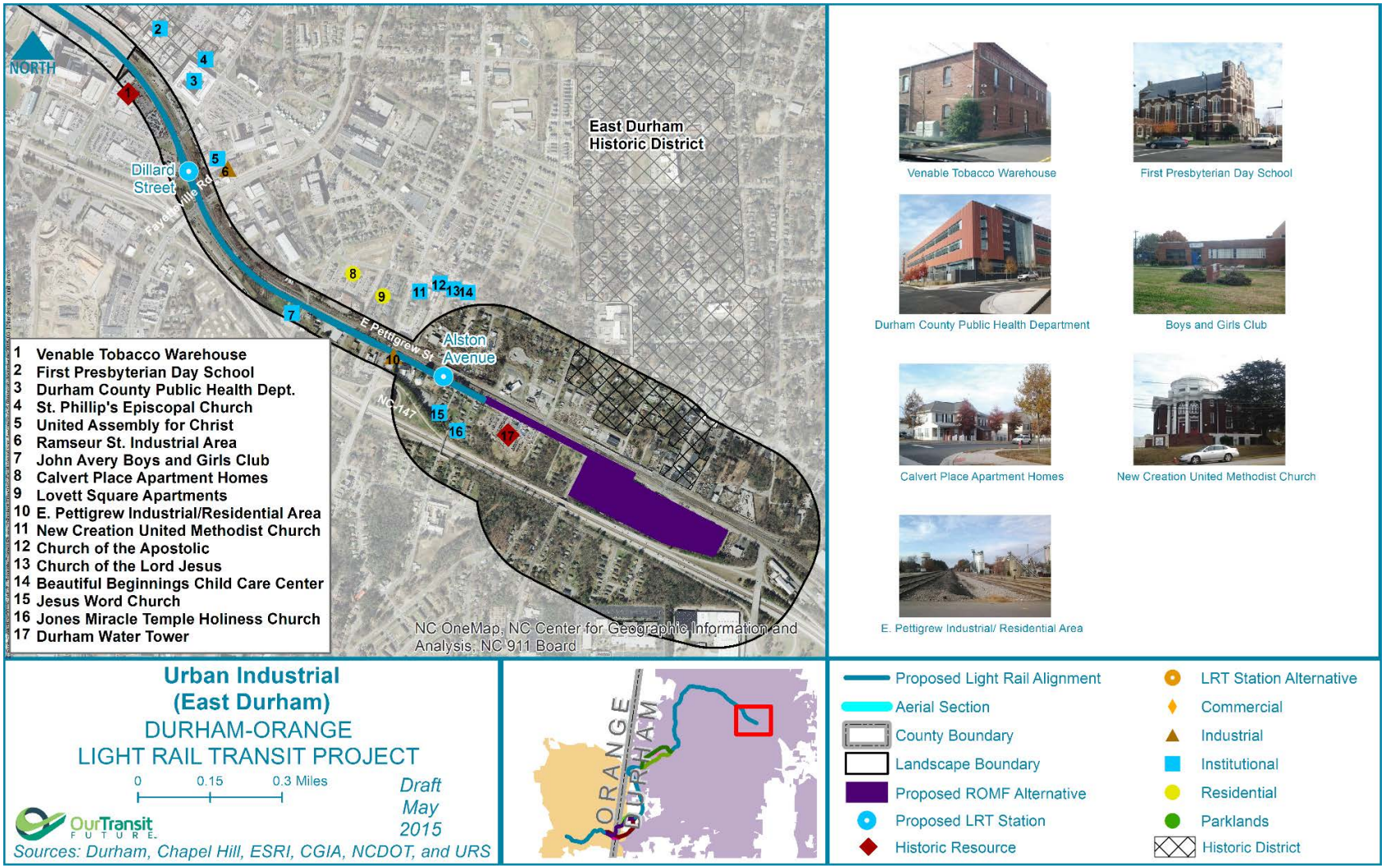
The Urban Industrial landscape unit represents the easternmost portion of the viewshed and is characterized by minor industrial activity, railroad infrastructure, and residential land uses. Older single-family and newer multifamily residential areas are scattered throughout the landscape unit, either as isolated dense clusters along the railroad tracks, adjacent to industrial uses, or on the edge of the landscape unit as part of adjacent neighborhoods. There are also several places of worship within the study area, some in stand-alone buildings and others in industrial building storefronts. A summary of existing conditions for Landscape Unit #10 is provided in Table 25; visual resources are shown on Figure 25.

Table 25: Landscape Unit #10 – Urban Industrial (East Durham) Existing Visual Conditions

Visual Character	Visual Resources
Existing railroad tracks with adjacent industrial uses and scattered residential areas *Vividness* - Moderate *Intactness* - Low *Unity* - Low **Visual quality**: Low	Venable Tobacco Warehouse* Large churches (First Presbyterian Church, St. Phillips Episcopal Church, New Creation United Methodist Church) Durham County Public Health Department Scattered residential neighborhoods* Industrial operations along East Pettigrew Street and Ramseur Street Durham Water Tower*

* Visually-sensitive resource

Figure 25: Landscape Unit #10: Urban Industrial



4.10.2 Impacts Assessment

Viewers in this area include motorists and transit riders, children at the Boys and Girls Club, church members, and residents. The Light Rail Alternatives would be located along the existing transportation corridor that includes Pettigrew Street and the railroad.

Visual changes would include light rail infrastructure and new stations. The stations would have canopies, pedestrian accommodations, lighting, and parking, including a large surface parking lot at Dillard Street and a multi-story parking structure at Alston Avenue. Overall, the visual change would be minor to moderate in this unit, as there is already a mix of land uses and visual elements, and the addition of the Light Rail Alternatives to the existing transportation corridor would be consistent with expected conditions in this area.

Table 26: Landscape Unit #10 – Urban Industrial (East Durham) Visual Impacts

Viewer Response	
Viewers	**Viewer Response**
Residents – single- and multi-family housing	High
Business owners	High
Children and teachers – school (Girls and Boys Club)	Moderate
Church members	Moderate
Motorists	Low
Transit riders	Low

Visual Change	
Visual Elements	**Degree of Change for Visual Elements**
Transit infrastructure	Moderate
Elevation	Minor
Displacement of structures	Moderate
Parking area	Substantial
View disruption	Minor
Removal of existing screens to residential uses	Moderate
Visual change to parklands	-
Blocks scenic features	Minor
Changes to streetscape	Moderate
Removal of vegetation	Minor
Visual changes to historic resources	Minor
New night lighting	Moderate

Viewer Response: Moderate + Visual Changes: Minor to Substantial = Visual Impacts: Low to Moderate

Overall visual impacts in the East Durham Urban Industrial landscape unit would be low. The following sections describe the potential visual impacts in this unit in more detail.

4.10.2.1 Common Segment of the Light Rail Alternative: Dillard Street Station

The proposed Dillard Street Station would be located east of Dillard Street between the existing railroad track and north side of Pettigrew Street (Figure 26). In this area the views would transition from the urban architecture of the downtown business and cultural districts to a more industrial aesthetic. The Light Rail Alternatives would be along Pettigrew Street south of the existing railroad tracks. East of Dillard Street, Pettigrew Street would be shifted slightly to the south and would serve two-way automobile traffic. A large park-and-ride lot is also proposed for this location with more than 950

parking spaces between Dillard Street and Jackie Robinson Drive. This property is currently associated with car dealership and rental businesses, so surface parking would not be a visual change from the existing use.

The project would be located at-grade immediately north of the Venable Tobacco Warehouse historic property. This property is located in a dense urban setting that already includes a long-established rail line that once served the facility. Given the property's historic and current setting and industrial character, the D-O LRT Project would not impact its historic integrity.

Transit riders would have views of historic structures such as the Venable Tobacco Warehouse, residential homes, light industrial businesses, offices, and large surface parking areas.

Figure 26: Dillard Street Station – Sample Design

4.10.2.2 Common Segment of the Light Rail Alternative: Alston Avenue Station

Pettigrew Street would be shifted slightly to the south to accommodate the addition of the Light Rail Alternatives between the roadway and existing railroad tracks. The construction of the light rail station and infrastructure, along with the shift of Pettigrew Street, would be a moderate visual change (Figure 28). The shift of Pettigrew Street would require removal of some commercial structures between Grant Street and Murphy Street. A multi-story parking structure would be constructed at this station, south of Pettigrew Street between Colfax Street and Chatham Place. Some residences would be displaced, and there would be changes in traffic patterns to allow access to and from the parking structure from Alston Avenue via Gann Street. The parking structure would be taller than most in the area and would be visible above existing development. However, the majority of the remaining properties in this area are commercial or light industrial uses that would not be sensitive to this change. For the few residences that would remain, the visual changes would be substantial.

The eastern terminus of the project, including the Alston Avenue Station, would be located about 525 feet west of the Durham Water Tower and Valve House historic property. The buildings separating the resource from the alignment, along with the distance of the resource from the project, would screen

and separate the resource from the project. Given the historic and current setting of the resource and its industrial character, the D-O LRT Project would not alter or diminish its historic integrity.

Figure 27: Alston Avenue Station – Sample Design

4.11 Short-term Effects

During the construction of the Light Rail Alternatives there would be temporary visual impacts associated with construction activities. These impacts include temporary changes to views in and around the construction area. Construction activities may take place along the proposed route as well as within support facilities including maintenance, operations, and staging areas during the phased construction process. Construction activities may introduce heavy equipment such as cranes, bulldozers, backhoes, graders, scrapers, trucks and light machinery into the view of various properties and those moving along transportation corridors, through neighborhoods, sidewalks, and those using adjacent recreational facilities. Additionally, smaller-scale elements would include security fencing and sediment/erosion control devices such as silt fences and straw bales. These temporary construction activities may also include secured or fenced staging areas for materials and equipment. Additional trucks and equipment may be travelling to and from the site. Visual impacts associated with construction would be typical of building projects in suburban and urban areas.

4.12 Rail Operations and Maintenance Facility

Five alternative sites are being considered for a ROMF that would provide maintenance, repair, interior cleaning, and inspection of light rail vehicles. Only one site will be selected. These sites include the following:

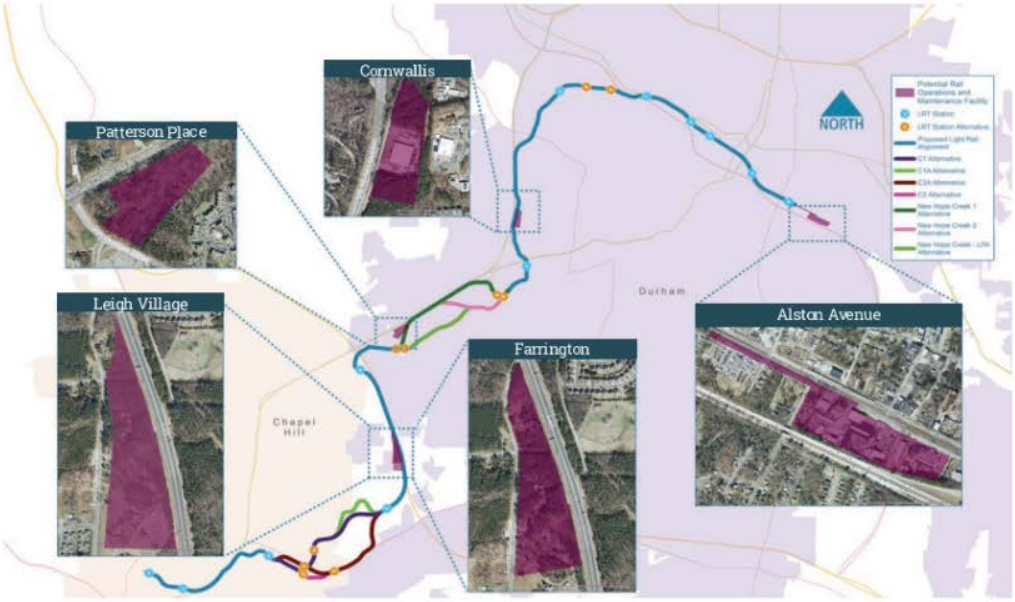
- Leigh Village
- Farrington Road

- Patterson Place
- Cornwallis Road
- Alston Avenue

Some impacts to visual resources would result regardless of which site is selected, including the introduction of built facilities (maintenance buildings, office spaces, shops, and covered storage areas) and infrastructure (parking and paved areas, tracks, switches, overhead catenary system, a power station, and signals). All sites would have changes in topography due to grading; changes in structural features, such as removal of existing structures and construction of new buildings; changes to vegetation, such as removal of existing vegetation and planting of new vegetation; and addition of lighting with light poles and exterior lighting on buildings. Lighting would be aimed to reduce spillage onto neighboring properties or adjacent roadways.

Each site's context with the surrounding landscape and viewers would vary. Potential impacts associated with each site are described in the following sections.

Figure 28: ROMF Alternatives



4.12.1 Leigh Village ROMF

The Leigh Village site is located between Farrington Road and I-40, south of the intersection of Ephesus Church Road and Farrington Road in landscape unit #4. The site includes two single-family residences and 12 accessory structures, a gravel driveway, and a utility corridor with overhead electric lines. A portion of the site is part of the Walter Curtis Hudson Farm historic property. Viewers at this site would include motorists on I-40 and Farrington Road and transit riders, who would generally not be sensitive to visual changes, as well as residents of single-family homes on Farrington Road and residents of the Villas at Culp Arbor, who would be more highly sensitive to visual changes. The area surrounding the northern end of the site is largely wooded, and the site would not likely be visible from Creekside Elementary School, located on Ephesus Church Road.

Visual changes would include removal of existing structures and vegetation, construction of new buildings and parking areas, and the introduction of light rail infrastructure (tracks, overhead catenary

system, switches, and signals), light rail vehicles, and lights. The ROMF would also result in the loss of resources associated with the Walter Curtis Hudson Farm historic property, including the house, buildings, and farmland, which would result in an adverse effect on the historic resource.

Visual changes associated with the ROMF would be substantial. Residents along Farrington Road and in the Villas at Culp Arbor would have views of the southern portion of the ROMF site, where there is no wooded buffer. A vegetated buffer between Farrington Road and the ROMF would be maintained along the northern portion of the site. Residents on the east side of I-40 have expressed concern about visual impacts and lighting from the ROMF site; however, a vegetated buffer between I-40 and the ROMF would be maintained. Overall visual impacts at this site would be high.

4.12.2 Farrington Road ROMF

The Farrington Road site is located west of I-40 just south of where Farrington Road crosses over I-40 in landscape unit #4. Most of the ROMF site is coincident with that of the Leigh Village ROMF site, just shifted to the north. The site is largely wooded, though there is one single-family home on the site that would be displaced. Viewers at this site would include motorists on I-40 and Farrington Road and transit riders with low sensitivity to visual changes, as well as residents along Farrington Road and in the Villas at Culp Arbor. The area surrounding the site is wooded, and the site would not likely be visible from nearby residential areas or from Creekside Elementary School on Ephesus Church Road.

Visual changes would include new buildings and parking areas, light rail infrastructure (tracks, overhead catenary system, switches, and signals), light rail vehicles, lights, and removal of existing vegetation.

Visual changes associated with the ROMF would be substantial. Residents on the east side of I-40 have expressed concern about visual impacts and lighting from the ROMF site; however, a vegetated buffer between I-40 and the ROMF would be maintained. The site would also be largely screened by vegetation from Farrington Road. The ROMF would be located approximately 200 feet north of the boundary of the Walter Curtis Hudson Farm historic property and would introduce new visual elements to the property's setting. Overall visual impacts at this site would be moderate.

4.12.3 Patterson Place ROMF

The Patterson Place site is located in an existing wooded area between US 15-501 and Colonial Grand apartments east of Southwest Durham Drive in landscape unit #5. The NHC 1 and NHC 2 alternatives would also pass through this wooded area northwest of the apartments, and if chosen would eliminate this ROMF site from consideration. The NHC LPA would pass on the opposite side of the apartment complex and in combination with a ROMF site at this location would be surrounded by light rail infrastructure.

Viewers would be primarily residents of the apartments, as the site is buffered from US 15-501 and Southwest Durham Drive by wooded areas. Residents would be highly sensitive to changes in visual conditions. Visual changes, in addition to the Light Rail Alternatives, would be substantial and would include new buildings, parking areas, additional light rail infrastructure (tracks, overhead catenary system, switches, signals), light rail vehicles, and lighting. Visual impacts of an ROMF in this location would be high.

4.12.4 Cornwallis Road

The Cornwallis Road site is located in landscape unit #5 east of US 15-501 and south of Cornwallis Road. The site is currently developed as an industrial site and contains a former Pepsi plant that is presently being re-developed. Viewers at this site would include motorists on US 15-501 and Western Bypass,

transit riders, office workers in University Tower, residents, and members/teachers/students at the Jewish Community Center. Motorists, transit riders, and office workers would have low sensitivity to changes in the visual environment; however, residents and members of the Jewish Community Center would be highly sensitive to changes.

As the site is already developed, visual changes would be minor to moderate and would include potential removal of existing structures and vegetation, new buildings and parking areas, light rail infrastructure (tracks, overhead catenary system, switches, and signals), light rail vehicles, and lights. Motorists and transit riders would have views of the buildings on the site, as well at the light rail infrastructure and light rail vehicles.

The proposed site is adjacent to the Jewish Community Center campus. There is currently a narrow, wooded buffer between the properties. If this buffer cannot be maintained, visual impacts to the Jewish Community Center would be high. Even with the buffer, it is likely that light poles and, at night, lights from the site would be visible from the Jewish Community Center. Due to the proximity and sensitivity of viewers (residents and members/teachers/students at the Levin Jewish Community Center) and concerns expressed at public meetings regarding this site, the overall visual impacts of a ROMF at this site would be moderate to high.

4.12.5 Alston Avenue ROMF

The Alston Avenue site is located in landscape unit #10 east of the proposed Alston Avenue Station near Briggs Avenue between Pettigrew Street and NC 147. The site is currently used as an industrial site and includes buildings and paved parking areas. The site is accessed by large trucks and has s rail spur from the adjacent railroad mainline track as well. Viewers in this area would include workers at surrounding industrial developments, motorists on Pettigrew Street and NC 147, and transit (Amtrak) riders. Visual changes would be minor, and viewers would not be sensitive to these changes. The visual impact of a ROMF at this site would be low.

4.13 Summary of Visual Impacts

Visual impacts resulting from the Light Rail Alternatives on each landscape unit are summarized in Table 27 and ROMF impacts are in Table 28. Areas with high visual impacts are summarized in Table 29.

Table 27: Summary of Visual Impacts

Area	Existing Visual Quality	Viewer Response	Visual Change	Overall Visual Impact
#1 University (UNC Campus Area)	Moderate	Moderate	Moderate	Moderate
#2 Mixed use/ Institutional (East Chapel Hill)	Moderate	--	--	--
C1, C1A, C2		Moderate	Minor – Substantial	Moderate
C2A		Moderate	Minor – Substantial	Low - Moderate
#3 Natural (East Chapel Hill)	High	--	--	--
C1		Moderate	Substantial	High
C1A		Moderate	Substantial	High
C2/C2A		Moderate	Moderate	Moderate
#4 Interstate (Leigh Village)	Moderate	Moderate	Moderate	Moderate
#5 Suburban Commercial (US 15-501 Corridor)	Moderate	--	--	--
New Hope Creek LPA		Moderate	Moderate – Substantial	Moderate -High
New Hope Creek Alternative 1		Moderate	Moderate – Substantial	Moderate - High
New Hope Creek Alternative 2		Moderate	Moderate - Substantial	Moderate – High
#6 Recreational (Duke West Campus)	Moderate	Moderate	Moderate	Moderate
#7 University (Duke West Campus)	Moderate	Moderate	Minor	Low – Moderate
#8 Historic/Emerging Urban (Old West Durham/Duke East Campus)	Moderate	Moderate	Moderate	Moderate
#9 Downtown Urban (Downtown Durham)	Moderate	Moderate	Minor	Low
#10 Urban Industrial (East Durham)	Low	Moderate	Minor - Substantial	Low-Moderate

Table 28: Summary of ROMF Visual Impacts

ROMF	Existing Visual Quality	Viewer Response	Visual Change	Overall Visual Impact
Leigh Village (Landscape Unit #4: Interstate)	Moderate	Low-High	Substantial	High
Farrington Road (Landscape Unit #4: Interstate)	Moderate	Low-High	Substantial	Moderate
Patterson Place (Landscape Unit #5: Suburban/Commercial)	Moderate	High	Substantial	High
Cornwallis Road (Landscape Unit #5: Suburban/Commercial)	Moderate	Low – High	Minor – Moderate	Moderate - High
Alston Avenue (Landscape Unit #10: Urban Industrial)	Low	Low - Moderate	Minor	Low

Table 29: Summary of High Visual Impacts

Area	Existing Visual Quality	Viewers with High Sensitivity	Areas with Substantial Visual Changes	Substantially Affected Viewers
#1 University (UNC Campus Area)	Moderate	--	--	--
#2 Mixed use/ Institutional	Moderate			
C1/C1A		Residents, golfers, Botanical Garden visitors, and pedestrians	East 54, Finley Golf Course, and Meadowmont Village	Residents, golfers, Botanical Garden visitors, and pedestrians
C2/C2A		Residents, golfers, Botanical Garden visitors, and pedestrians	East 54 (C2, C2A) Finley Golf Course (C2)	Residents, golfers, Botanical Garden visitors, and pedestrians
#3 Natural	High			
C1		Nature enthusiasts, hikers, and hunters	Upper Little Creek Waterfowl Impoundment	Nature enthusiasts, hikers, and hunters
C1A		Nature enthusiasts, hikers, and hunters	Upper Little Creek Waterfowl Impoundment	Nature enthusiasts, hikers, and hunters
C2/C2A		Residents along George King Road	George King Road	Residents along George King Road
#4 Interstate	Moderate	Residences near Crescent Drive, Pope Road, and White Oak Drive	Leigh Village Station would be located in an area that is currently wooded	Residents near Crescent Drive, Pope Road, and White Oak Drive

Area	Existing Visual Quality	Viewers with High Sensitivity	Areas with Substantial Visual Changes	Substantially Affected Viewers
#5 Suburban Commercial	Moderate			
NHC LPA		Residents, business owners, pedestrians, nature enthusiasts, and hikers	NHC wooded area, Sayward Drive	Apartment/condominium complexes and residences along Sayward Drive; pedestrians, nature enthusiasts, and hikers
NHC 1		Residents, business owners, pedestrians, nature enthusiasts, and hikers	Sayward Drive, US 15-501	Businesses along US 15-501, Oak Creek Village Apartments and residences along Sayward Drive
NHC 2		Residents, business owners, pedestrians, nature enthusiasts, and hikers	Sayward Drive, US 15-501, Garrett	Oak Creek Village Apartments, businesses along Garrett Road and residences along Sayward Drive
LRA		Residents, business owners	University Drive, Shannon Road, and residential areas near Pickett Road	Apartment/condominium complexes and residences, businesses along Shannon Road
#6 Recreational	Moderate	Golfers, pedestrians, nature enthusiasts, runners, and hikers	Golf course and wooded areas	Golfers, pedestrians, nature enthusiasts, runners, and hikers
#7 University (Duke)	Moderate	--	--	--
#8 Historic/Emerging Urban	Moderate	Residents	Ninth Street mixed-use developments, medical facilities along Pettigrew Street	Mixed use and historic district residents
#9 Downtown Urban	Moderate	--	--	--
#10 Urban Industrial	Low	Residents	--	Residents of remaining single-family homes

5. Mitigation

This section describes potential mitigation measures for adverse visual and aesthetic impacts identified during the evaluation process and in coordination with other disciplines, including natural and built environment.

5.1 No-Build Alternative Mitigation Measures

Under the No-Build Alternative, there would be no visual or aesthetic impacts due to the proposed D-O LRT Project. As such, project-related mitigation would not be warranted.

As described in chapter 2 of the DEIS, Alternatives Considered, the No-Build Alternative includes other transportation projects that are presumed to be constructed – even if the proposed D-O LRT Project is not built. The sponsor(s) of those projects will perform environmental studies to establish mitigation requirements as required by law.

5.2 Light Rail Alternatives Mitigation Measures

Locations where impacts occur (identified in Table 29) and the degree and nature of the impacts are noted in the previous sections. The following potential mitigation options could be considered for the affected areas:

- Using interdisciplinary design teams to create aesthetic guidelines and standards in the design of project elements
- Integrating facilities with area redevelopment plans
- Minimizing clearing for construction and operation
- Planting appropriate vegetation in and adjoining the project right-of-way
- Replanting remainder parcels
- Using source shielding in exterior lighting at stations and auxiliary facilities
- Selecting particular Light Rail Alternatives
- Art-in-Transit opportunities

The following are recommendations to reduce visual impacts associated with temporary construction activities.

- Stabilize and vegetate construction areas as quickly as possible so that sediment and erosion control devices can be removed.
- Locate staging areas in the least visible sensitive project areas. When feasible locate these facilities out of view of residents, businesses or any potential viewer. Implement height limits for staged materials or excavated soil so that they are less visible.
- Lighting should be directed toward the interior of the construction areas or shielded to minimize light pollution into adjacent properties.
- Screen construction activities whenever feasible.

The following mitigation measures are recommended for site-specific potential visual impacts. Triangle Transit will continue to coordinate with affected residents, businesses, and community facilities to identify strategies to minimize the effects of the project.

- Finley Golf Course - reconstructing affected holes and providing landscaping based on a plan developed by the golf course designer:
    - Redesign of the golf course would be necessary to mitigate impacts to Hole 17 and would include relocation of the tee boxes and vegetation to screen the tracks and passing LRT vehicle from view.
    - Little Creek Alternatives C1 and C1A - The tee boxes for Hole 3 would be redesigned and vegetation added between the golf course and tracks to mitigate impacts to Hole 3.
- East 54/Hamilton Road Station - where feasible, the design team will identify if and where additional landscaping along Prestwick Road could potentially be incorporated during the engineering phase. Triangle Transit will continue to coordinate with residents and if feasible, additional landscaping will be offered. This additional landscaping along the golf course side, along with the continued growth and maturity of the existing street trees along Prestwick Road on the development side, will help obscure views of the protective netting around the station, OCS poles and wires, and station canopies. If either Alternative C1 or C1A is selected, careful attention would be paid during the Engineering Phase to the direction of the lighting due to the close proximity to residences in East 54 and NC 54, so as not to cast light directly into residences or interfere with drivers' vision at night.
- Friday Center Station (Little Creek Alternative C2A) – Lighting at the station should be shielded or directed away to avoid impacts to the existing roadway.
- Meadowmont Station (Little Creek Alternatives C1 and C1A) – Consideration would be made to reduce glare from canopy lighting and pedestrian-level lighting associated with Meadowmont Station along the street for those driving in the area and for surrounding residents.
- Little Creek Trail - Triangle Transit will coordinate with Durham County to ensure that the proposed trail extensions in this area would be located in a place that would not visually affected by the LRT.
- Impacts to the Patterson's Mills County Store and Walter Curtis Hudson Farm would be mitigated in accordance with Section 106 and Section 4(f) requirements, including landscaping.
- Farrington Road ROMF – Impacts to Walter Curtis Hudson Farm would be mitigated, in consultation with the State Historic Preservation Office, through the design of the facility and its lighting plan, and through landscaping.
- Impacts to the Levin Jewish Community Center campus would be mitigated through fencing and vegetative screening that would be coordinated with representatives of the center.
- Triangle Transit will coordinate with Duke University to offer additional landscaping and vegetative screening for the golf course.

Appendices

Appendix A: Related Laws and Regulations

Related Laws and Regulations		
Federal Laws, Regulations, and Guidance		
Agency	**Regulation/Guidance**	**Reference**
Council on Environmental Quality (CEQ)	Regulations for Implementing NEPA	40 Code of Federal Regulations (CFR) 1500-1508
Advisory Council on Historic Preservation	National Historic Policy Act of 1966, as amended	36 CFR 800
US Department of Transportation, Federal Highway Administration (FHWA)	Visual Impact Assessment for Highway Projects (1981, reprinted 1989)	FHWA-HI-88-054
	Environmental Impact and Related Procedures	23 CFR 771, 1965
	Aesthetics and Visual Quality Guidance Information (August 18, 1986)	
US Army Corps of Engineers	B. Everett Jordon Lake	
State Laws, Regulations, and Guidance		
Agency	**Plan/Guidance**	**Reference**
NC Department of Transportation	2040 Transportation Plan	Section 3 – Trends and Challenges no. 5. Environmental Stewardship
	Complete Streets Policy	
	Context-sensitive design	
NC Department of Environment and Natural Resources – Division of Water Quality	Jordan Lake Rules	
NC Department of Environment and Natural Resources – Natural Heritage Program	Little Creek Bottomlands and Slopes Significant Natural Heritage Area	
NC Wildlife Resources Commission		

Local Plans and Ordinances		
Agency	**Plan/Guidance**	**Reference**
Town of Chapel Hill	Design Guidelines – Downtown Chapel Hill	
	Chapel Hill Comprehensive Plan- 2020 Our Town. Our Vision.	Chapter 1 – Community Choice ad Connections
		Chapter 3 – Theme 3 – Getting Around
	Design Manual (2004)	Section 2 Stormwater management – 2.4.1 Structural BMP's and appendix 2-D, 2-G, 2-F Section 3 Landscaping and Tree Protection Section 4 Access and Circulation – 4.10 Transit Amenities Section 6 Street- lights, signs, and markings Section 7 Utilities and Easements – 7.7 Easements
	Design Guidelines for the Chapel Hill Historic Districts -Chapel Hill Local Ordinance Historic Districts	Cameron McCauley Historic District Franklin-Rosemary Historic District Gimghoul Historic District
	Neighborhood Conservation Districts – Design Guidelines	CD-2 Greenwood CD-3 Kings Mill-Morgan Creek CD-5 Mason Farm-Whitehead Circle CD-7 Highland Woods CD-8 Glen Lennox
	Chapel Hill Zoning – Overlays	resource conservation historic neighborhood conservation
	Meadowmont Master Plan	
	Town of Chapel Hill Greenways	
Orange County	Orange County 2030 Comprehensive Plan	Chapter 6- Natural and Cultural System Elements Chapter 9 – Transportation Elements appendix K
University of North Carolina at Chapel Hill	UNC Facilities Services – Campus Master Plan	
City of Durham	Durham (City and County) Design Manual – Revised 4-7-2010	Chapter 2 Downtown Streetscape Chapter 3 College and University Transitional Use Areas
	DurhamWalks! Pedestrian Plan – September 2006	Section 6- Standards and Guidelines
	Department of Community Development and the City of Durham, NC Spring 2009	Six Northeast Durham Neighborhood Plans- Old Five Points, Cleveland Holloway, East Albright, East Durham, Wellons Village, Hoover Road

Local Plans and Ordinances		
Agency	**Plan/Guidance**	**Reference**
	The Durham City/County Appearance Commission (DCCAC)-Design Guidelines	
	Unified Development Ordinance – Zoning Districts	4.1.2 Development Tier Map – The Development Tier Map is intended to ensure that development reflects the character of the area within which it occurs. Neighborhood Protection Overlay Historic Districts & Landmarks Overlay
Durham County	Durham Comprehensive Plan	Chapter 3 ▪ Objective 3.4.2. Incorporate Appropriate Revitalization Principles: Ensure that revitalization plans in targeted areas incorporate best practices in design and development principles. ○ Policy 3.4.2d. Design Standards. The City Department of Community Development shall establish design standards to guide new construction and rehabilitation of existing structures within targeted areas.

Local Plans and Ordinances		
Agency	**Plan/Guidance**	**Reference**
		Chapter 4 ▪ Goal 4.4 Project an attractive community image along Durham's roadways. Roadway appearance is a critical component of community character, unifying areas, acting as the foreground for developments, providing views, and even functioning as a series of outdoor rooms. ○ Objective 4.4.1. Streetscape Appearance: Enhance the general appearance, street tree canopy coverage, and unique visual character of Durham's streetscapes; create an attractive visual image along major corridors and around prominent entryways; design streets to be compatible with green infrastructure while maintaining the character of the area they serve and including a Complete Streets policy approach that integrates bicycle and pedestrian. ○ Objective 4.3.3. Appropriate Design: Ensure that the design of development is appropriate and compatible with its surroundings, acting as a visual and functional asset to nearby residential areas, and reinforcing the existing community character.
		Chapter 5: Urban Density and Historic Neighborhoods. ▪ Contextually designed so that they do not adversely affect the historic integrity of nearby neighborhoods.

Local Plans and Ordinances		
Agency	**Plan/Guidance**	**Reference**
		Chapter 8 ▪ Goal 8.1, Durham's Transportation System ○ Provide a safe, accessible, connected, efficient, attractive, multi-modal transportation system that includes pedestrians, bicycles and transit facilities and support, in accordance with regional and local growth management objectives and policies. ○ Policy 8.1.1d. Complete Streets. Establish and implement Complete Street design standards ○ Policy 8.1.6n. Preservation of Neighborhood Streets.
	Historic Preservation Commission (HPC)	National Historic Districts ▪ Downtown Durham Local Historic District ○ West Durham ○ Trinity ○ Brightleaf ○ American Tobacco Campus Local Historic Landmark
	Durham Trails and Greenways Master Plan, 2011	
	Durham Natural Inventory Site (1999)	Little Creek Bottomlands Significant Natural Heritage Area (SNHA)
Duke University	Office of the University Architect-Campus Master Plan	

Appendix B: Photo Log

Landscape Unit #1: University (UNC)

Odum Village Student Housing

Mason Farm Road Student Housing

Mason Farm Road Single-Family Home

Mason Farm Road Single-Family Home

Baity Hill Student Housing

Baity House

UNC Medical Facility

UNC Medical Facility

UNC Student Housing

UNC Dean Smith Center

UNC Kenan Flagler Business School

UNC Chiller Plant

Landscape Unit #2: Mixed Use/Institutional

Laurel Hill-Rocky Ridge Neighborhood

Rocky Ridge Farm Historic District

Aldersgate United Methodist Church

North Carolina Botanical Gardens

St. Thomas More Catholic Church Campus

The Highlands Neighborhood

Glenwood Elementary School

East 54 Urban Village

UNC Finley Golf Course

Friday Center for Continuing Education

Exchange at Meadowmont Offices

Meadowmont Village

The Cedars of Chapel Hill Retirement Community

Paul Rizzo Conference Center

DuBose House

Residential Area near Woodmont Station

Landscape Unit #3: Natural

Jordan Lake Watershed

George King Road

George King Road Single-Family Home

Landscape Unit #4: Interstate

Leigh Village Station Area Single-Family Home

Farrington Road

Farrington Road Single-Family Home

White Oak Road Single-Family Home

Landscape Unit #5: Suburban Commercial

Comfort Inn

Witherspoon Rose Culture Nursery

Patterson Place Retail

Patterson Place Retail

Colonial Grand Apartments

Sayward Drive Single-Family Home

New Hope Creek

Oak Creek Village Apartments

Laurel Trace Apartments

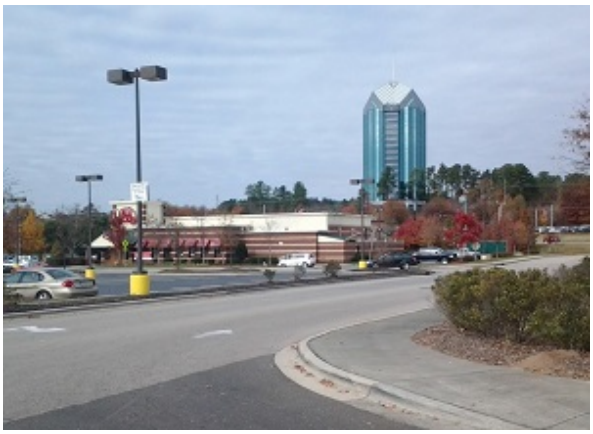
Westgate Townes

ITT Technical Institute

University Drive Retail

University Drive Offices

South Square Retail



University Tower

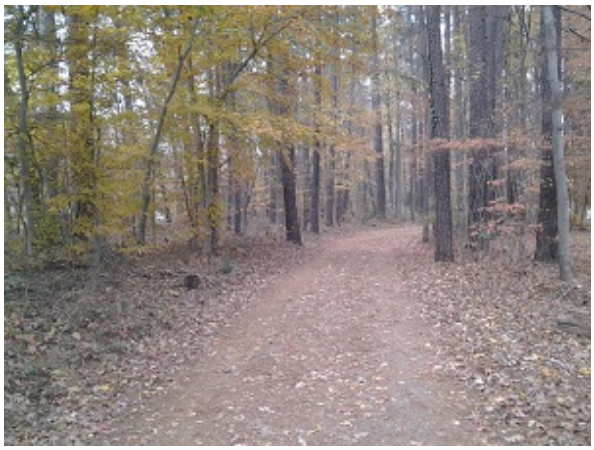
Pickett Road Residential

Herald Sun Building

Former Pepsi Building

Landscape Unit #6: Recreational

Duke Golf Club



Al Buehler Cross Country Trail

US 15-501

Landscape Unit #7: University (Duke)

Erwin Road Mixed Use

Duke Forest

Duke Medical Center

Duke Central Campus Student Housing

Durham VA Medical Center

Anderson Street at Erwin Road

Landscape Unit #8: Historic Emerging Urban

Erwin Square

Erwin Mill

Crescent Ninth Street Apartments

Hilton Garden Inn

Harris Teeter

Ninth Street

St. Joseph's Episcopal Church

Blacknall Memorial Presbyterian Church

Bull City Market Shopping Center

Duke University East Campus

Trinity Park Historic District

Smith Warehouse

Hillcrest Convalescent Center

Duke University Center for Documentary Studies

Landscape Unit #9: Downtown Urban

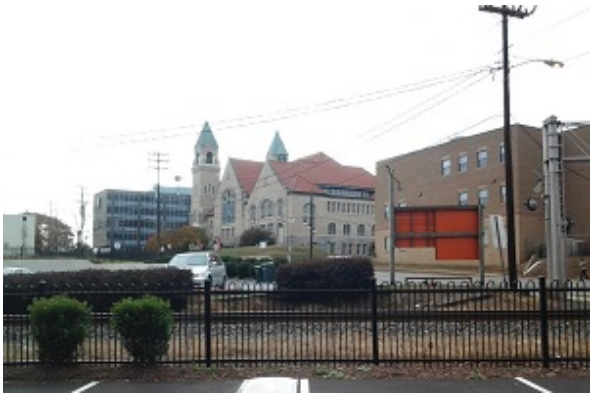
Downtown Durham

Downtown Durham

American Tobacco Campus

Durham Transit Center

Durham School of the Arts



Duke Memorial United Methodist Church

Durham Performing Arts Center

Durham County Detention Center

Durham County Courthouse

Durham Bulls Athletic Park

University Ford

Brightleaf Square

West Village

NC Mutual Life Building

Landscape Unit #10: Urban Industrial

Venable Tobacco Warehouse

Downtown Durham – East End

Durham Government Services

Hendrick Auto Collision Center

Industrial Operations

Industrial Operations

St. Philips Episcopal Church

New Creation United Methodist Church

First Presbyterian Church

Single-Family Homes

Mill Homes

Townhomes

Durham Freeway

Pedestrian Bridge