

*City of Charleston*  
DESIGN DIVISION  
**REPORT 12**

HAGOOD AVENUE STUDY



JUNE 2023

# HAGOOD AVENUE STUDY

June 2023

## WELCOME

The Hagood Avenue area is facing many of the major issues of Charleston today; compound flooding risk from tides and stormwater, housing equity, and development pressures. A comprehensive approach must be taken, identifying opportunities and a critical path forward. This report summarizes the site context and seeks to answer the question, “How do we start?”

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## EXECUTIVE SUMMARY

### A Better Corridor

Traveling along Hagood Avenue today, with its frequent flooding, scarce sidewalks, and unwelcoming street design is rarely a pleasant experience. It’s a route taken by those that absolutely have to, which is often Medical District commuters and neighborhood residents.

There are visible problems at the surface-level and even more challenges at the sub-surface level. Charleston has a history of wharfing, of land-extending, and of landfilling on the peninsula, most recently on the west side, with the landfill under Gadsden Creek and Hagood Avenue closing in the 1970s. The cap is maintained, but the increasing number of tidal and storm flooding events has caused erosion in some areas.

In early April, Design Division convened a group of stakeholders with active projects in the area for an initial discussion of goals, constraints, and timelines affecting their efforts. The resulting consensus? This project, improving the Hagood Avenue Corridor, is important. This project is big. This project should happen now.

This report is the first step in working towards a holistic approach to Hagood Avenue; an assessment of what exists now and recommendations for the logical next steps. This report explores the potential paths forward, major site factors and features, and the interconnectedness of decisions through diagrams, maps, and conceptual imagery.



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**SITE  
CONTEXT  
AREA**  
HAGOOD  
AVENUE

“The design of the streetside elements requires understanding the characteristics and activity of the adjacent existing or future context.”

*Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, Institute of Transportation Engineers (ITE) and the Congress for the New Urbanism (CNU)

- |                             |                               |                            |
|-----------------------------|-------------------------------|----------------------------|
| ① Gadsden Green and Ext.    | ⑤ Perimeter Surge Barrier     | ⑨ Lowcountry Rapid Transit |
| ② WestEdge                  | ⑥ Citadel Campus Improvements | ⑩ Ashley River Crossing    |
| ③ Spring/Cannon PUD         | ⑦ Hagood Extension            | ⑪ Bee Street Bikeway       |
| ④ VA Hospital Redevelopment | ⑧ Hagood/Fishburne Roundabout | ⑫ Hagood Bike Lanes        |



# THE COASTLINE AND THE LANDFILL

## Natural areas were filled in, extending the edge of the city

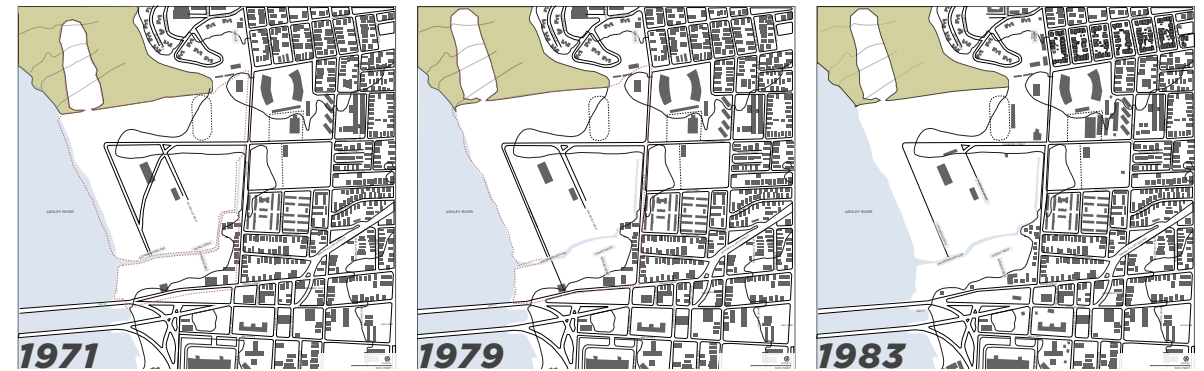
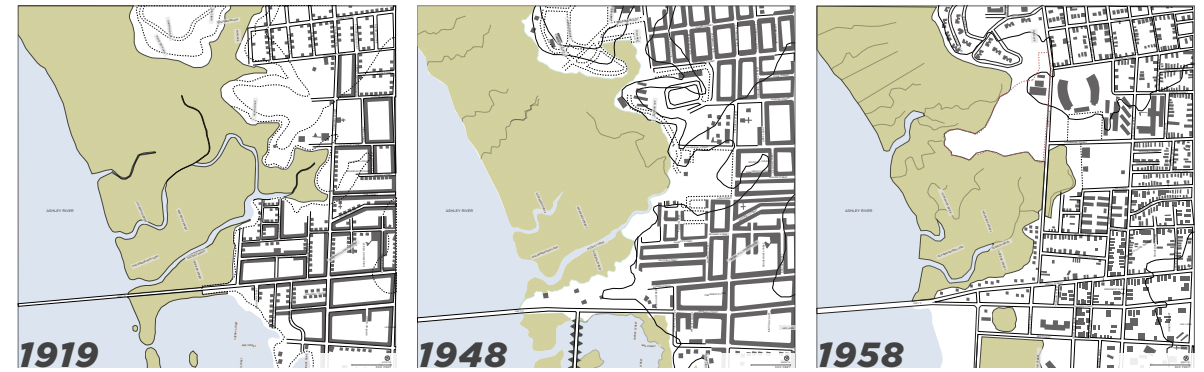
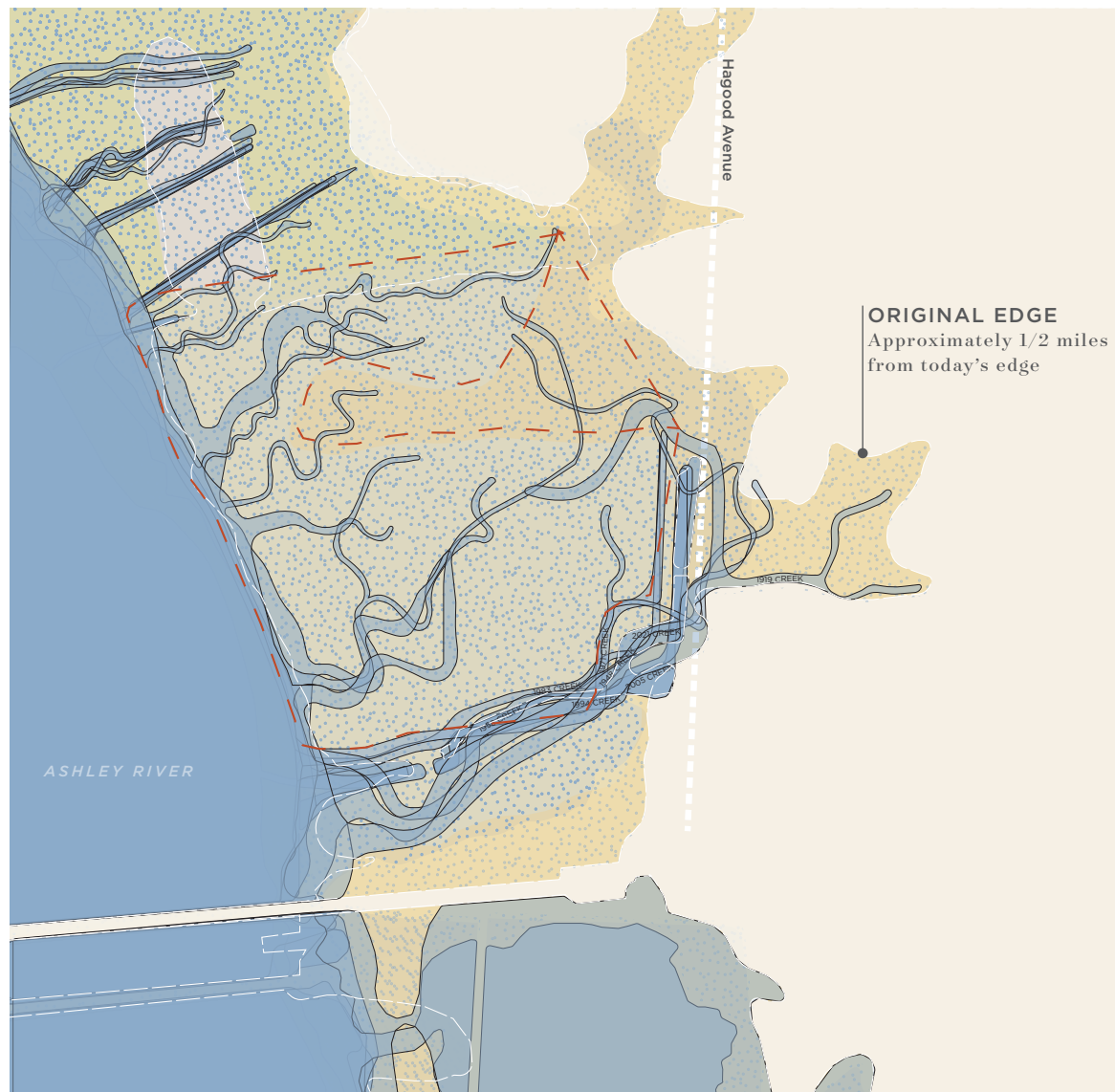
The first signs of the edge extending happened about one hundred years ago. Surprisingly underdeveloped when compared to similar geographies on the peninsula.

## 100 YEARS OF CHANGING LANDSCAPE

Today's coastline at Brittlebank Park is approximately 1/2 mile from the historic coastline which was on the eastern side of Hagood Avenue. The location of Gadsden Creek and other tidal inlets have moved over time, and is illustrated on the map below.

## THE LANDFILL IS CAPPED

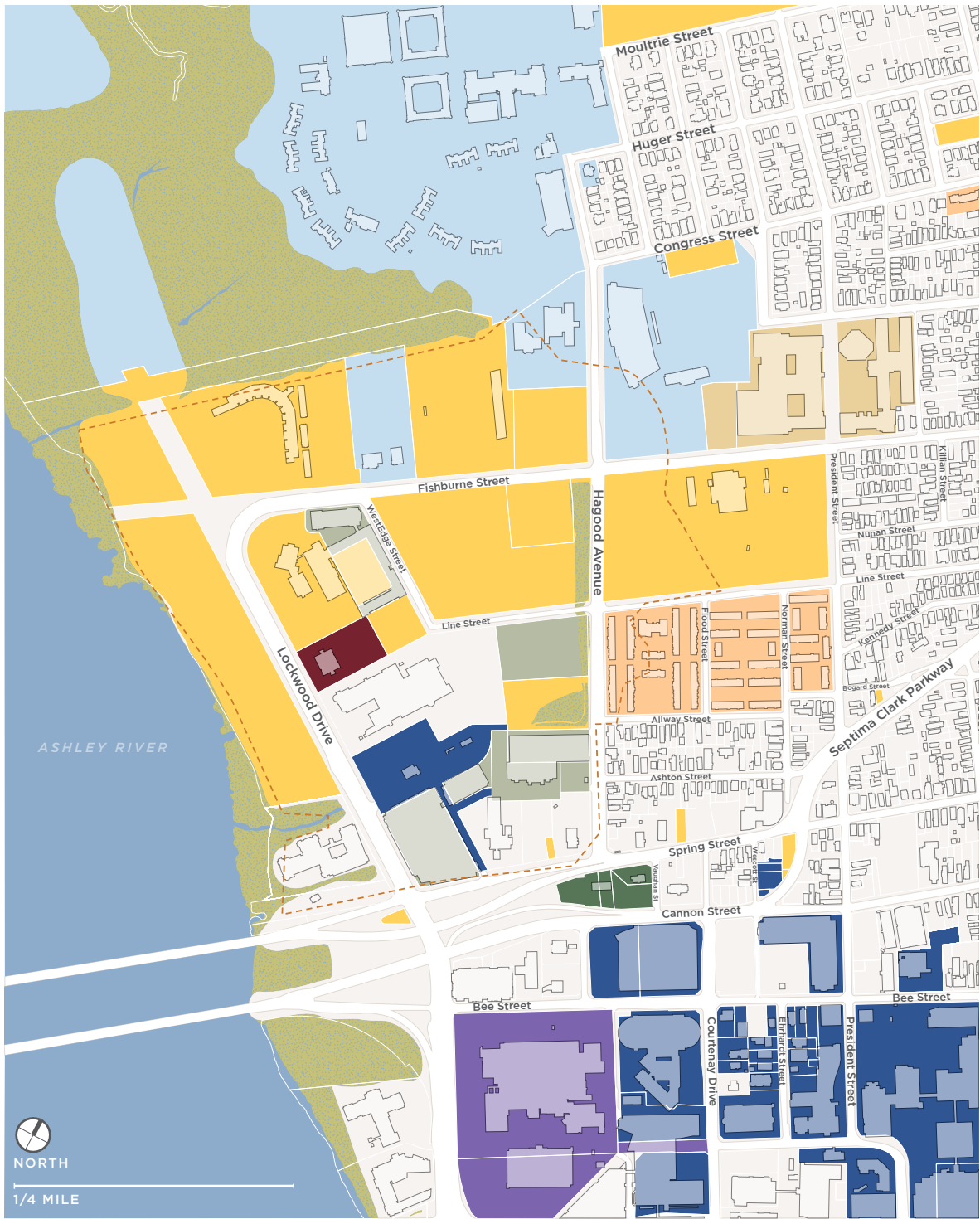
When the landfill was closed, three feet of dirt was placed as a cap to cover and seal about fifteen feet of waste. Overtime, more earth has accumulated and eroded, adding an additional three feet or more of dirt in some places and wearing the cap down to only a few inches near Gadsden Creek. Any new construction or project that requires digging, must obtain a permit to ensure the landfill cap is properly maintained.



## THIS AREA WAS MARSH

Above: Map series documenting the changing landscape and building pattern over the last century. Major impacts to the geography include the land-filling and the addition of Septima P. Clark Parkway through a historically black neighborhood.

- Marsh
- Water
- Landfill Boundary



**LAND OWNERSHIP**

The project area is a mix of small, residential parcels and large, typically institutional parcels. Many of the large parcels are owned by a handful of non-profit, government, and educational entities. Coordination among all groups is vital for any improvements to move forward.

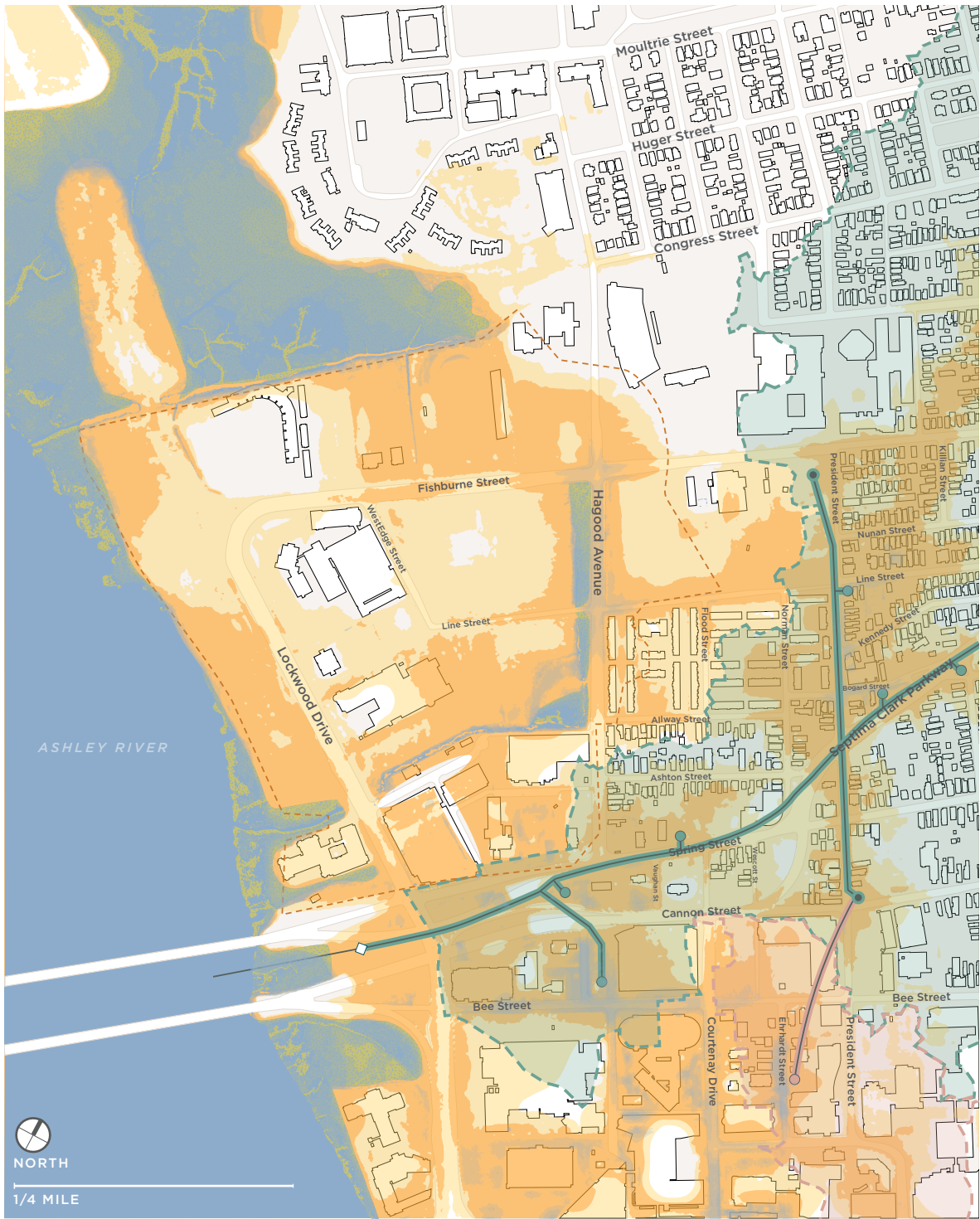
- City
- Westedge
- Charleston Housing Authority
- MUSC
- Landfill Extents
- The Citadel
- School District
- College Of Charleston
- VA Hospital
- Spring/Cannon PUD



**VEGETATION CANOPY**

The west side of the peninsula is lacking tree canopy when compared to other peninsula neighborhoods. Simultaneously, this area has a higher-than average amount of grass turf land cover. Both are needed to mitigate the dangerous effects of urban heat.

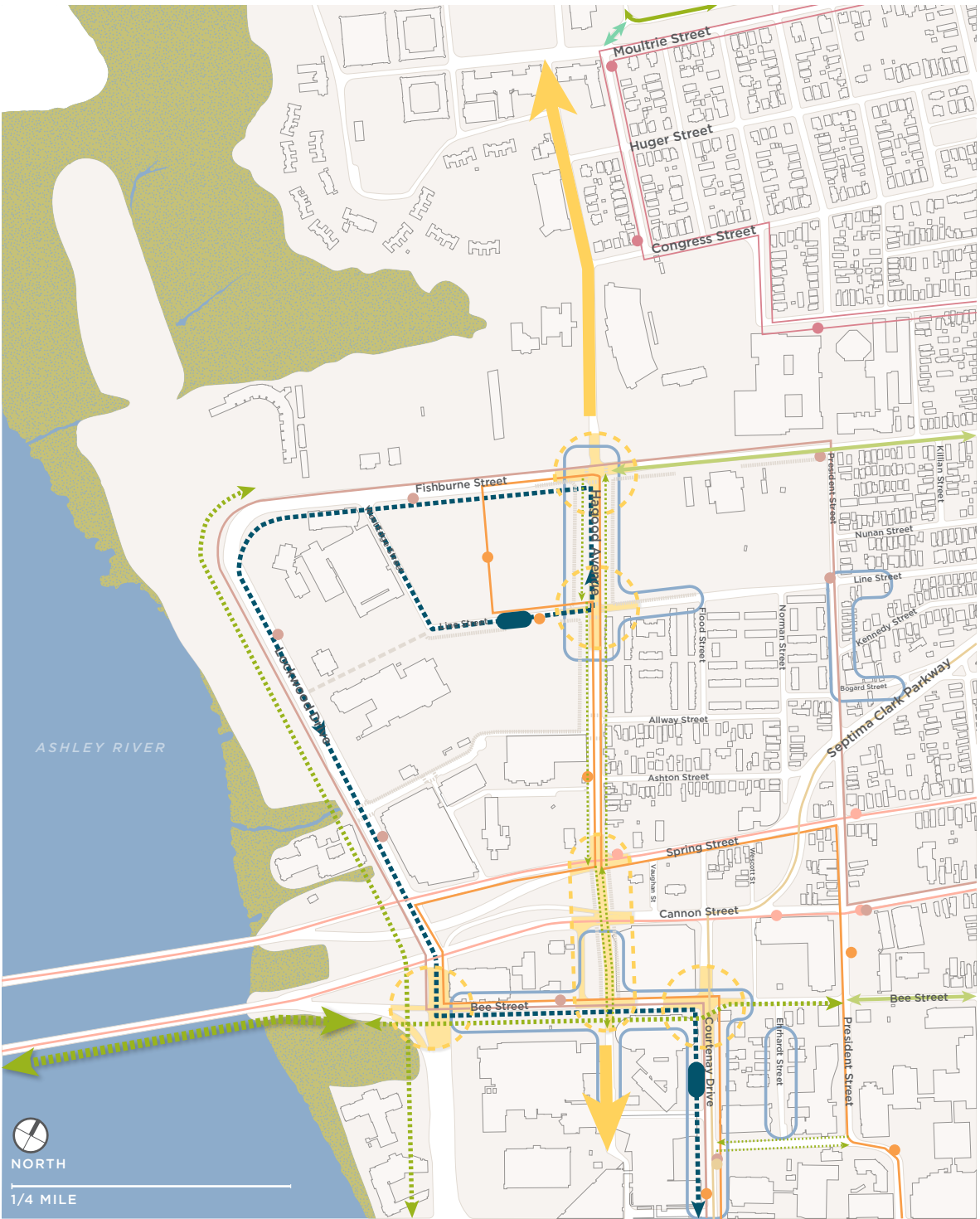
- High Density area with *limited tree canopy*
- Low Density area with *limited tree canopy*
- Tree Canopy
- Grass/Turf
- Marsh
- Landfill Extents



**ELEVATION, TIDE, TUNNEL**

Much of this area is impacted by tidal flooding and by stormwater from mild to severe weather events. The area is at risk for coastal storm surge flooding; most of the land is below elevation 12'.

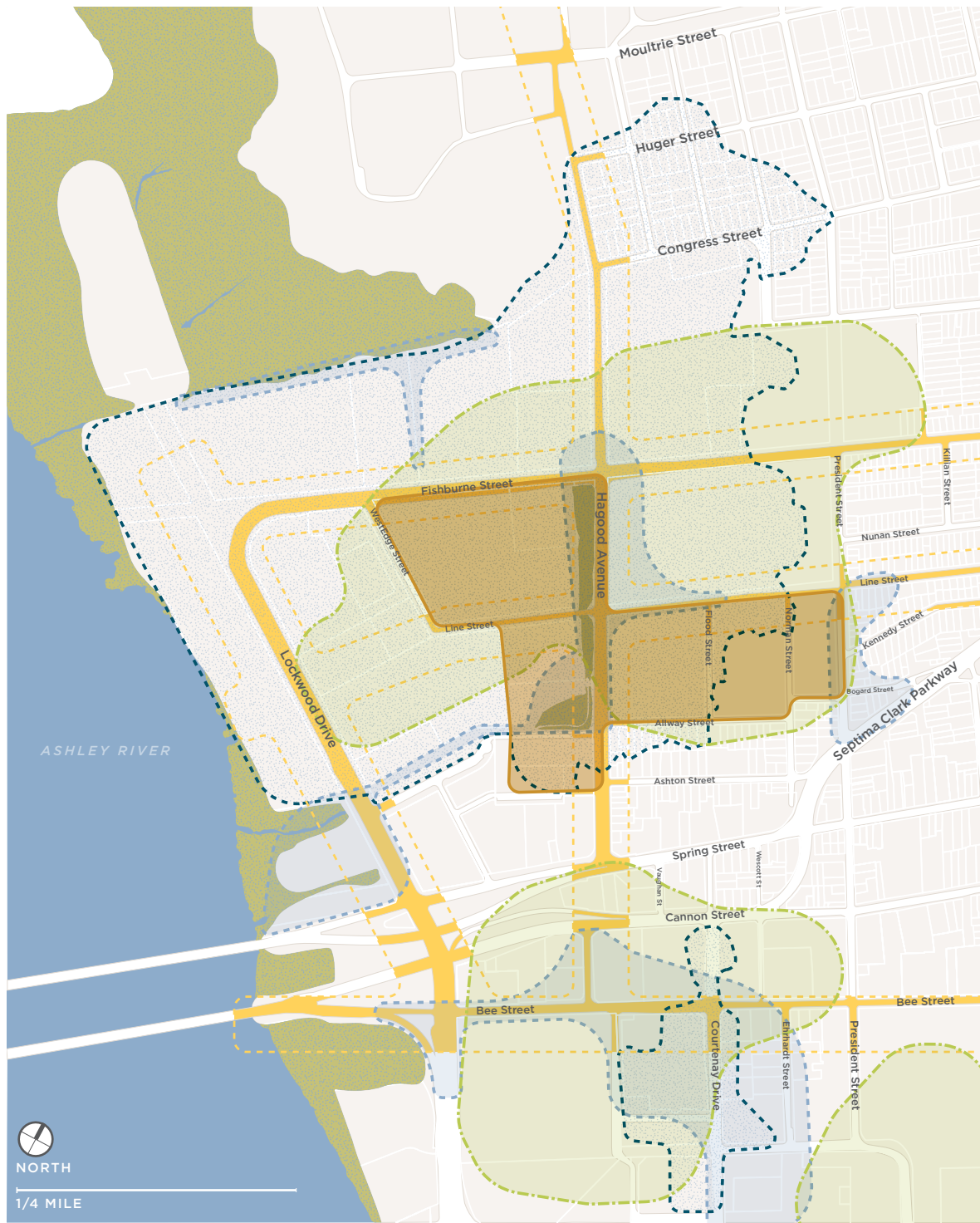
- Deep Tunnel Service Area ; *Calhoun-West*
- Tunnel Location
- Access Shaft
- Ehrhardt Street Tunnel Service Area
- Ehrhardt Tunnel Location
- 7' Tide Impacts
- 8' Tide Impacts
- Area Below 6'
- Area Below 8'
- Landfill Extents



**MOBILITY NETWORK**

This area is surrounded by major corridors, making access difficult for bikes and pedestrians. Many roadways are impacted by tidal flooding and stormwater flooding. Roadway elevation and multi modal facilities would increase connectivity.

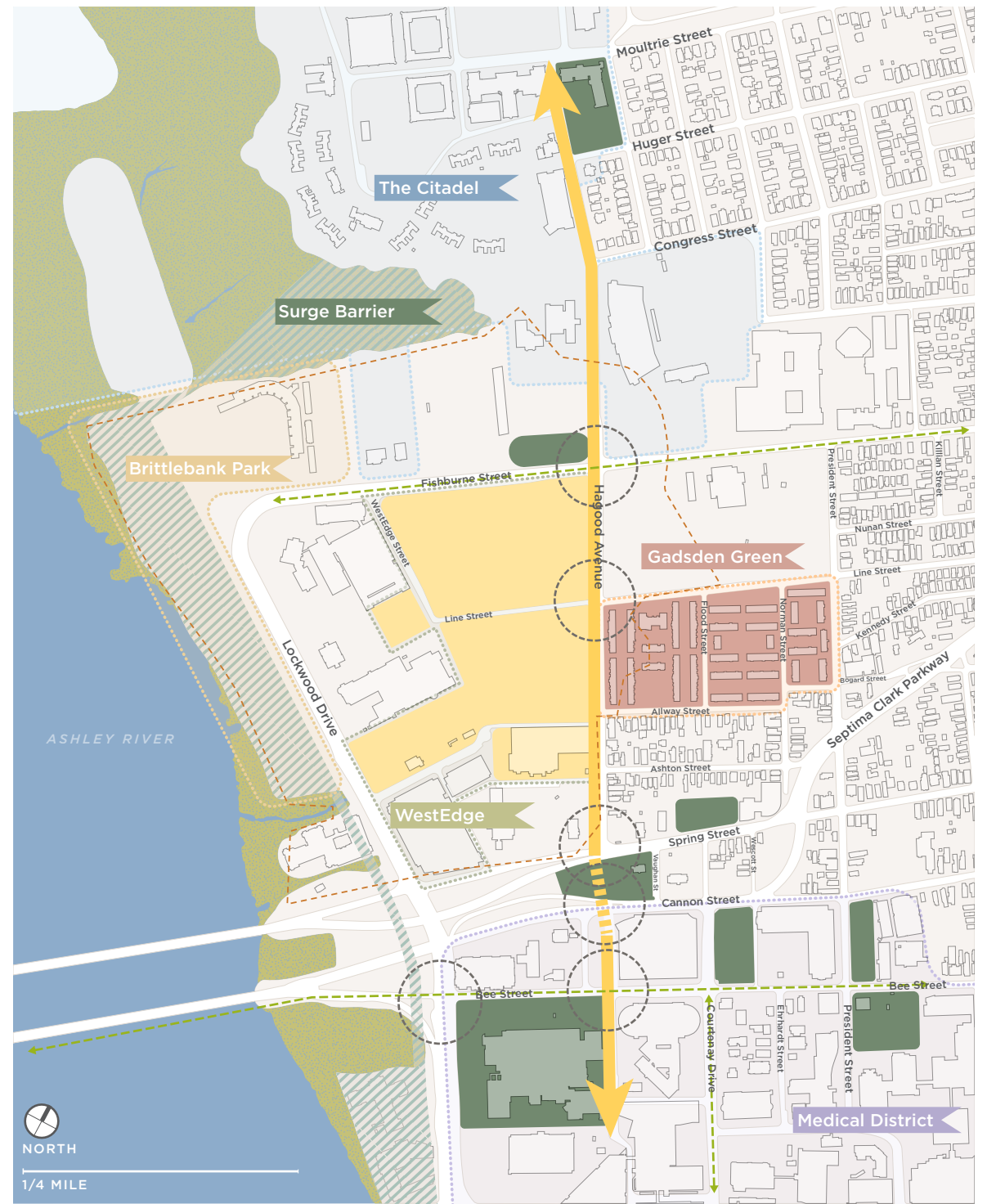
- Intersection Improvements needed
- Roadway flooding; tidal and stormwater
- Connection Opportunity with Hagood Extension
- Future Bike Infrastructure
- Bike Infrastructure
- CARTA Routes
- Future LCRT
- Station Area



### OPPORTUNITY AREAS

Study the overlap. Improvements in these locations would provide multiple benefits by addressing two or more of the major issues of Charleston today; compound flooding risk from tides and stormwater, housing equity, heat, mobility, and development pressures.

- Tide
- Stormwater
- Housing Equity
- Heat
- Mobility



### RECOMMENDED DEVELOPMENT AREAS

Much of the project area can and should be developed as a TOD area to support the future LCRT station area. In contrast, the existing neighborhood fabric should remain untouched with the exception of small infill opportunities.

- Hagood Avenue and Extension
- Intersection Improvements
- Pedestrian and Bicycle Network Improvements
- Mixed Use  
*Majority Residential*
- Mixed Use  
*Majority Non-Residential*

# MOVING FORWARD

## The site is complex and decisions are interconnected

Much has happened and much is planned in the area; this is an opportunity to get all projects on the same page, working towards common goals.

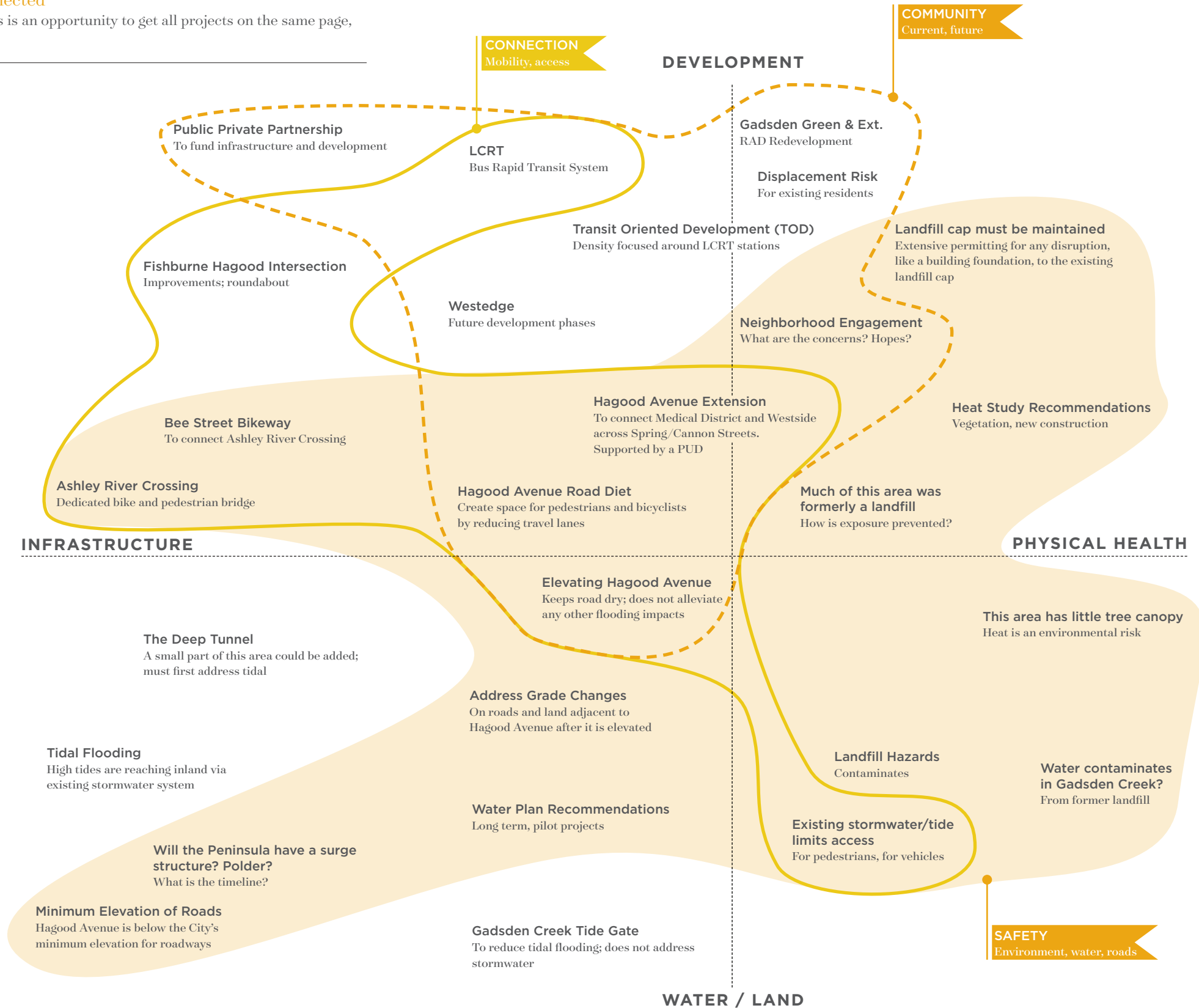
### HAGOOD AVENUE IS AT THE CENTER

This image highlights features, challenges, current projects and future projects related to the Hagood Avenue Corridor. All major projects and initiatives have been charted, and relationships identified. Ideas of Safety (from environmental hazards, water, and roadways), Community, and Connection are the top themes; Hagood Avenue Improvements are at the intersection of these ideas.

#### How to read this chart:

The foundation is the x-axis/y-axis chart, which identifies four categories to locate items; *Infrastructure*, *Water/Land*, *Physical Health*, and *Development*. The Deep Tunnel drainage project, for example, is located on the far left of the chart because it is more closely related to *Infrastructure* than to *Physical Health*. The Deep Tunnel is on the lower half of the chart because it is more closely related to *Water/Land* than to *Development*. Each of these axes is a spectrum.

There are three groups on the chart; *Connection*, *Community*, and *Safety*. These highlight items related to each group. A Public Private Partnership, for example, is related to *Community*, and is included in the *Community* bubble. Some items are in multiple groups, some in none. Improvements to the Hagood Avenue Corridor are in all three groups.





## PLANNING PHASE

**Establish Technical Advisory Committee**  
For consistency and facilitation of needed project milestones.

**Establish Neighborhood Advisory Committee**  
Work with community to set and achieve goals.

**LCRT - TOD Planning**  
On-going effort as part of the LCRT process.

**Hagood Avenue Extension**  
Discuss the extension with relevant stakeholders; get endorsement from SCDOT.

**Street Ownership**  
Secure maintenance/ownership of Hagood Avenue from SCDOT.

**Anti-displacement Strategy**  
Using small infill locations, identify and plan for new housing on Gadsden Green.

**Stormwater**  
Technical Planning and Design.

**USACE, Waterplan, and the Perimeter Protection**  
Technical Planning and Design.

**Establish Design Standards**  
For new roadways; address tide and landfill.

**Ashley River Crossing & Bee Street Bikeway**  
Project underway. Will result in Bee Street becoming a major bike-pedestrian corridor.

## IMPLEMENTATION PHASE

**LCRT**  
Perform necessary impact study and assessment for LCRT to utilize Hagood Ave extension as a route to the Line Street station area.

**LCRT**  
Reroute to Hagood Avenue Extension.

**Hagood Avenue Extension**  
Construct the hagood extension into the medical district, connecting at Bravo Street.

**Abandon Cherry Street**  
As connection opens.

**Fishburne/Hagood intersection improvements**  
Elevate Hagood avenue, from Fishburne to Line street. This improvement was proposed as part of the City Wide Transportation Plan, approved in 2018.

**Hagood Avenue Improvements**  
Elevate hagood and adjacent roads and land from Line Street to Spring Street.

**Gadsden Creek**  
Make safe, and transition into stormwater storage.

**Build Housing**  
Using small infill locations, begin new construction of housing on Gadsden Green.

**Housing**  
Move existing Gadsden Green residents into new units to prevent displacement. Demolish now empty buildings and begin construction on new.

**Housing**  
Complete redevelopment of Gadsden Green and Ext.

**Stormwater**  
Disconnect part of the neighborhood from the stormwater.

**Stormwater**  
Disconnect part of the neighborhood from the stormwater.

**USACE, Waterplan, and the Perimeter Protection**  
Technical Planning and Design.

**WestEdge**  
Phase 2 and 3, per the masterplan.

**Ashley River Crossing & Bee Street Bikeway**  
Project underway. Will result in Bee Street becoming a major bike-pedestrian corridor.

## COORDINATION

Like dominos, many improvements will be sequential; requiring steps to be completed before moving on to the next improvements. Some improvements can be simultaneous, especially in the planning phase. This is not a timeline, but rather a way of tracking which improvements need attention first.

- People and Coordination
- Infrastructure; *Roadways, Mobility*
- Water; *Tide, Stormwater, Surge*
- Development

# A FUTURE FOR HAGOOD AVENUE

## What type of corridor, neighborhood, do we want to see?

The driving force behind this project, the reason design is valuable, is to define and create a desirable neighborhood street that is functional, dry, and supports the neighborhood.

### HAGOOD AVENUE CORRIDOR

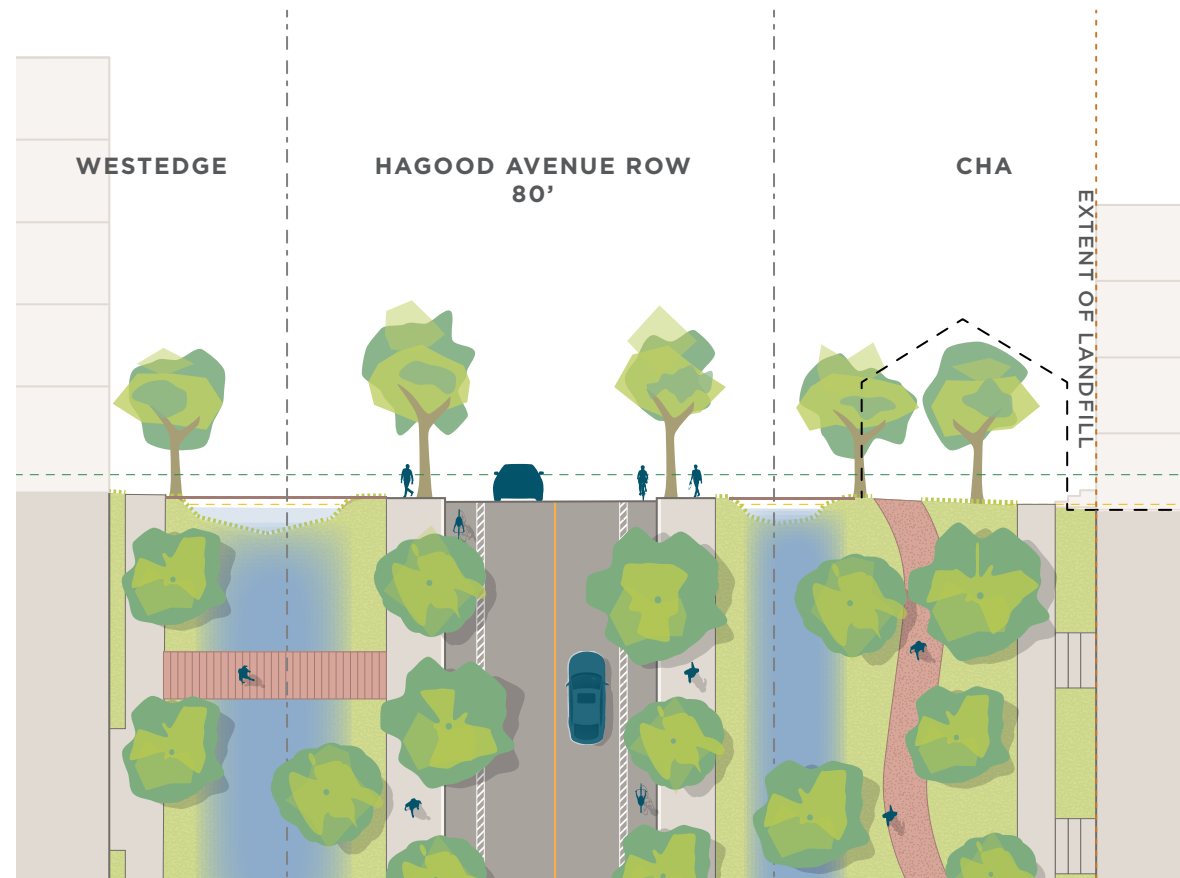
This section drawing illustrates a potential future for Hagood Avenue; the road is elevated, has been reduced to two lanes for vehicles, includes bike lanes, and significantly wider sidewalks.

Hagood Avenue has immense potential to be an active corridor with stormwater storage, vibrant tree canopy, and to provide a critical connection to and from the west side of the peninsula.

With building setbacks, much of the area stormwater needs can be located in low areas next to Hagood Avenue. No construction of public housing on the landfill extents is recommended at this time.

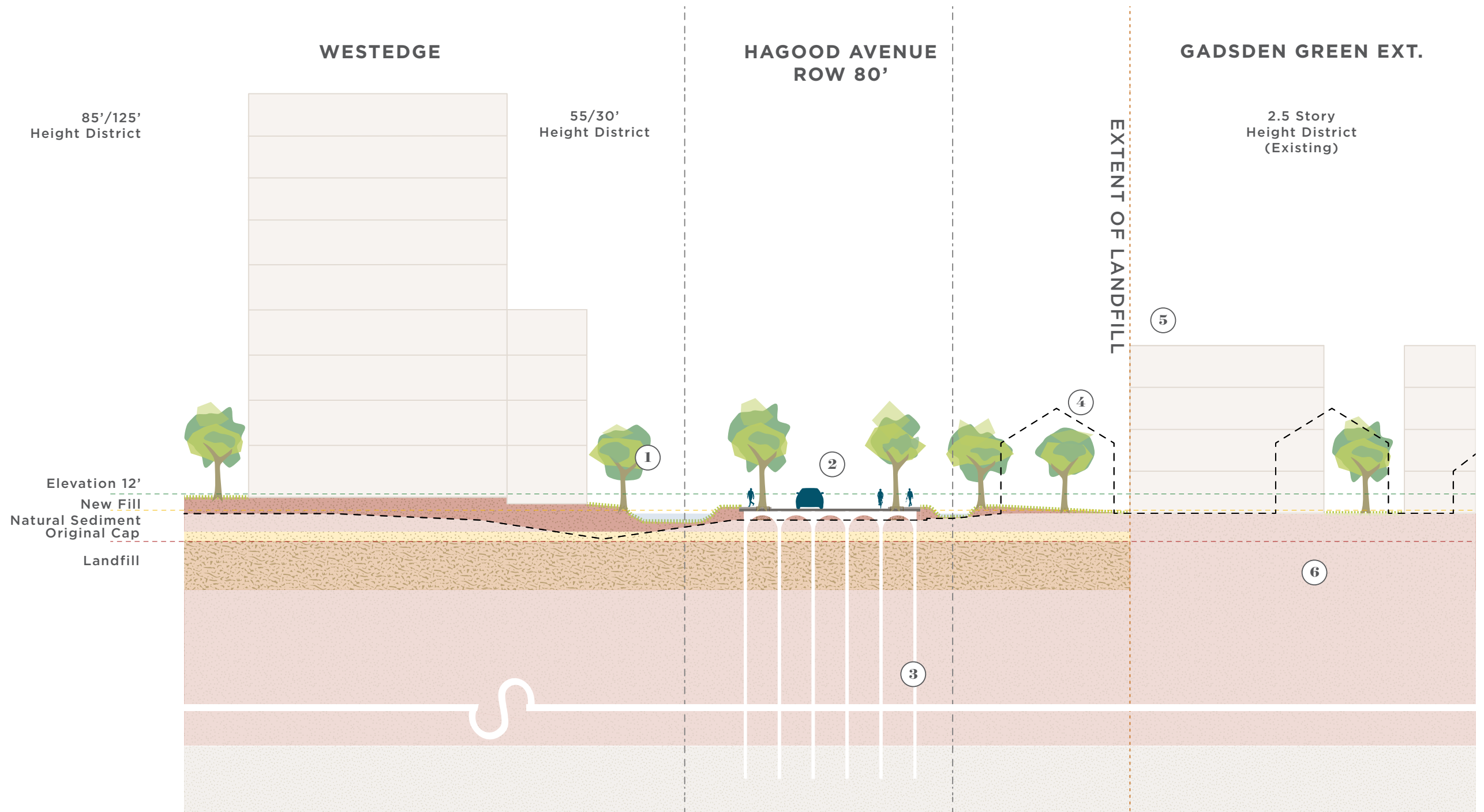


Above: Stormwater Median Design, NACTO, *Urban Streets Stormwater Guide*, 2017.



## RECOMMENDATIONS

- 1 GATHER THE RIGHT TEAM**
  - Identify a Technical Committee (formal or informal) to organize, lead, and manage a *Planning Effort* for the project area. The resulting *Planning Report* should achieve 10-15% design of needed stormwater and roadway infrastructure improvements, and address urban design and development elements for the neighborhood.
  - Engage a Neighborhood Advisory Committee
  - Engage major stakeholders
- 2 PURSUE A WHOLISTIC APPROACH**
  - Consider housing, water management, environmental risks, and infrastructure for all transportation modes as equally valuable objectives.
- 3 PRIORITIZE HEALTH, SAFETY, WELLBEING**
  - Maintain the landfill cap; reinforce where needed
  - Focus new construction at Gadsden Green and Ext. on land outside of landfill
  - Structurally support new roads and buildings to reduce subsidence, especially on areas over the landfill cap. Vent appropriately to prevent contaminant buildup
  - Preserve and increase existing tree canopy, particularly on the Hagood Street corridor for beauty, stormwater management, and shade to mitigate heat
- 4 STRENGTHEN EXISTING STORMWATER CAPACITY AND ALLEVIATE TIDAL IMPACTS**
  - Utilize the Hagood Avenue Corridor for stormwater capture, retention, etc. and recreation
  - Explore necessary drainage improvements to the entire area; including a tie-in to the deep tunnel if appropriate
  - Identify actionable steps to reduce tidal flooding events
- 5 IMPROVE MOBILITY NETWORK**
  - Coordinate with SCDOT and other stakeholders
  - Connect the neighborhood to the Medical District via the Hagood Extension
  - Consider a roundabout to improve the Fishburne/ Hagood intersection
  - Prioritize pedestrian and bicycle safety by introducing new infrastructure on existing corridors



**IMPROVEMENTS ARE NEEDED ABOVE AND BELOW GROUND**

The section drawing above highlights the major improvements needed for a successful Hagood Avenue Corridor.

- 1** Stormwater Storage

**2** Road Elevation  
Elevate from 4.5' to at least 7.5' to reach City minimum roadway elevation
- 3** Foundation  
Structural Piles similar to WestEdge Streets

**4** Existing Gadsden Green Ext.
- 5** New Construction  
Avoid Landfill area when redeveloping new housing at Gadsden Green Ext.

**6** Update stormwater and drainage systems to limit tidal impacts

“Green streets are part of healthy, equitable urban design that views streets as vital public spaces.”

*Green Street Principles, NACTO*



**Existing Hagood Avenue Streetscape**

Hagood Avenue today has wide travel lanes, limited sidewalks, few street trees, and experiences sunny day and stormwater flooding.

**A COMPLETE CORRIDOR**

Hagood Avenue can be a corridor for neighborhood travel; a safe street for pedestrians, bicyclists, transit, and other vehicles. The right-of-way now is incredibly wide for the area. A road diet to reconfigure the space can improve the street experience, drainage, and connectivity.

# GLOSSARY

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## PLANNING TERMS

**Community-** Within this process, community is defined as the people, events, activities, culture, shared values, and belief systems of a group of people who live and work in the same geographic area.

**Mixed-Use Development-** This type of development refers to a site that contains several different uses. Uses could be residential, commercial, civic, etc.

**Neighborhood-** Within this process, neighborhood is defined as the geographic area where a group of people live, work, and consider easily accessible to them.

**(PUD) Planned Unit Development-** Allow developers to deviate from standard zoning and development regulations on large properties in exchange for site-specific improvements with public benefit like open space conservation, mixed land uses, etc.

**Redevelopment-** The demolition of old, outdated structures on the site, to then construct new structures that better cater to the area and the people who would live on site.

**Renovation-** Unlike redevelopment, renovation keeps some parts of the previous structure, and updates other parts.

**Revitalization-** The act of bringing new life to a development that reactivates the site.

**Study-** A process that collects information necessary to increase understanding of a place and/or topic and provides guiding recommendations based on that understanding.

**Units-** Units refers to individual living quarters within the development (i.e., an apartment, single-family home, townhome, etc.)

## GENERAL TERMS

**Infrastructure-** Includes roads, utilities, stormwater facilities and systems, and functional structures like bridges, tide gates, etc.

**Municipal Waste Landfill-** A landfill that receives hazardous and non-hazardous waste from households.

**Phase/Phases/Phasing-** A term used to describe the stages or steps, in order, that a project will be built.

**Soil Sampling-** Testing that is performed on the soil to determine engineering, geochemical, and ecological factors that could affect the project planned for the area.

**Subsurface Infrastructure-** Located underground, these systems carry out necessary functions like water, electricity, sewers, drainage, etc.

**(TIF) Tax Increment Financing-** TIF is a financial tool that assists local governments in financing development with the generated revenue from the development.

## STORMWATER TERMS

**Deep Tunnel System-** Deep Tunnel System- used to convey water, sewage, stormwater, floodwater, and overflow in urbanized areas and cities. Can be done by gravity or siphon

**Drop shaft-** A vertical or inclined passageway that can be implied for several different reasons such as, ventilation, water or sewerage service tunnel, or assessing an underground structure.

**Floodwater-** Water that has come onto dry land, overflowing from a body of water, like the Ashley River.

**Groundwater-** Water that is present beneath the earth's surface that is held in the soil and rock.

**Muted Tide Gate-** A stormwater regulation method in which there is a gate, typically made of metal or wood, in which the default setting is open rather than closed. Allowing tidal exchange and fish passage when water level is permitting. The gate opens through a series of linkages which move in reaction to the modulator, which rotates downward. When the modular rotates upwards, due to rising interior water level, the linkages close the tide gate.

**Rainwater-** Water falling from the sky as rain, which can also result or contribute to flooding events.

**Stormwater-** Rainwater produced by a storm, different from rainwater in the way that when the rainwater runs off a piece of land after raining it becomes stormwater.

**Stormwater Storage-** A method in which stormwater is mitigated during peak flooding events to routing stormwater to a detention facility or other storage feature

**Tidal Flooding-** Also known as “sunny day flooding” is the temporary flooding of low-lying places, such as streets, during high tide events (i.e., full moons, new moons, king tides, etc.)

## AFFORDABLE HOUSING TERMS

**Affordable Housing-** Refers to housing that caters to a specific AMI that has been determined to be low income (i.e., 30%, 50%, 60%, and 65% AMI)

**(AMI) Area Median Income-** AMI refers to the middle point of income in a specific area and calculated by HUD annually. It also helps to determine lower AMI's in the area to set the income limit for affordable and workforce housing.

**Choice Neighborhood Development Fund-** This funding stream is a major capital investment program that is used to redevelop public housing and of HUD assisted housing.

**(HUD) U.S. Department of Housing and Urban Development-** One of the executive branches of the U.S. Government that oversees and administers housing and urban development laws.

**(LIHTC) Low Income Housing Tax Credit-** A dollar for dollar tax credit used as an incentive for developers to build, buy, or renovate housing for low-income families.

**Public Housing-** Refers to affordable housing that is built and operated by government dollars.

**(RAD) Rental Assistant Demonstration-** RAD is a program put forward by HUD that lets public housing agencies leverage private/public debt and equity to renovate or redevelop housing authority properties. The use of Rad moves housing authority properties to a section 8 method of affordable housing, with a long-term contract that helps the housing on site stay affordable in perpetuity.

**(Section 8) Housing Choice Voucher Program-** Section 8 housing is a type of affordable housing that relies on housing vouchers, given to residents, that covers part of the cost of rent for the unit, making the housing more affordable than it would have been previously.

**Workforce Housing-** Refers to housing that is geared toward income levels at 80% AMI and higher. The name implies a difference in employment between affordable and workforce housing, while this is not true, it does indicate people who hold higher paying jobs. (i.e., 80%, 100%, 120%, and 150% AMI)

## TRANSPORTATION TERMS

**(LCRT) Low Country rapid Transit-**A program implemented by the Berkeley -Charleston-Dorchester Council of Governments that aims to create a 21.3-mile modern bus rapid transit system that will connect Ladson, North Charleston, and Downtown Charleston.

**Multi-Modal Transportation-** When two or more modes of transportation are involved and supported. (i.e., walking to a bus station and then riding the bus to a destination)

**Road Diet-** Also known as a lane reduction, in which the number of travel lane or width of the road is lessened to be able to achieve system improvements along the roadway. (i.e., widening or adding sidewalks, landscaping strips, cycle lanes, etc.)

**(ROW) Right of Way-** The public area of a street or roadway corridor; includes sidewalks, medians, etc.

**(SCDOT) South Carolina Department of Transportation-** A government agency in South Carolina with a mission to build and maintain roads, bridges, and administer mass transit services

**(TOD) Transit Oriented Development-**A type of Urban development that aims to expand the amount of residential, commercial, and leisure space that is in walking distance to public transportation.

## STAKEHOLDERS

**(CHA) Charleston Housing Authority-** The public housing agency for the City of Charleston, a smaller local offshoot of the federal branch, implementing its federal counterpart's objectives in the region.

**(USACE) U.S. Army Corps of Engineers-** A engineering formation of the U.S. Army in which their main contributions are engineer realignment, military construction, and civil works.

**WestEdge Foundation-** Westedge is a non-profit entity organized to guide redevelopment of the westside near MUSC, intended to provide housing, commercial spaces, research facilities, and public infrastructure.



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