

# Dutch Dialogues® Charleston

Colloquium Summary & Direction  
July 2019







## Dutch Dialogues® Charleston

On May 1-2, 2019, the City of Charleston and the Historic Charleston Foundation hosted a Colloquium, the first public part of the Dutch Dialogues Charleston process. This document contains the Colloquium summary, key takeaways to guide the Dutch Dialogues Workshop in July 2019, and links to the Colloquium presentations.

For Dutch Dialogues history click [here](#), and for up-to-date Dutch Dialogues Charleston information visit [dutchdialoguescharleston.org](http://dutchdialoguescharleston.org).

### Acknowledgements

The Dutch Dialogues rely on the extensive collaboration of numerous experts, internationally, domestically and locally. Outside voices can challenge norms and suggest new opportunities to think differently about water, but ultimately the local eye is always required to connect ideas and ground them in place. For Dutch Dialogues Charleston, there are many leaders, funders, participants and advocates to thank for their contributions. The list is long and likely would be incomplete if itemized. Many hands are required to do this work.

The collaboration in leadership and funding from the Historic Charleston Foundation, The City of Charleston, The

Charleston Water System, the American Flood Coalition, the Medical University of South Carolina, and the Nature Conservancy, coupled with the team from Waggoner & Ball, The Water Institute of the Gulf, the Kingdom of the Netherlands and the many technical partners supporting those organizations, was essential. This includes the significant investment made by the Clemson Design Center in Charleston in hosting the event and engaging the students who will lead our resilient futures.

Thank you all so very much. This work would not happen without such strong collaboration.



## Plenary Setting: Opening, Stage-setting, and Connected efforts

Dr. B.D. Wortham-Galvin, Director of the Resilient Design program and the Clemson Design Center, Winslow Hastie, Director of the Historic Charleston Foundation, Mayor John Tecklenburg of the City of Charleston and Dale Morris of The Water Institute of the Gulf opened by anchoring Charleston's challenges to the work of the Colloquium.

They noted that while the Netherlands has hundreds of years of managing water, its most recent strategies move away from "fighting the water" and towards "Living with Water." Smart spatial planning drives investment to facilitate adaptation to storm impacts and climate change while also providing other societal benefits. This Living with Water approach is a mindset of adaptation and efficient investment that Charleston needs.

The Dutch Dialogues are a search for solutions, direction, and a shared, common vernacular to drive policy, action and proactive investment. Pre-event preparation and prevention are always less costly -- in terms of human life, impacts and dollars spent -- than post-event emergency response and recovery.

David Waggoner of Waggoner and Ball, Dr. Norm Levine of the College of Charleston and Steven Slabbers of Bosch-Slabbers Landscape Architecture then set the stage for the effort. They explained work in the City of New Orleans, Bridgeport, CT and Hampton Roads, VA, research on sea level, seismic and heat in the Lowcountry, and the history of water management and spatial adaptation in the Netherlands. They assessed the challenging Lowcountry landform in the context of increasing storms, sea-level rise and aspirational pathways for solutions.

Every physical landscape, its inhabitation, systems, and uses, is unique. Discovering the context of the place, and how to create or fortify identity through water, is key. This mindset presumes a relationship with and respect for water. Ignoring or constantly fighting the water, "walling it out," will not be an effective or affordable long-term strategy.

Charleston's natural and physical systems and landforms are grounded in dunes and islands, and are shaped by waves, winds, currents and interconnected, inland water systems (creeks, rivers, marshes, estuaries). This is

indeed "the Lowcountry," with half of all home elevations at less than 10ft above sea level. Like many coastal environments, Charleston's physical, environmental and aesthetic riches are the sources of its most pronounced vulnerabilities. Urbanization-induced landfill has changed the water-land interface but the region's marshes still want to act like marshes, regardless of use. Extreme weather events and nuisance, sunny-day flooding are equally costly and demand equal attention: both impact property, livelihoods, critical infrastructure, economic activity and property values. These impacts are worrisome to citizens, policymakers, emergency responders and investors alike.

### Golden Rules from the Netherlands

**Change Attitudes.** Embrace water and its spatial quality. It demands and is a tool for inclusiveness.

**Cooperate.** "God created the world, but the Dutch created the Netherlands." Living safely with water is a collective responsibility and needs collective solutions.

**Have a Larger Perspective,** in time, scale, purpose, systems and the environment.

**Don't Accept Solutions that Only Work.** Single-purpose solutions fail the test of time. They are expensive to build, maintain and lose public support over time. Instead, seek solutions for water challenges that add other values – economic, environmental, recreation, mobility and social. A design-based approach identifies these other values and their salience to the communities that form a city. Dare to think outside of the box, create a vision beyond narrowly-bound programming or funding constraints. Have a vision: from inspiration comes funding, and from funding comes inspiration.

**Have courage to think big and the guts to act small.** A compelling long-term vision must be shared and understood, but small projects must be quickly implemented to prove to citizen's that the vision is achievable.

- Steven Slabbers, Bosch Slabbers Landscape Architects

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Photo Credit Left and Continued on the Covers: Ramiro Diaz

## Ongoing Efforts

Mark Wilbert, Chief Resilience Officer of the City of Charleston, Ken Dierks of Kimley Horn in collaboration with Nemas/Fernleaf, Wes Wilson of the US Army Corps Engineers, Matt Fountain of the City of Charleston Stormwater Management Team and Jacob Lindsey, Planning Director for the City of Charleston, provided overviews of a much larger and diverse set of flood-risk mitigation and adaptation efforts in the City.

Dan Burger of Charleston Resilience Network, Rick Devoe of SC Sea Grant, Liz Fly of The Nature Conservancy, Ian Scott of the Metro Chamber of Commerce and Lauren Gellatly of Lowcountry Local First wrapped-up the Colloquium's Plenary.

Patience and urgency, plus a long-term vision and funding, are necessary to manage Charleston's multi-generational and multifaceted challenges of growth, flooding, transportation, equity and cultural heritage. Scales of time, geography, elevation, occupation and science must underpin solutions. Coastal cities recognize that state and federal governments are unable to effectively respond to local climate change impacts. Natural systems, which can address many of these impacts, should be embraced.

While the Cooper River and the Peninsula work tends toward the retrofitting of existing built environments, West Ashley and Johns Island developments are frequently planned in previously undeveloped areas. Given this, there is a clear, yet shrinking, possibility to "get it right" from the start.

Businesses note that their largest challenges are the ability to attract and retain talent and provide affordable housing to the growing workforce. Talent attraction and affordable housing are intertwined with stormwater and tidal flooding and the growing threat of sea-level rise. In a recent survey, 3/4 of local businesses report considerable impacts from storms and flooding and 44% reported loss of income. This is economically unsustainable.

Business sees political fragmentation as a challenge, the lack of vision as worrisome, and the desire for more regional cooperation and a single voice ("water ombudsman") to focus attention, resources and information as a necessity.

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### Ongoing Flood Risk Mitigation Efforts

**City of Charleston Flooding and Sea Level Rise Strategy:** The City's 2019 updated Flooding and Sea-level Rise Strategy plans for 2-3 feet of sea-level rise over the next 50 years, and has five distinct focal areas: governance, resources, land use, outreach and infrastructure. An online, active platform keeps residents informed and engaged.

**City of Charleston Vulnerability Assessment:** The Vulnerability Assessment analyzes the many regional threats and their interactions with populations and assets to highlight the most critical areas. If Charleston does not understand and manage well its many vulnerabilities, investment and people can and will go elsewhere.

**City of Charleston USACE 3x3 Study:** The US Army Corps 3 x 3 Peninsula Flood Risk Management study is focused upon surge and storm risks on the peninsula and will explore structural and non-structural solutions to mitigate those risks. These responses shall be aligned with other investments in the lower (battery-areas) and mid-peninsula areas and could incorporate locally-preferred alternatives.

**City of Charleston Stormwater Management Program:** The newly-created Stormwater Management Department is led by a newly-appointed Stormwater Program Manager who will update the 1984 Master Drainage Plan. The Department is a one-stop shop for the City's stormwater management programs, projects, resources and capabilities.

**Related Planning Efforts:** The City's Planning Department is focused upon future flood risks but also housing, transportation, tourism, the changing economy across the City's neighborhoods. These and other issues are part of the ongoing Comprehensive Plan Update. The Planning Department noted that inspiration from the Netherlands is essential but that Charleston is 17-times less dense than the Netherlands with a tax-base that reflects a more suburban, less urban environment.



## Focal Areas

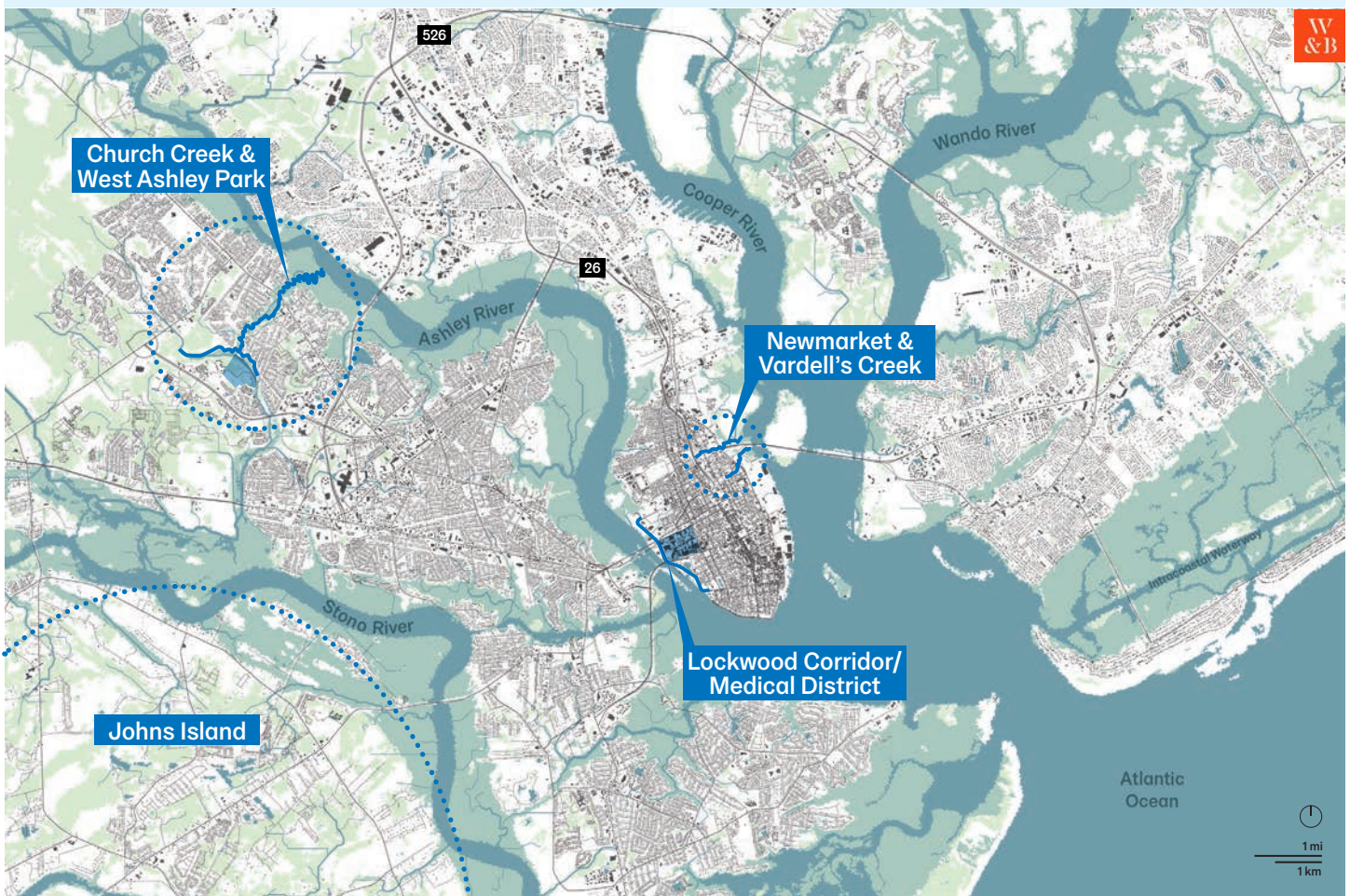
**Lockwood Corridor/Medical District** is a critical provider of essential services, and is currently impaired by recurrent tidal and storm-related flooding.

**New Market and Vardell's Creek Area** is experiencing significant growth and requires comprehensive land use and water planning to address the low elevation, stormwater flooding, unmet housing needs, and broader neighborhood development patterns.

**Johns Island** requires a set of best water management practices to mitigate current and predicted flood risk. This multi-jurisdictional area with many infrastructure and growth-related challenges demands a regional perspective.

**Church Creek** is heavily urbanized, underutilized, and constrained and serves primarily as a drainage conduit and cause of flooding. Settlement patterns, geography, land use, water storage, and discharge needs, and upland opportunities will influence proposed interventions to lower flood risk and enhance post-event resiliency while ensuring the vitality and viability of the area.

Focal Areas were introduced by Jacob Lindsay, City of Charleston Planning Director along with Jared Bramblett of Davis & Floyd, Bob Horner of Weston & Sampson, and Christopher Morgan of the City of Charleston.



## Key Takeaways: Lockwood Corridor and Medical District

### Operations Vulnerability

Participants noted that access to health services, patient and personnel safety, and overall well-being are at risk. Many patients had trouble accessing the medical district, including Emergency Rooms, because of flooding. Current flooding will impact where patients seek future medical care, and recent announcements of providers “moving upland” confirm this.

### Largest Employer

The District is the single largest area of concentrated employment in South Carolina. Thus, the District’s aggregate economy -- patients, families, medical facility personnel, suppliers and supporting businesses -- is at extreme risk. Many hope / expect that the Vulnerability Analysis will quantify this economic risk. The State is refining its shelter-in-place strategy and hospitals await new guidelines to understand operational impact, since emergency responders lack facilities in the District.

### Ecological Vulnerability

Participants expressed concern about the former landfills surrounding and underneath the District and water quality (in WestEdge and at Laurel Island). Similar discussions on the water quality in Ashley River and Long Lake raised additional concern. Habitat loss, tree cover loss and their relation to tourism and human comfort brought forward greater considerations.

### Energy Vulnerability

There is deep concern about the redundancy and reliability of the District’s energy supply and hope a district energy strategy could increase resilience.

### Heat Vulnerability

Beyond the work on slowing, storing, redirecting and adapting to water, complementary solutions would help as many solutions for water also reduce urban heat.

### Collaboration Intent

Participants expressed a desire to collaborate more deeply, combine (and increase) local funding and programs where possible, better leverage state (transportation) funding, and gain more control over key transportation arteries in (and near) the District.

### Transportation Planning

Many hoped that SCDOT, in addition to its primary task of

repaving and reducing congestion, would begin to explore how road improvements could be rethought to reduce flood risk mitigation / enhance resilience. Similarly, several expressed a desire to (re)engineer parking enhancements with stormwater storage and a desire to create more transit opportunities (bus and water taxis) to alleviate congestion and improve access.

### Shared Parking

There was significant discussion about how shared parking across the three hospital systems might free-up space for greater stormwater storage. Incentives and citizen engagement to collect and store rainwater, “adopt a drain,” “rainproof” their neighborhoods, become an “evacuateer,” create and manage a nearby “living shoreline” are desired. Similarly, the nearby Charleston Public Housing Authority, the Citadel, West Edge, Riley Ballpark, local businesses and surrounding counties must be part of the collaborative effort.

### Connectivity Improvements

Expanding the District’s limited connections to key centers – The Citadel, College of Charleston, Brittlebank Park, Westedge, Riley Field – offer new opportunities.

### Communication Campaign

Participants identified the need for greater resilience awareness in the city including structured partnerships to enable others to understand their risks.

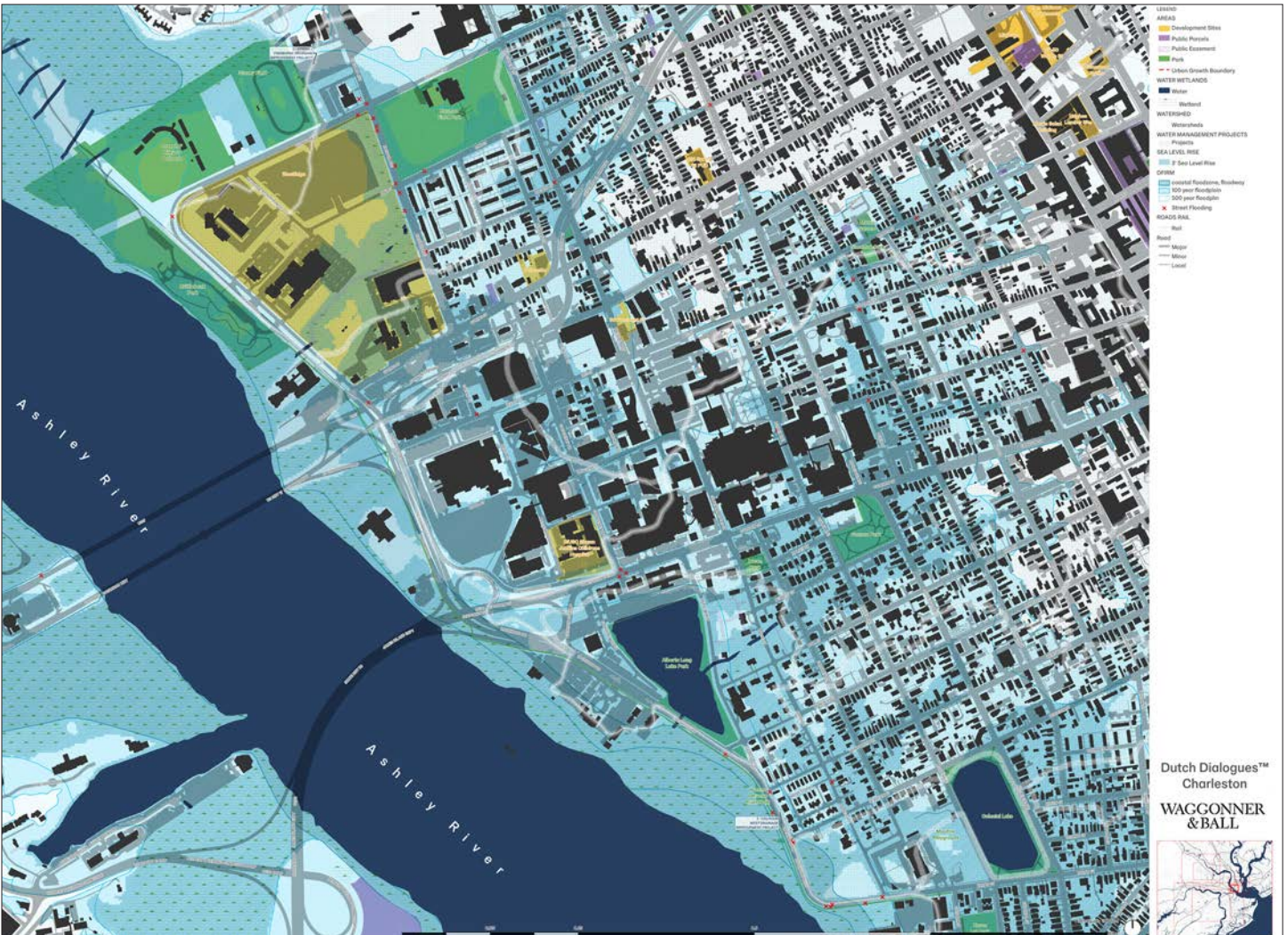
### Investments and Policy

There is interest in perimeter protection along the Ashley River, which will be addressed by the USACE 3x3 study (and which would likely require additional pumping capacity). The area’s existing density and intense use may preclude large-scale use of green infrastructure.

### Further Opportunities

Some wanted to explore storm water storage opportunities in / near Alberta Long Lake combined with enhanced recreation; others were encouraged by plans-in-development to elevate key pedestrian corridors between medical facilities and elevate key utilities at the same time. Still others referenced the Charleston Plan and the need to further coordinate with its directions. There is a desire to require a “resilience component” in any future permitted project to create and deepen a culture of resilience awareness and responsibility.





Above: Medical District and Lockwood Corridor Floodplains and Sea Level Rise map  
Top Left and Right: Team collaborations to understand the work area



## Key Takeaways: New Market and Vardell's Creeks

### Complex and Compact

Two old creeks – one covered, one not -- define its physical boundaries and the area is low and flat. One-third of the adjacent Eastside neighborhood have public housing. “High-ground” in the area is close to the Cooper River (Morrison Drive and East Bay Street), along Huger Street and, on the west-side, abutting the Lowline. There is a considerable amount of mixed-use and market-rate housing development on the Zone’s western edge (Meeting Street), some of which extends into the Cooper Bridge Redevelopment Zone. Cultural amenities in the zone include churches, schools, the community center, Martin’s Park and green space amongst some of the public housing.

### Wet, Flat and Vulnerable

There are four distinct, interrelated water challenges in the Cooper River Redevelopment District and in the nearby Eastside community: stormwater impacts, compromised drainage, high-water (tidal and surge) inundation, and the future sea-level rise impacts upon drainage and possible inundation. Understanding and managing these water risks must be primary for all (current and future) neighborhood development as well as the communication to residents and business of these risks. The drainage system is not well-understood and shallow groundwater levels are likely high.

### Lee Street and Nearby

An obvious, if possibly overlooked, opportunity is to repurpose Lee Street and nearby surface parking lots for water storage as leases there are nearing deadline. Green infrastructure (bioswales etc.) and an immediate opportunity to recreate the blue-green links that previously defined the area is important. Participants are curious if the Port’s Columbus Terminal might play a role in perimeter protection, and others wondered whether any peninsula perimeter protection stemming from the USACE 3x3 study will require a pumping system. Many want to explore using the lower Newmarket Creek watershed (under I-26 and Ravenel Bridge) for additional neighborhood water storage and, possibly, a community amenity (park).

### Redevelopment and Equity

Parts of the Cooper River Redevelopment District are hotbeds of (re)development that are influencing the neighborhood’s identity. Participants believe that respecting and reinforcing the community’s identity as (re) development occurs are important. There is uncertainty – within the neighborhood and without -- about the target

of redevelopment, amenities the residents need and want, and neighborhood identities to safeguard. This begs for more community outreach, engagement by the City, and a community trust-building effort.

### Transit and Connectivity

The Morrison / East Bay corridor and the Meeting Street corridor provide opportunities to reinforce transit nodes (bike, bus, future BRT) in / near the zone. Participants wondered whether a water taxi (linking to lower peninsula, or even to Lockwood Corridor or Mt. Pleasant) would be possible and if / how the future Lowline redevelopment can also create an east-west corridor linking to Hampton Park, Medical District and the Riley Ballpark.

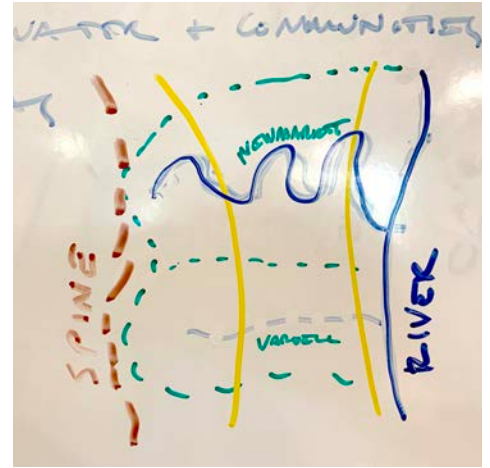
### Stewardship and Governance

There is a need to (re)create a water identity in the neighborhoods and provide outreach and resources to enable residents to help manage and have stewardship of stormwater (e.g., adopt a drain, rain barrels, rain gardens, infiltration space). The complex answers to who owns the streets and who is responsible for what on those streets confuse residents and make street and stormwater management unnecessarily complex.



Open space and networks sketch made during the Colloquium





Above: Cooper River Bridge Redevelopment District, New Market and Vardell's Creek Floodplains and Sea Level Rise  
 Top Left, Center and Right: Site tour view, team collaborations and white board diagram of study area watersheds



## Key Takeaways: Johns Island

### Ecological Identity and Vulnerability

Johns Island is the 4th largest island on the US east coast. Its strengths are its aesthetic beauty, coastal ecology, mid-island elevation, its treescape, marshes and sandy soils, and the large tracts of undeveloped land that create a distinct, bucolic, languid sense of place. The strengths are vulnerable and diminishing. The island's large farms are also diminishing as is the land stewardship that farmers frequently practice. Development pressure and the Urban Growth Boundary have a tense relationship when it comes to flood risk, as newer development within the Boundary is occurring in low-lying areas.

### Flood vulnerability

The island is reliant upon historic and poorly-maintained overland drainage infrastructure, development-specific (not system- or island-wide) drainage plans, insufficient or poorly-enforced stormwater regulations and management practices. The Island's explosive development, development-related stormwater impacts (e.g., raising homesites without understanding impacts on nearby communities and drainage system limits), traffic, storm evacuation challenges, and complex relationships between the City and developers adds to the existing flood risk. Sea-level rise and higher mean water levels in the Ashley, Stono and Wadmalaw Rivers and Bohicket Creek will further constrain overland drainage.

### Cultural Vulnerabilities

The island's cultural assets – including the Gullah-Geechee community, slave descendants, and its Civil War, Civil Rights movement and native American histories – are rich and distinct. All are threatened by land development, recurrent tidal and stormwater flooding and sea-level rise. There is much to protect and much to lose.

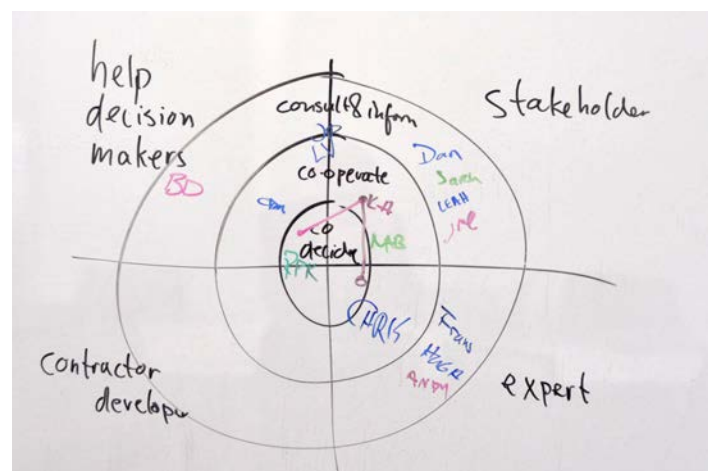
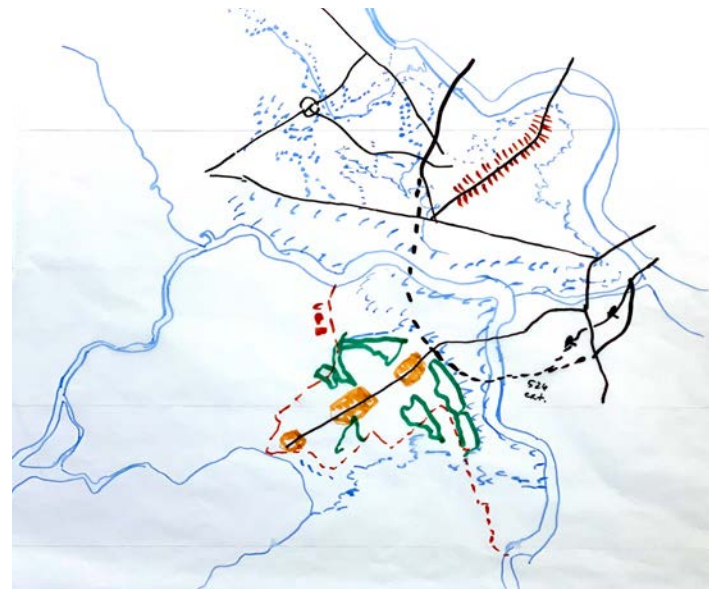
### Transportation Planning

Almost every discussion about Johns Island is influenced by transportation and the I-526 extension. Concerns about the value versus the costs in a time of other financial needs tend to be the focus. Opinions pro-and-con are strongly held and expressed.

### Green and Gray

Johns Island, "different from the rest of Charleston," is mostly a greenfield development – not a redevelopment -- challenge. There is space for innovation, new water management practices (green and gray), new housing and

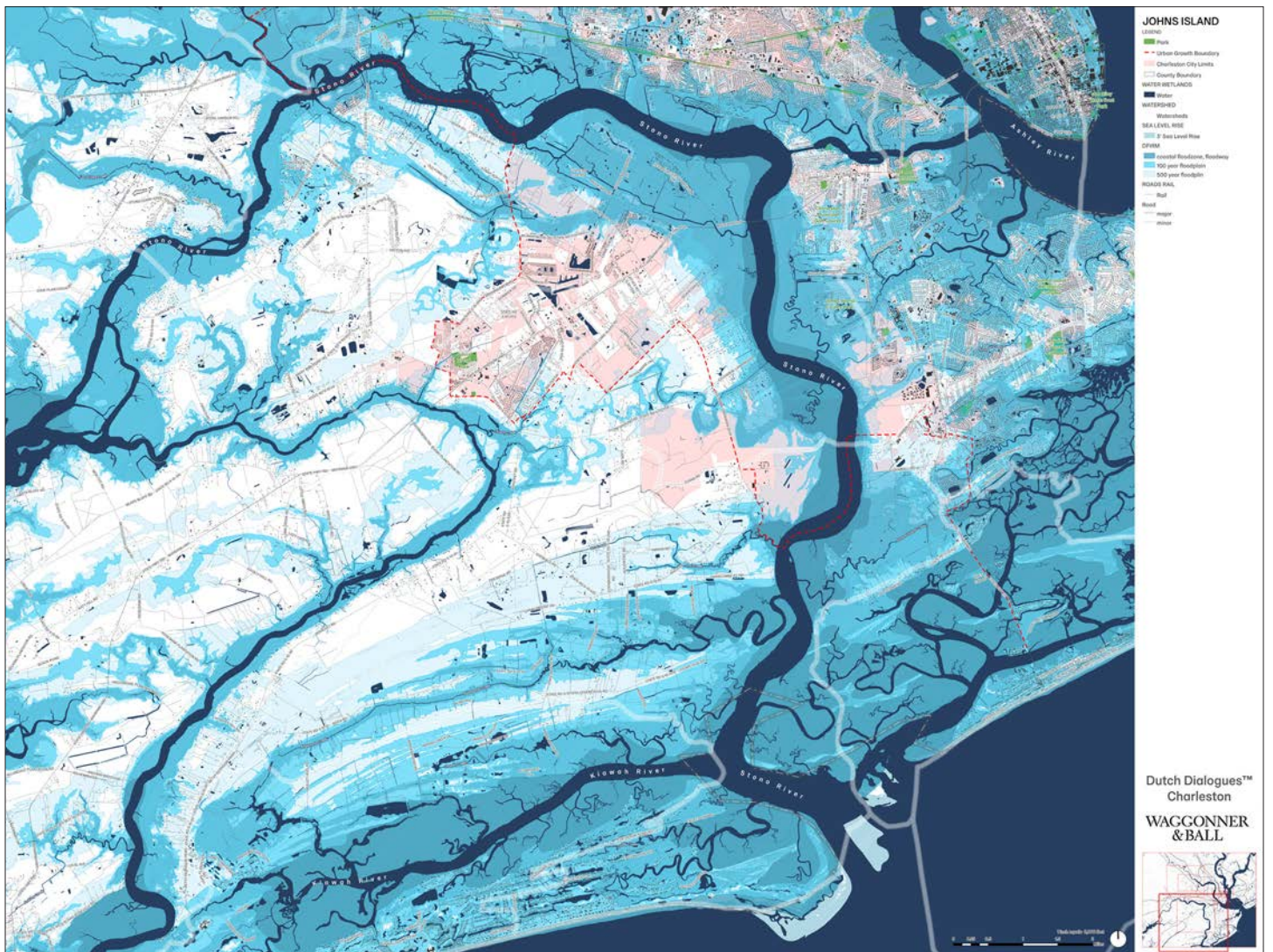
flood-proofing technologies and low-impact development pilots. Citizens ask: "How do we get this right?" Successful resilient development will occur only if and when it is grounded in the Island's current and future geology, geography and hydrology. Citizens wisely question whether to call "Johns Island affordable if people are buying homes with excessive flood risk?" And they wonder whether successful development practices piloted in the Lowcountry could enable developers and leaders in Charleston to share their efforts with other communities facing similar threats. If done right, "resilience" is a brand to further showcase Charleston.



Above: John's Island site studies

Below: Mapping stakeholders at the Colloquium





Above: John's Island Floodplains and Sea Level Rise  
 Top Left and Right: Site tour of typical development and typical tree treatment



## Key Takeaways: Church Creek

### Church Creek Basin

Participants saw the Church Creek challenge as a retrofit to “understand the past to secure the future.” Before human settlement, the area’s dominant coastal forests and savannah woodlands lacked arterial water, channels and creeks, and served as a natural basin providing water storage. Higher water-levels in Ashley River, and the loss of Long Branch Creek / Church Creek system connectivity, have further challenged the area’s natural storage / drainage functions. The construction of Bees Ferry Road has altered natural drainage patterns, with the Road acting as a dam in places. Housing development has further compromised the area’s basin function.

### Phosphate Mining

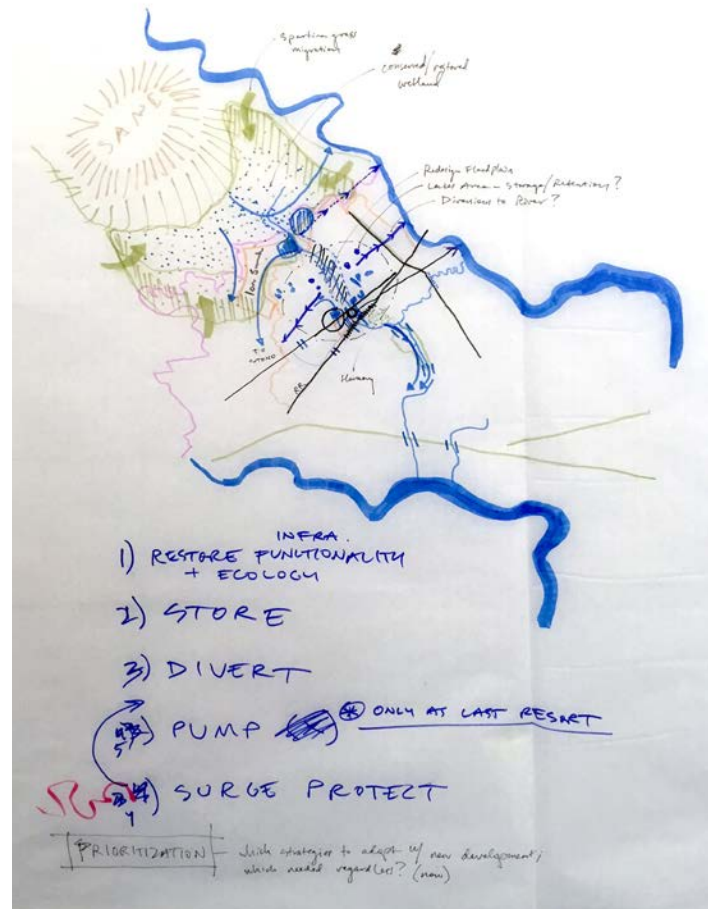
The coastal forests were cut to enable phosphate-mining, the remnants of which – artificial linear mounds and dug channels -- dominate undeveloped parts of the current basin. These mining impacts and more recent suburban development impacts that further deforested the area have substantially altered and diminished the area’s hydrology, drainage and natural systems functioning. The drained soils are subject to compaction and subsidence.

### High, Dry and Connected

The participants adopted a “high-dry-and-connected” theme to guide infrastructure improvements and development in the West Ashley area. Planning and development must recognize the benefits and challenges of the human-water relationship while also considering climate and population projections in the Charleston area.

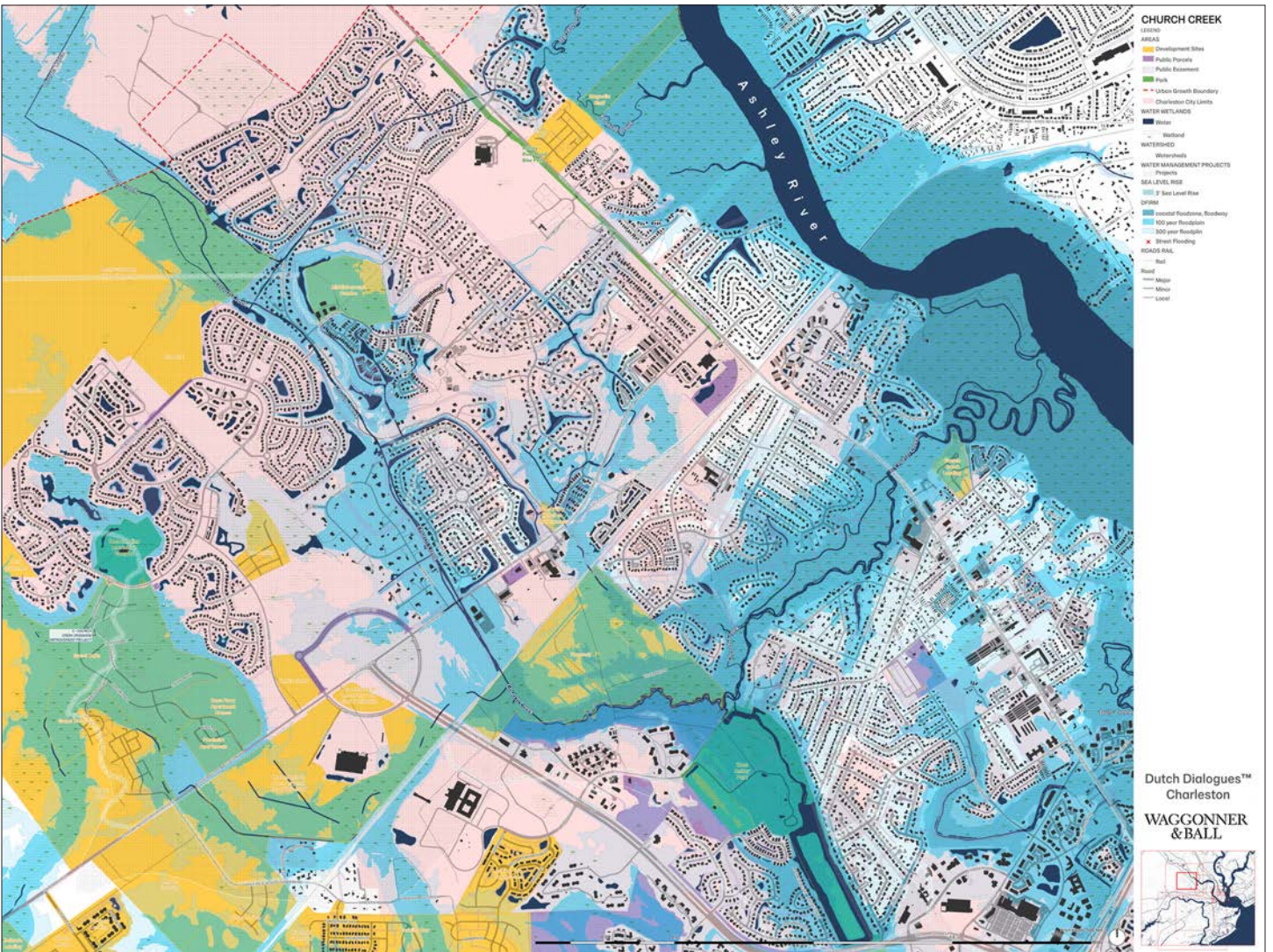
### Ongoing Studies/Unrealized Opportunities

Church Creek is home to many studies that can inform new opportunities to secure the future. There is a complex land reclamation project (Harmony) through which the City is gaining land. NOAA / Sea Grant are studying whether and how to reconnect Long Branch Creek / Lake to Church Creek (West Ashley Park). How these will impact the water system, water levels and stormwater drainage is unclear. There is a new drainage study, with proposed projects, that is informing current plans. There are a few developers interested in piloting new development and drainage practices, and offering land bank mitigation, to offset their investments. These developers should be encouraged to pilot innovative projects and applauded for their leadership.



Above: Church Creek site studies and strategies





Above: Church Creek Floodplains and Sea Level Rise  
Top Left and Right: Shawdownmoss and nearby neighborhood site photos



## Collective Takeaways

### 1: Participants noted that there were few surprises.

“Many things we thought we knew and assumed turned out to be true.” However, the subtleties of the solutions and their interconnectedness appear to be poorly understood. As the Dutch experts strongly encouraged, the City needs to understand these connections and their capacity to address what needs to be done.

### 2: Solutions exist but funding is needed.

Some are achievable and desired; all presume collective (federal, state, regional, county and local) action and multiple funding sources. Such collective action yields greater opportunities for stacked financing structures and potentially greater overall resilience. A wish without funding remains a wish.

### 3. There is a clear thirst for action.

Action must rest on an integrated, comprehensive and articulated plan that secures the greatest value for the investments made. While the City is ready for action, it lacks a long-term vision and plan for how to proceed. The number of current parallel studies and their findings, and the large, important and still disconnected drainage projects underway are representative of the challenge.

The outcomes of the USACE 3×3 study will set a datum for seawall expansion. NOAA’s remapping of the Gulf Stream will possibly undermine the seawall assumptions. Compound growth in developing areas will exacerbate existing flooding and worsen water quality. Investments upstream in the watershed, across the three intersecting counties and the outcomes of the City’s vulnerability assessment need to be aligned in a regional masterplan to guide an effective course of investment. Citizens and

businesses in the meantime need short-term plans to address the risks faced as the new hurricane season opens.

### 4. The City and others must communicate better and share more info on Dutch Dialogues and other studies / actions.

The Community should be further engaged “on their terms and in their places.” This includes enabling community members to be ready to respond in the short term as longer-term city-scale solutions are developed. It also serves as a solicitation for citizen involvement in solution-making.

[See examples of outreach in Rainproof Amsterdam, Gentilly Resilience District Brand Campaign and Ripple Effect.]

### 5: South Carolina Department of Transportation (SC DoT) should be engaged more to partner in flood-risk efforts given their control of, and investments in, crucial infrastructure.

Opposite page:  
Top: Rainproof Amsterdam Engagement  
Center: Gentilly Resilience District Brand Campaign, New Orleans  
Bottom: Ripple Effect Program at Kipp School, New Orleans





“In the Netherlands, we see the water challenge not as a threat, but as an opportunity.”

## Rainproof Amsterdam

<https://www.rainproof.nl/English>

Photo Credit: Rainproof Amsterdam



## Gentilly Resilience District

<https://www.nola.gov/resilience/resilience-projects/gentilly-resilience-district/>

Image Credit: Waggonner & Ball



## Ripple Effect

<https://rippleeffectnola.com/>

Photo Credit: Claire Anderson



## Dutch Reflections

**Charleston's resilience is a complex story that must be explained in a simple way.**

Water is fundamental to Charleston's past and its future and it must be directly embraced and acknowledged. Build the story so citizens and businesses understand. Boldly raise community awareness of their risks and their opportunities.

**Recognize that safety comes in various forms such as flood protection, spatial planning and warning systems.**

Solutions to flooding fall into four categories: (1) Improve the drainage/protection system, (2) Change the land level by excavating and filling, (3) Adapt homes and buildings to address new water levels and/or (4) Adapt the preparedness level of people. There is no silver bullet: Charleston requires combinations of all four categories.

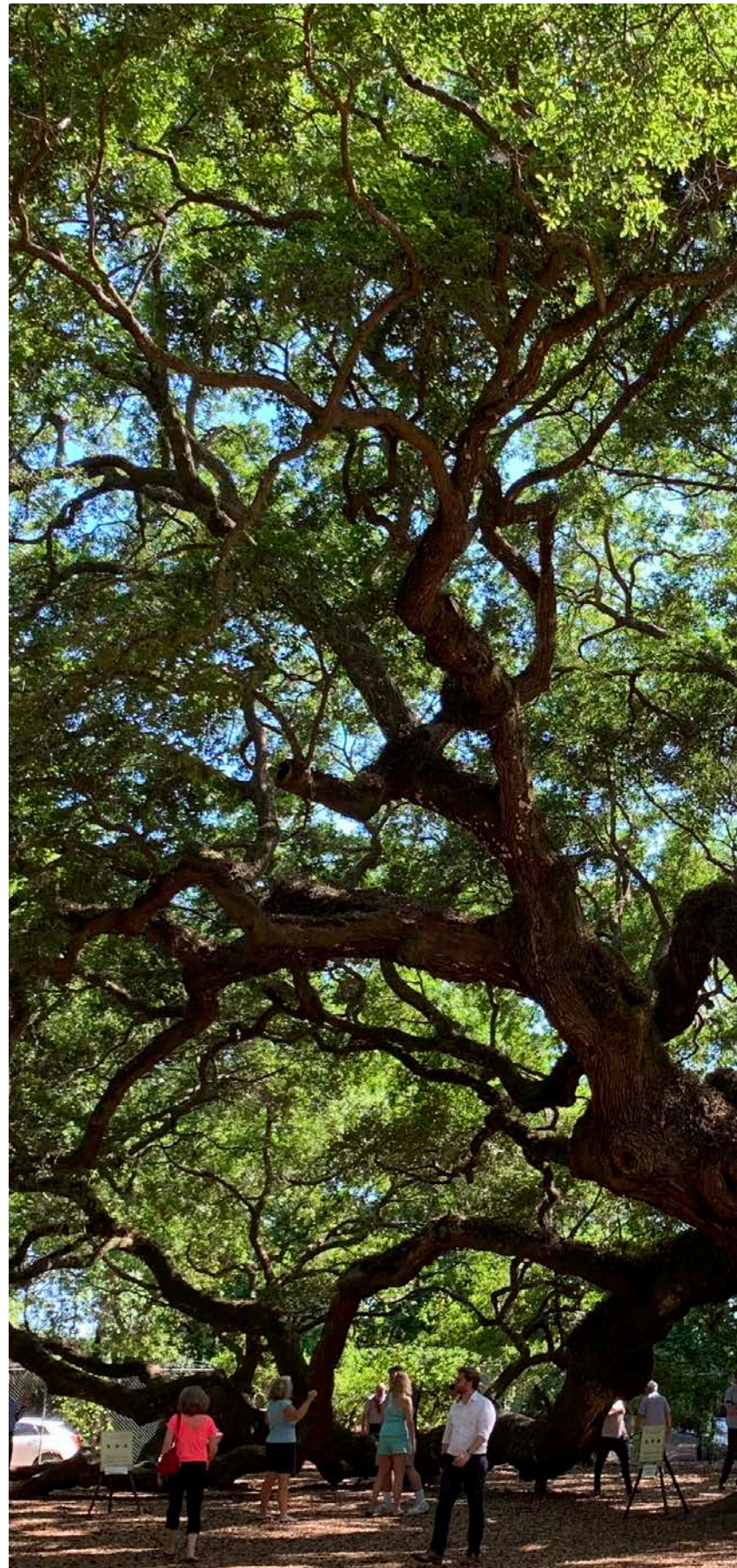
**Developers are not leading on resilience.**

Whether fearful of leadership or of losing market share to lower-priced developments, the recently completed developments underscore how little effort is made toward a resilient future for Charleston. The City should quantify the financial and livelihood risks to homebuyers of such developments. The City should also adopt stronger building codes to mitigate the various risks that will be quantified in the ongoing Vulnerability Analysis. Until the marketplace demands more, the market response will be insufficient to the challenge.

**Understand the difference between engineering solutions for current problems and designing for the future given the information available now.**

Engineering solutions address current quantifiable challenges. Designing for the future enables Charleston to project toward 2100 and beyond, with a long-term future imaginable as a new way of living with water.

Dutch Dialogues team at Angel Oak, Photo Credit: Waggonner & Ball



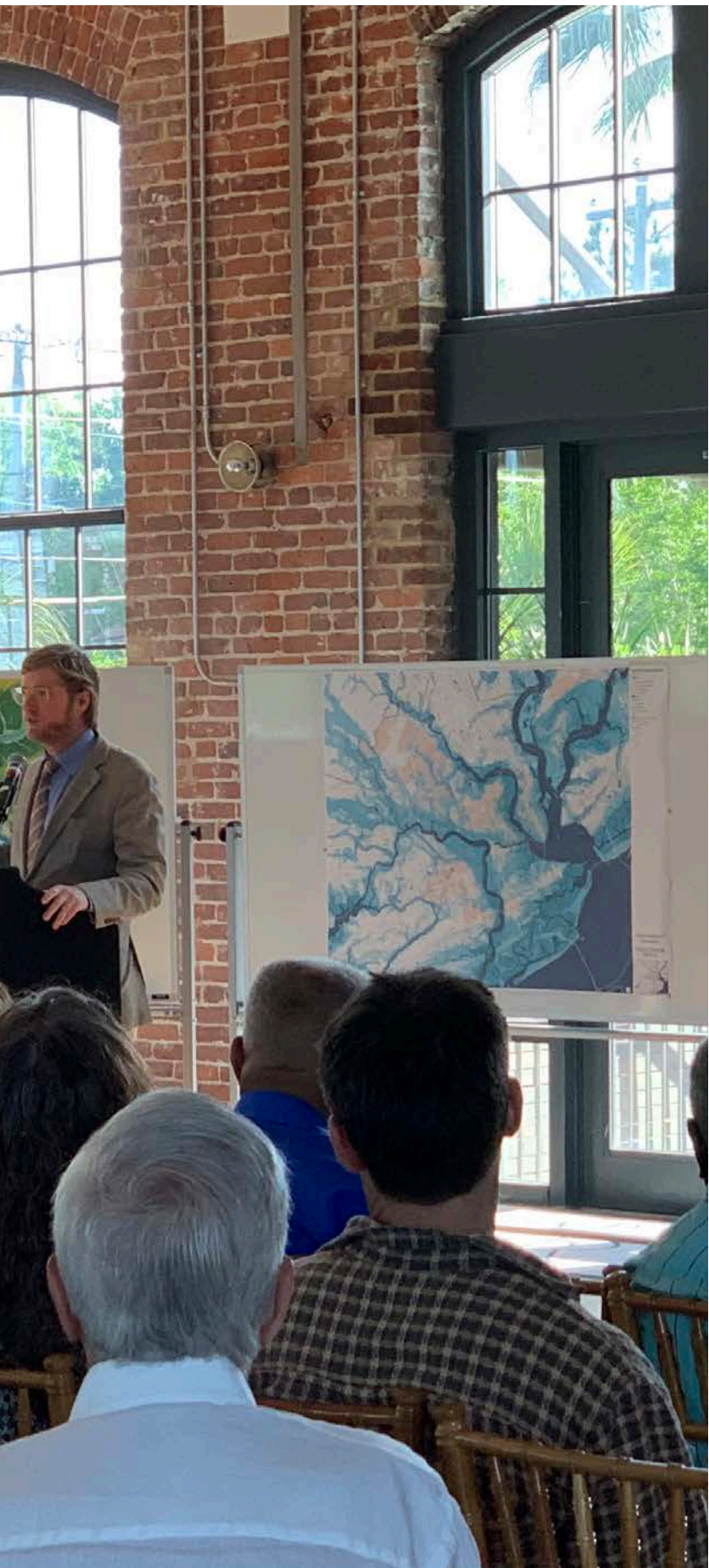












## Public Meeting

The Colloquium concluded with a public briefing at the nearby Cigar Factory. Comments by Mayor John Tecklenburg, Winslow Hastie, Dale Morris, Janice Barnes, David Waggonner, Jan Peelen and Taylor Schenker offered perspectives gleaned during the previous workdays and a glimpse into the efforts required in the Design Workshop.

Colloquium Agenda, Speaker Bio Sheet, and all presentations are available at [dutchdialoguescharleston.org](http://dutchdialoguescharleston.org)

## Colloquium Presentations

1. BD Wortham-Galvin, Clemson Design Center: Welcome
2. Winslow Hastie, Historic Charleston Foundation: Overview of Dutch Dialogues
3. John Tecklenburg, Mayor: Charleston Vision
4. Dale Morris, The Water Institute: Dutch Dialogues / Colloquium Summary and Goals
5. David Waggonner, Waggonner & Ball: Living with Water
6. Norm Levine, College of Charleston: The Physical System
7. Steven Slabbers, Bosch-Slabbers Landscape Architects: Dutch Perspectives: Living with Water in Historic Cities
8. Mark Wilbert, City of Charleston: Flooding and Sea Level Rise Strategy: <https://www.charleston-sc.gov/slr>
9. Ken Dierks, NEMAC-Fernleaf: All Hazards Vulnerability and Risk Assessment: <https://www.fernleafinteractive.com/>
10. Wesley Wilson, USACE: USACE 3x3 overview: <https://www.sac.usace.army.mil/>
11. Matt Fountain, City of Charleston Storm Water Program Manager: <https://www.charleston-sc.gov/index.aspx?NID=353>
12. Jacob Lindsey, City of Charleston, Related City Planning Efforts: <https://www.charleston-sc.gov/index.aspx?NID=272>
13. Dan Burger, Charleston Resilience Network
14. Rick Devoe, South Carolina Sea Grant
15. Liz Fly, The Nature Conservancy
16. Ian Scott, Metro Chamber of Commerce
17. Lauren Gellatly, Lowcountry Local First
18. Hugh Roberts, The Water Institute of the Gulf
19. Joannes Westerink, Notre Dame
20. Frans van de Ven, Deltares
21. Jared Bramblett, Davis and Floyd
22. Bob Horner, Weston and Sampson
23. Michael Maher, West Edge

Cigar Factory presentation, Photo Credit: Waggonner & Ball



