

Before We Start....

Audience will be **muted** throughout the session.



Closed Captioning is available for this session.



Use the **Q & A** function to submit your questions. Use the “like” button to upvote questions.



This webinar is being recorded and will be sent to you following the session.



Take the conversation online

@UrbanLandInst
#WhereTheFutureIsBuilt
#CurtisInfrastructure



AIA/AICP CEU Credit

Thank you for joining us today for this important conversation. Today's program is eligible for one credit hour from AIA or AICP.

If you wish to receive AIA or AICP credit for participating in today's program, please be sure to:

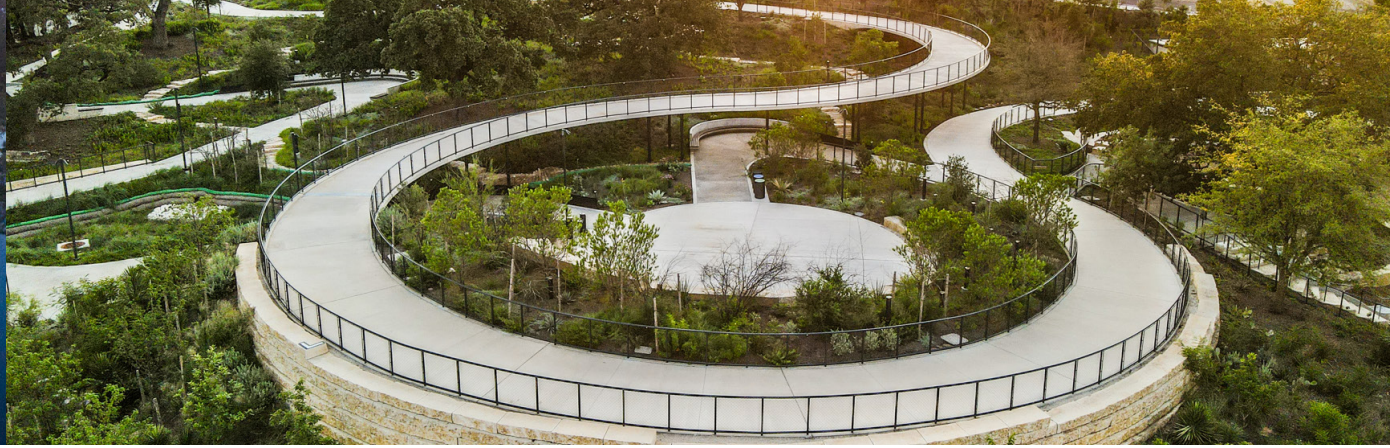
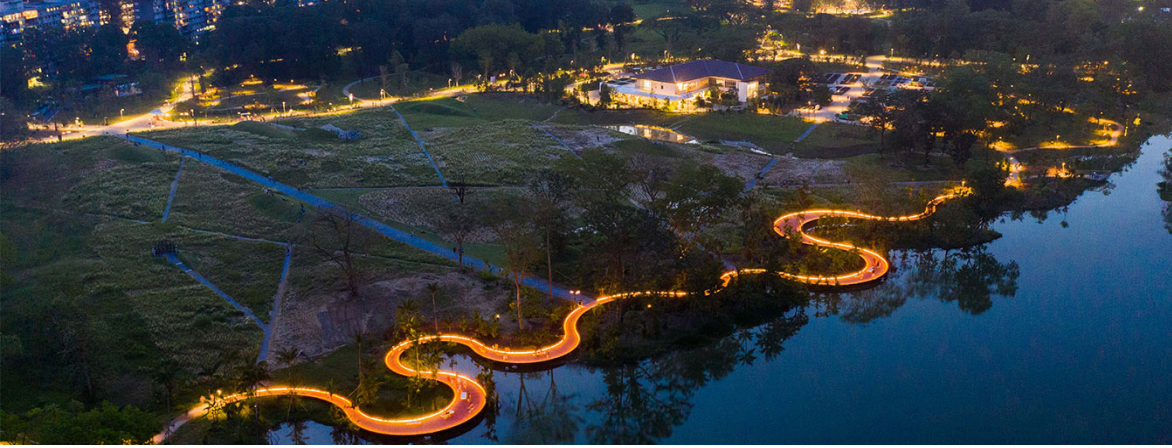
- **complete the evaluation survey linked in the 'Chat'**
- **use your full name in zoom (First Name Last Name)**

ULI InfraXchange Spring Series #1 Nature in the City:

One Environment Infrastructure
to Combine Public Space with
Flood-proofing and Utilities

MARCH 30, 2023





Welcome and Introduction



Billy Grayson
Executive Vice President
Centers and Initiatives
ULI Urban Land Institute



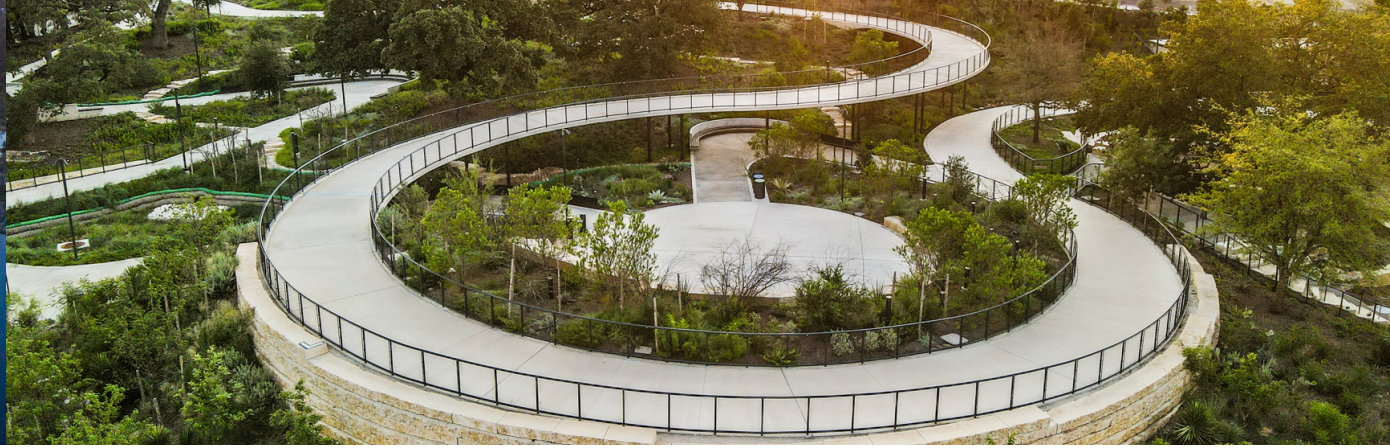
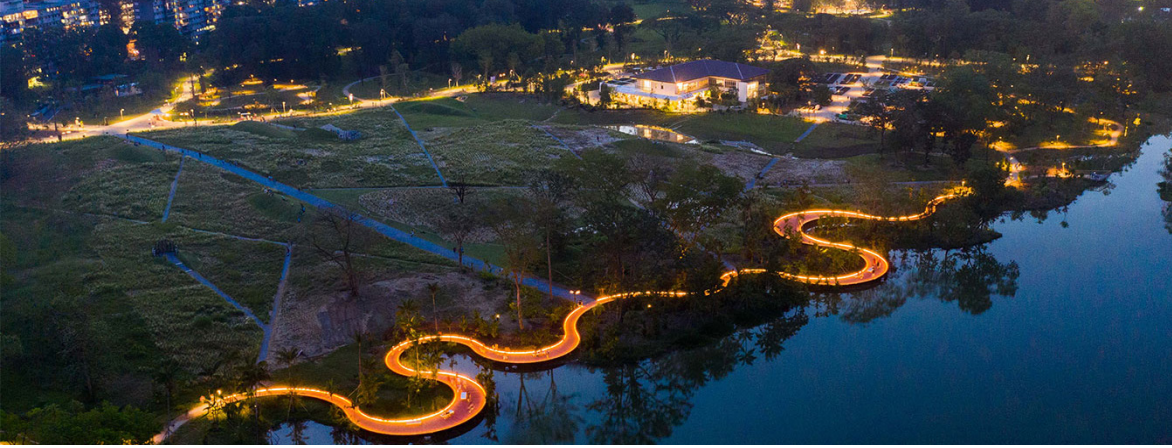
Craig Lewis
Principal, Global Practice Lead
Planning, Landscape & Urban Design
Callison RTKL

ULI Curtis Infrastructure Initiative
Global Advisory Board Chair



Yvonne Yeung
CEO, SDG Strategies
ULI Toronto Advisory Board
ULI SDRC Product Council Vice Chair

ULI Curtis Infrastructure Fellow

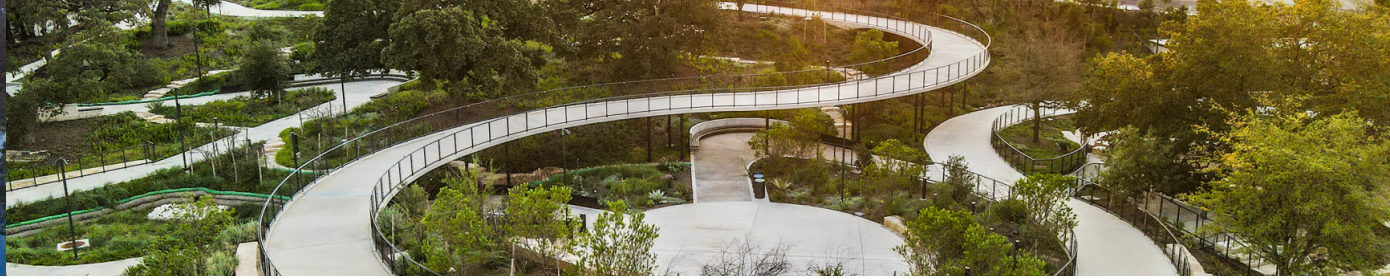


Tribute to Jim Curtis, ULI Life Trustee 1953-2019

*“Every single person in the land use process has the real ability to make a visible difference, and make it matter because they are part of the process. **If they push for the right choices, each one of them has the ability to change the world.**”*



ULI NEXT Global Visionary Video Series:
James J. Curtis III
[youtube.com](https://www.youtube.com)



Cornerstones of ULI Curtis Infrastructure Initiative

A Global Resource for Transforming Cities into Equitable, Resilient and Thriving Communities

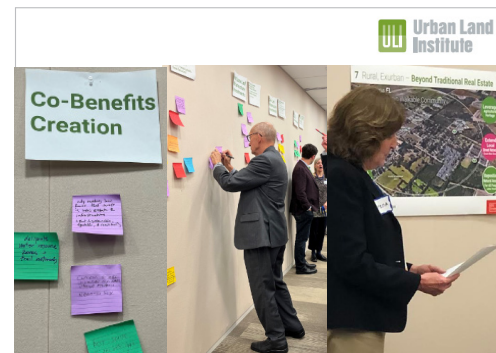
Build Global Partnerships

Conduct Technical Assistance

Grow Knowledge



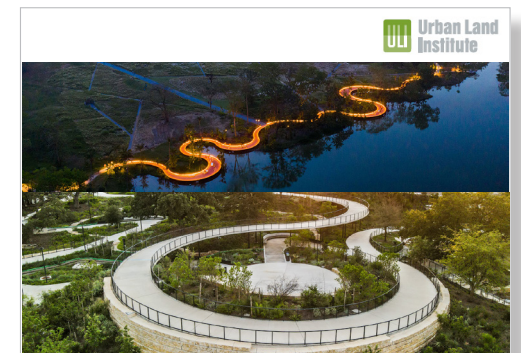
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ULI Publication

Building 15-minute Communities Leadership Guide

ULI Infrastructure Forum at Spring Meeting in Toronto

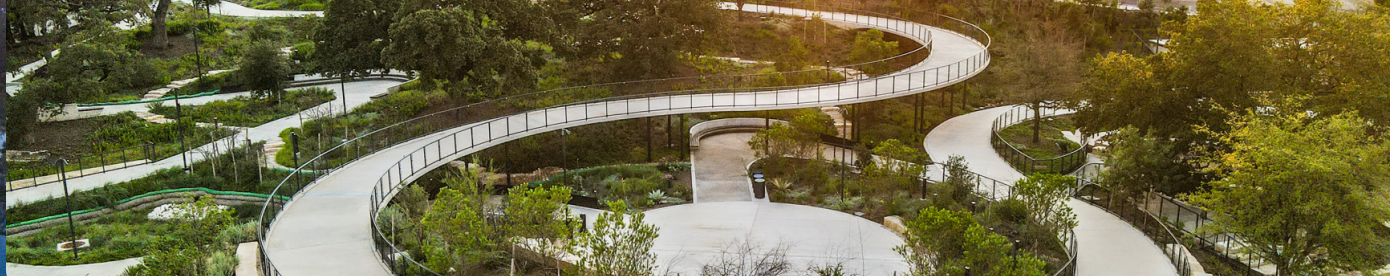
May 16, 2023 8am

ULI InfraTAP District & Product Council Coalitions

2023

ULI InfraXchange Global Spotlights Local Spotlights

Mar - Jul 2023

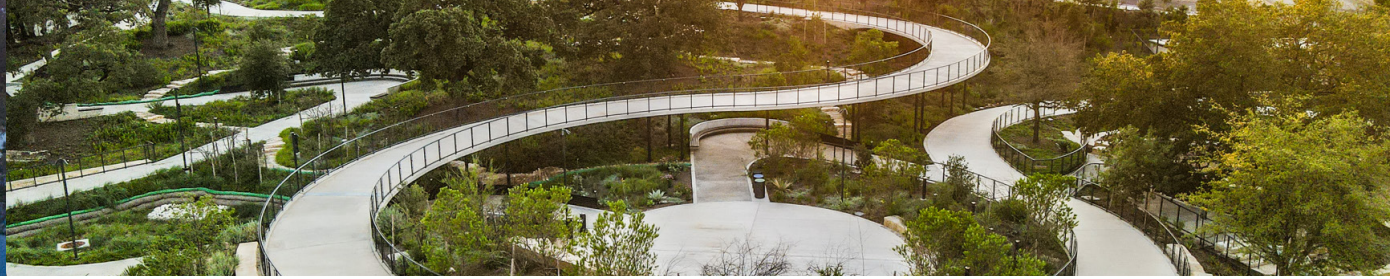


ULI Infrastructure Exchange Series 2023

Leading with Cutting-Edge Infrastructure Solutions and Co-benefits Creation Decisions at Community Scale

Five sessions over 5 months with an article summary to follow in 2023

- | | | |
|-----|--------------------------------|---|
| MAR | One Environment Infrastructure | deliver parks, green streets, flood protection, environmental restoration, and utilities in one project |
| APR | One Community Infrastructure | deliver education-social-health-culture-co-work space under one roof |
| MAY | One Energy Infrastructure | deliver micro-grid/DE, PV, EV, timber and circular waste within one district |
| JUN | One Mobility Infrastructure | deliver transit, micro-mobility, broadband, and smart city system to provide one trip experience |
| JUL | One Vision Infrastructure | deliver a community-scale platform to combine resources, lead multi-teams & engage community |



Today's Challenge: Nature in the City

How to Create 'One Environment Infrastructure' to Implement...

Pollution

Justice40 Initiative

to allocate 40% of total investment to disadvantaged communities that are overburdened by pollution

[whitehouse.gov](https://www.whitehouse.gov)

Urban Heat

National Integrated Heat Health NIHHIS

to reduce health risks of extreme heat, the greatest weather-related cause of death in the US for the past 30 years

heat.gov
cape.ca

Public Health

Healthy People 2030 Initiative

to increase physical activity by built environment approaches, combining transportation with land use and environmental design

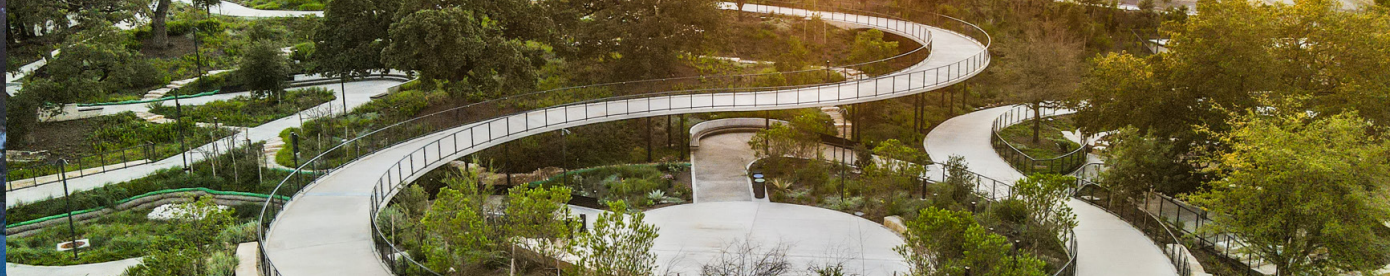
health.gov/healthypeople
canada.ca/health-canada

Water

30x30 Vision to Conserve Nature

to increase environmental restoration and conserve 30% of US & Canada land and water by 2030

[whitehouse.gov](https://www.whitehouse.gov)
canada.ca



Today's Opportunities: Nature in the City

How to Create 'One Environment Infrastructure' to Leverage...

Pollution

\$250M EPA
Planning Grants

**Climate Pollution
Reduction Grants
CPRG**

various deadlines
between March to June

[epa.gov](https://www.epa.gov)

Urban Heat

\$70M EPA Mitigate
Risks of Urban Heat

**Environmental Justice
Government-to-
Government Program
EJG2G**

deadline April 10, 2023

[grants.gov](https://www.grants.gov)

Public Health

\$550M EPA Public
Health in Communities

**Environmental Justice
Thriving Communities
Grantmaking Program
EJ TCGM**

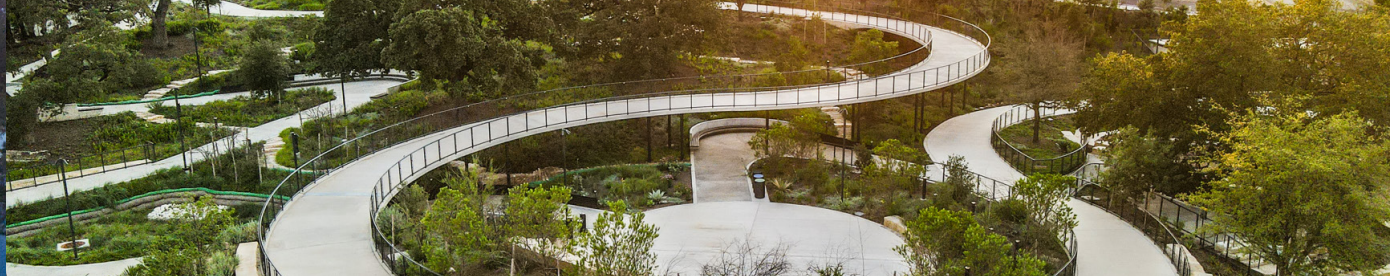
deadline May 31, 2023

[grants.gov](https://www.grants.gov)

Water

\$8.3B Bureau of
Reclamation water
infrastructure
projects over 5 years
for water conservation/
management
/restoration projects

[grants.gov](https://www.grants.gov)



Today's Opportunities: Nature in the City

How to Create 'One Environment Infrastructure' to Leverage...

Mitigation

\$1B DMAF
Disaster Mitigation

**Government of Canada
Adaptation Action Plan
GOCAAP**

deadline
July 19, 2023

[infrastructure.gc.ca](https://www.infrastructure.gc.ca)

Green

\$5B CIB Green
Infrastructure

**Canada
Infrastructure Bank
Priority Sector**

ongoing

[cib-bic.ca](https://www.cib-bic.ca)

Indigenous

\$1B CIB Indigenous
Infrastructure

**Canada Infrastructure
Bank Priority Sector
Indigenous Community
Infrastructure Initiative ICII**

ongoing

[cib-bic.ca](https://www.cib-bic.ca)

Acceleration

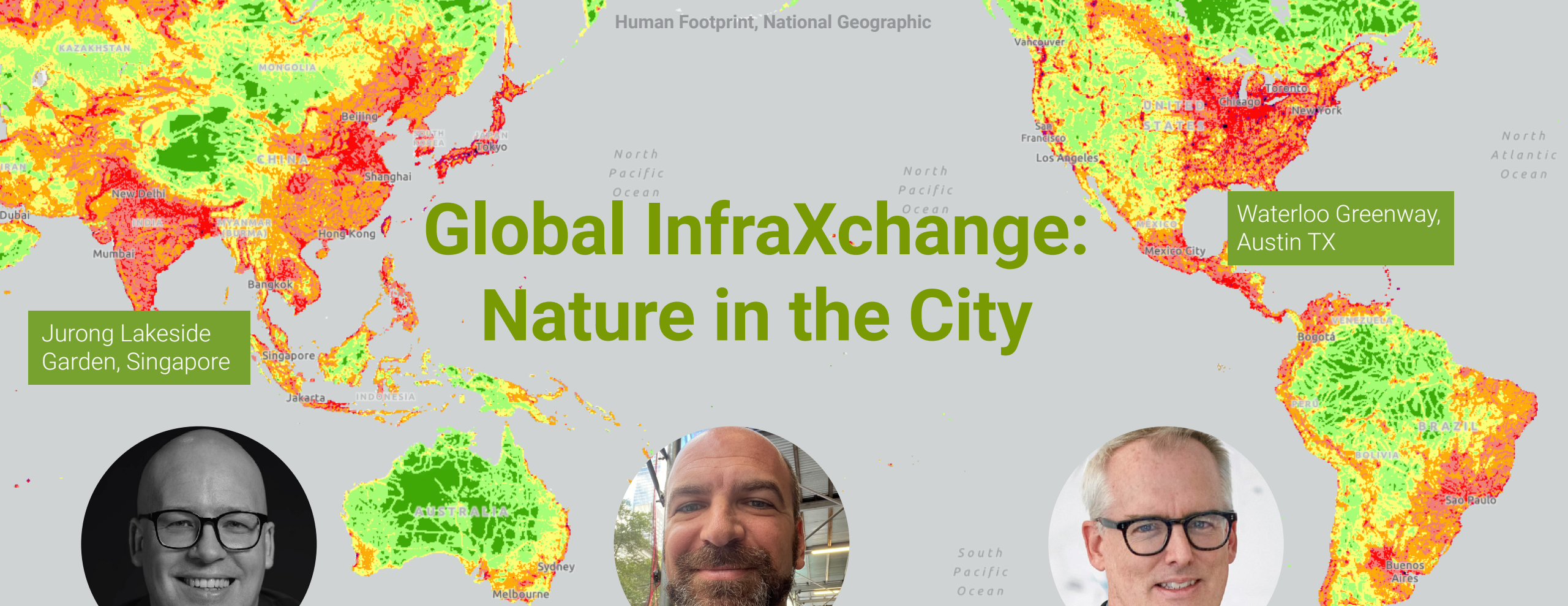
\$500M CIB Project
Acceleration

**Canada Infrastructure
Bank Priority Sector
Accelerate early works
Shorten critical paths to
construction**

ongoing

[cib-bic.ca](https://www.cib-bic.ca)

Human Footprint, National Geographic



Global InfraXchange: Nature in the City



Jelle Therry
Design Director
Henning Larsen
Singapore

speaker



Matthew Kwatinetz
Director, Urban Lab
New York University

USA

moderator



Gullivar Shepard
Partner, Michael Van Valkenburgh
Associates Inc

USA

speaker

Nature in the City

ULI Case Study #1

30 March 2023

Gullivar Shepard, Partner

RLA, ASLA, ULI

MVVA – Brooklyn, NY

Waterloo Greenway



Alliance of Infrastructure Reuse and Development

- A coalition around reclaiming underutilized infrastructure and revitalizing public space
- New hybrid forms of public space lead to significant and measurable impacts on their cities
- Led by Public-Private Partnerships
- Economic development through increased tax revenue, tourism and job creation



Bridge Park
WASHINGTON, DC



High Line
NEW YORK, NY



Waterloo Greenway
AUSTIN, TX



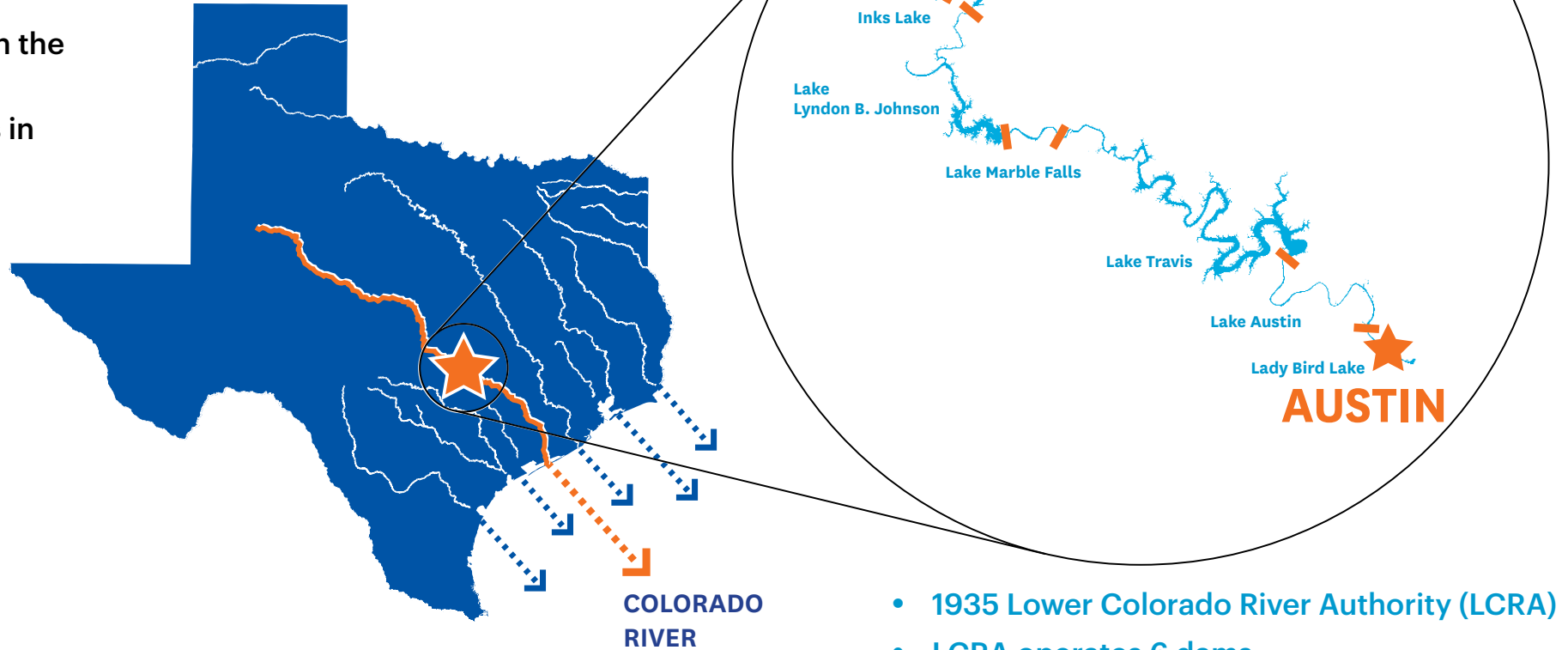
Rail Park
PHILADELPHIA, PA



Atlanta-Fulton County Stadium
ATLANTA, GA

Texas Urbanism and Water Infrastructure

- Semi-arid to arid landscape
- No natural lakes – flows from central Texas empty into the Gulf of Mexico
- Over 200 man-made lakes created by the impounding of this water
- Approximately 10% of all dams in the U.S. are in Texas
- 8 of the 15 fastest growing cities in the U.S. are in Texas
(source: Census Bureau)



- 1935 Lower Colorado River Authority (LCRA)
- LCRA operates 6 dams
- Watershed is 16% of Texas land area



WEST AUSTIN

OLD ENFIELD

WEST UNIVERSITY

UNIVERSITY OF TEXAS

FRENCH PLACE

Waterloo Greenway

Interstate 35

CLARKSVILLE

ROLLINGWOOD

CAPITOL

CENTRAL EAST AUSTIN

DOWNTOWN

Waller Creek

EAST AUSTIN

BARTON HILLS

ZILKER

First

Congress

EAST CESAR CHAVEZ

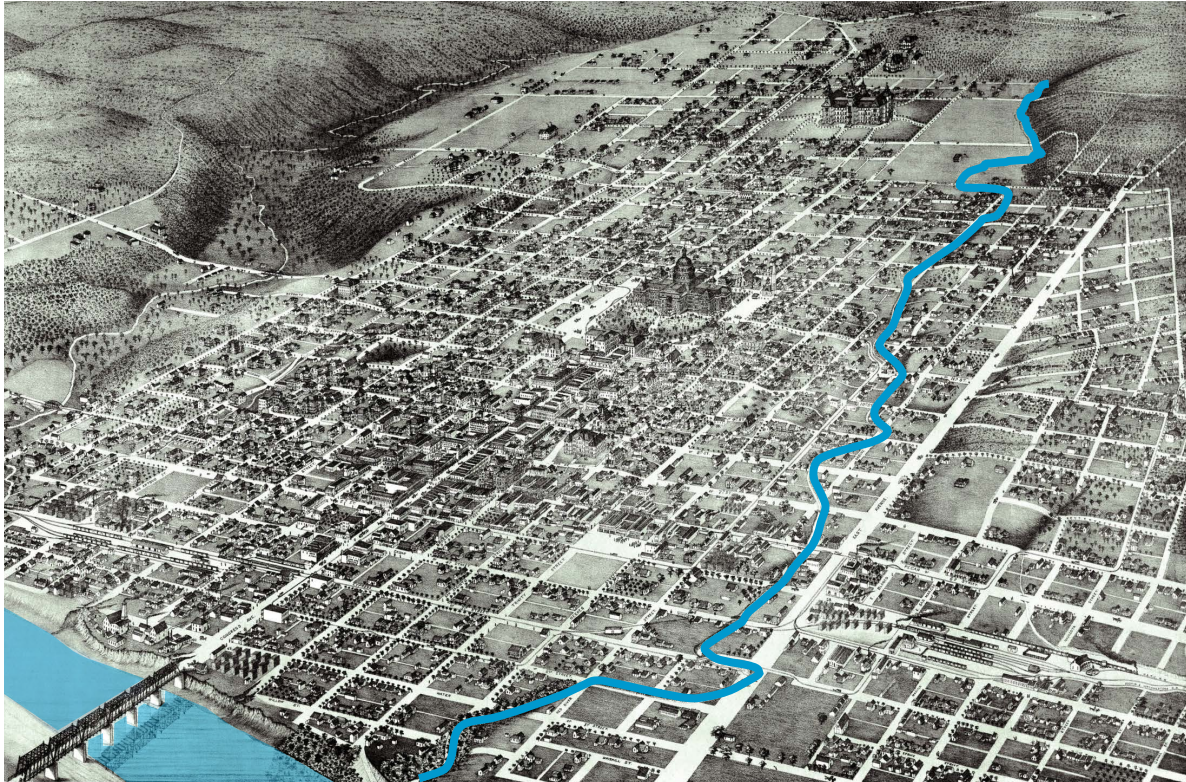
Lady Bird Lake

SOUTH AUSTIN

BOULDIN CREEK

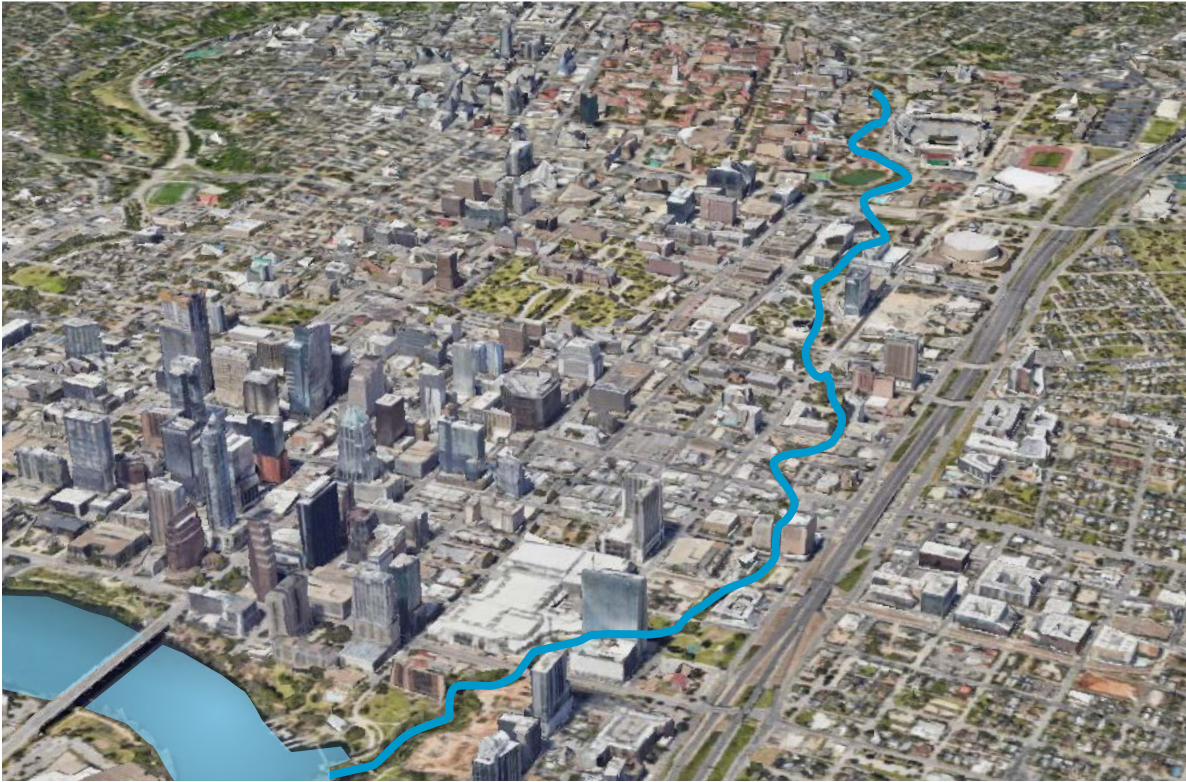
TRAVIS HEIGHTS

Waller Creek: Incrementally Infrastructural



Austin's First City Plan, 1887

Edwin Waller



Austin's Growth, 2020

Waller Creek: Infrastructural Overload



100-year storm floods 28 acres of downtown Austin

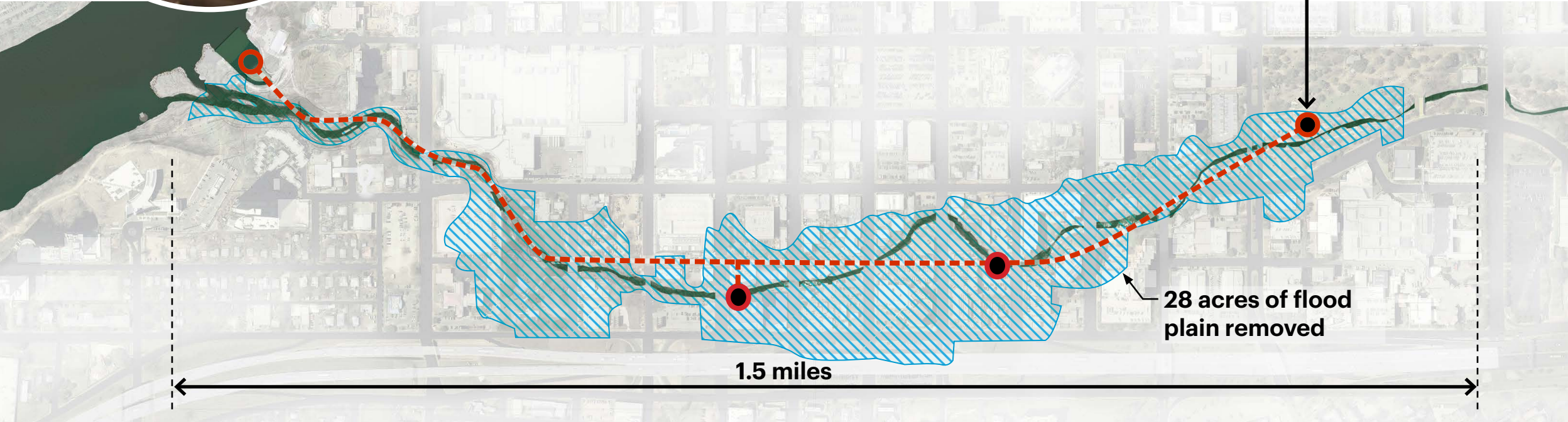
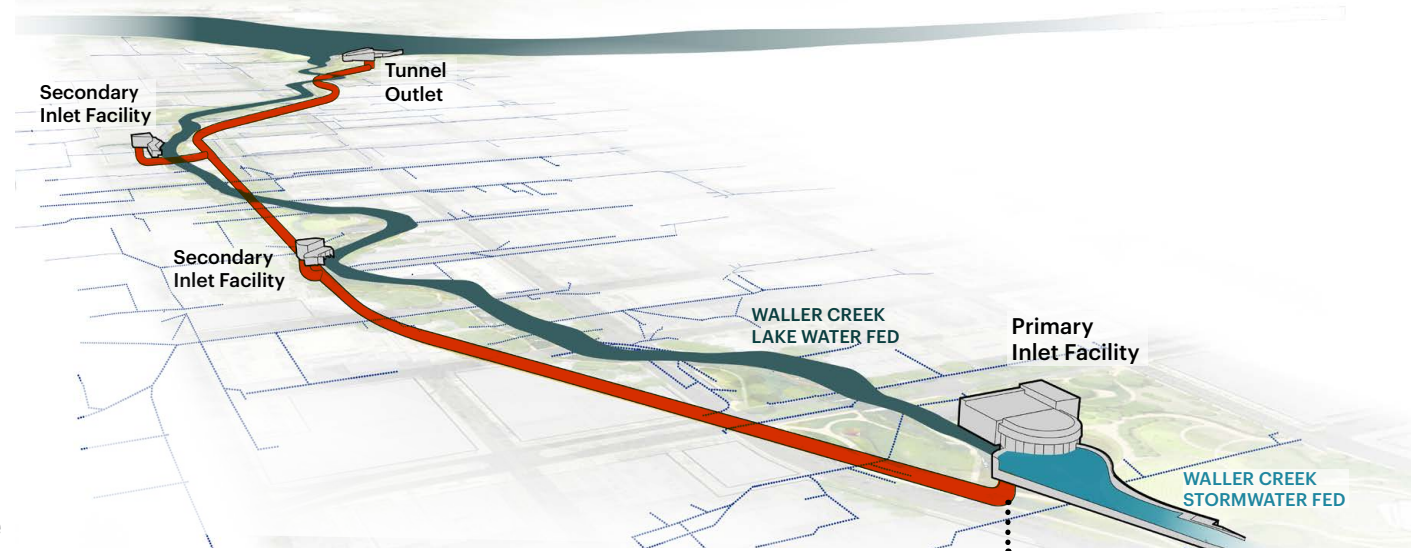


This is no longer a landscape...

City of Austin: Bypass Tunnel Infrastructure (2011-2018)



**26-ft diameter tunnel
~70 ft below the surface**



**28 acres of flood
plain removed**

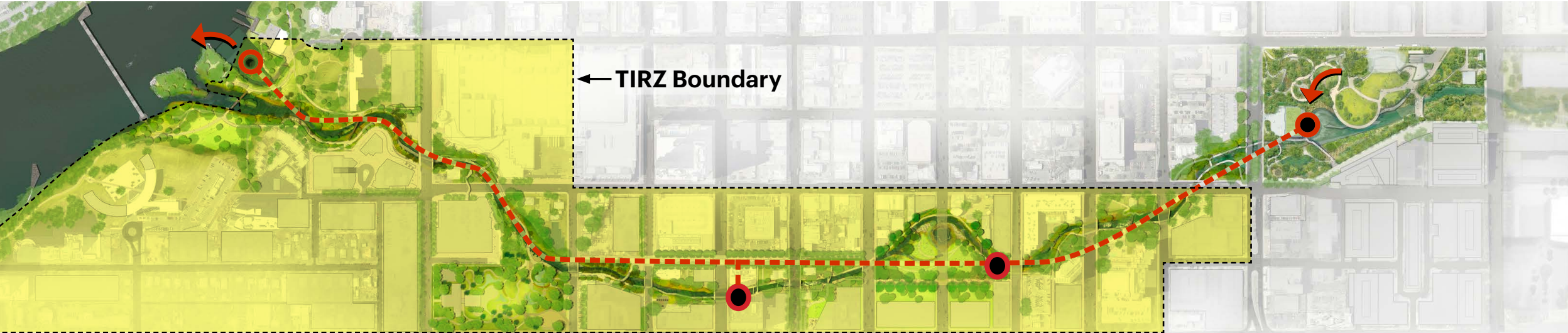
1.5 miles

Tax Increment Financing (TIF)

- Tax Increment Reinvestment Zone (TIRZ) created to fund the bypass tunnel construction.
- City of Austin and Travis County contribute 100% and 50%, respectively, of their tax increment within the TIRZ district (property tax on the increase in value of real estate property).
- The tunnel project will be funded by the issuance of debt that will be repaid over the duration of this TIF.
- Austin's growth has exceeded projections and the debt will be paid off faster (real estate entering the market sooner and with more square footage than expected)



Image credit: M2 Development Partners / SOM



Waterloo Greenway: A Public-Private Partnership

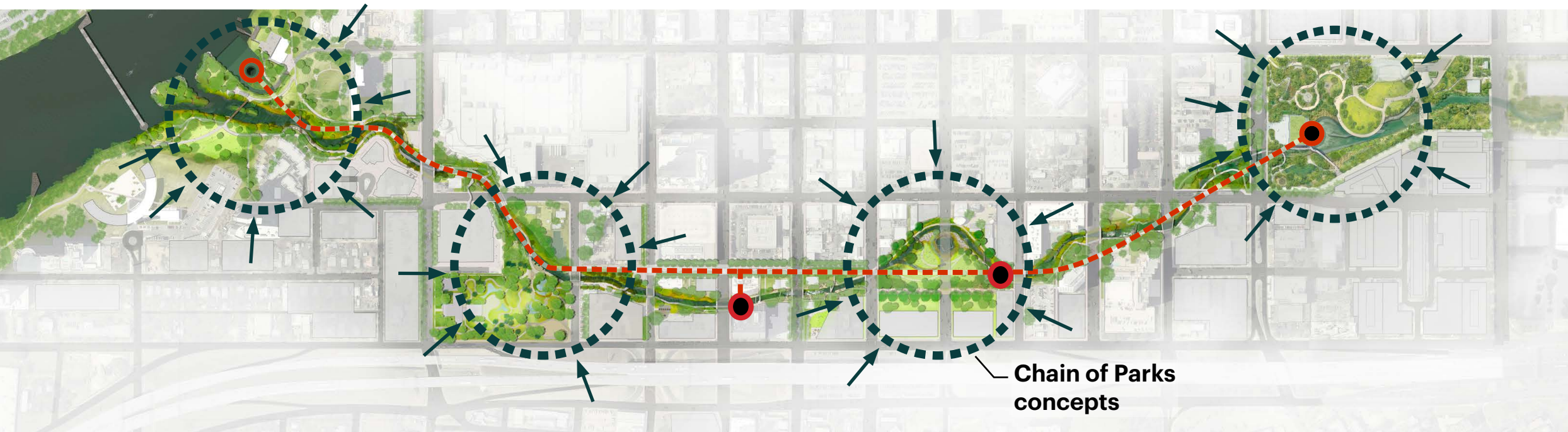
2011 Competition organized around Technical Advisory Group, in addition to jury

2012 Competition awarded to "Waller Creek and Chain of Parks"

2013 Joint Development Agreement finalized and coordination with Tunnel begins

2014 Planning and Design process begins

*** Ensure the creek be a publicly accessible space by managing the narrative**



Phase One: Waterloo Park (2018-2021)

- First and largest of the Chain of Parks (11 acres)
- Unique fusion of stormwater facility, event infrastructure, and park
- Approximately 50% donor participation in funding
- Modeling the new maintenance and operations protocol between WPD, Parks, and the Waterloo Greenway Conservancy



**WATERLOO PARK (10.5 Ac)
completed 2021**



Phase Zero: "Artwork Infrastructure" (2018)

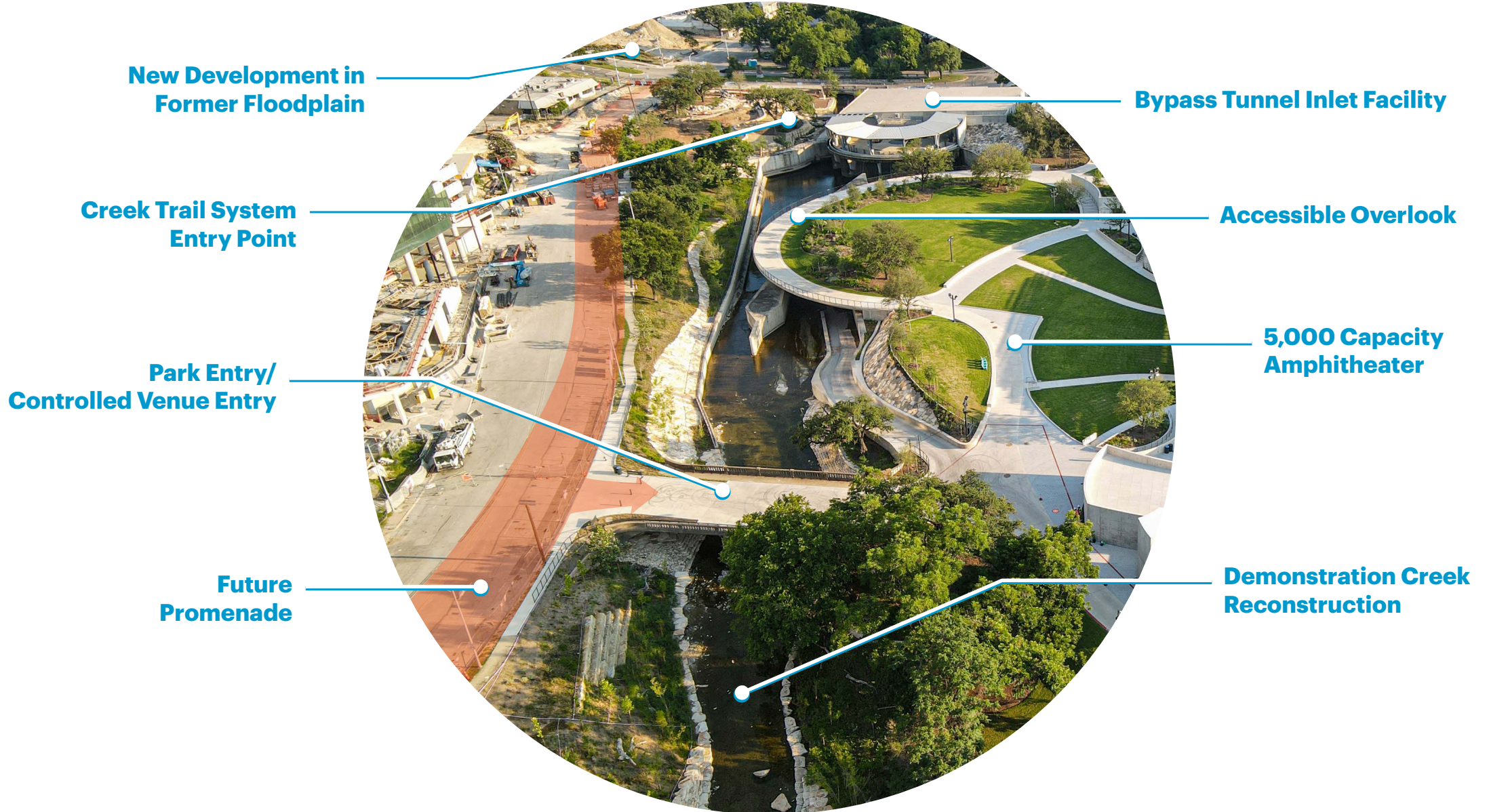


Bypass Tunnel Infrastructure



Intervention to Reclaim Lost Parkland

New Relationships to the Creek



A Park That Floats Over the Creek



An Icon That Floats Over the Park



A Program That Provides Revenue and Community Space



A Landscape That Inspires Environmental Stewardship



Places for Families



Places to Lose Oneself...



...in Landscapes not Typically Found in the City



Phase Two: The Confluence (2023-2025)

- Reconstruction of the creek mouth ecology
- 5 bridges and an elevated walkway to sew together fragmented lakefront neighborhoods
- Mobility link between historic downtown and lakefront
- Integrate major utility upgrades
- In the context of 12 million SF of adjacent downtown development



Immersive Experience of Nature



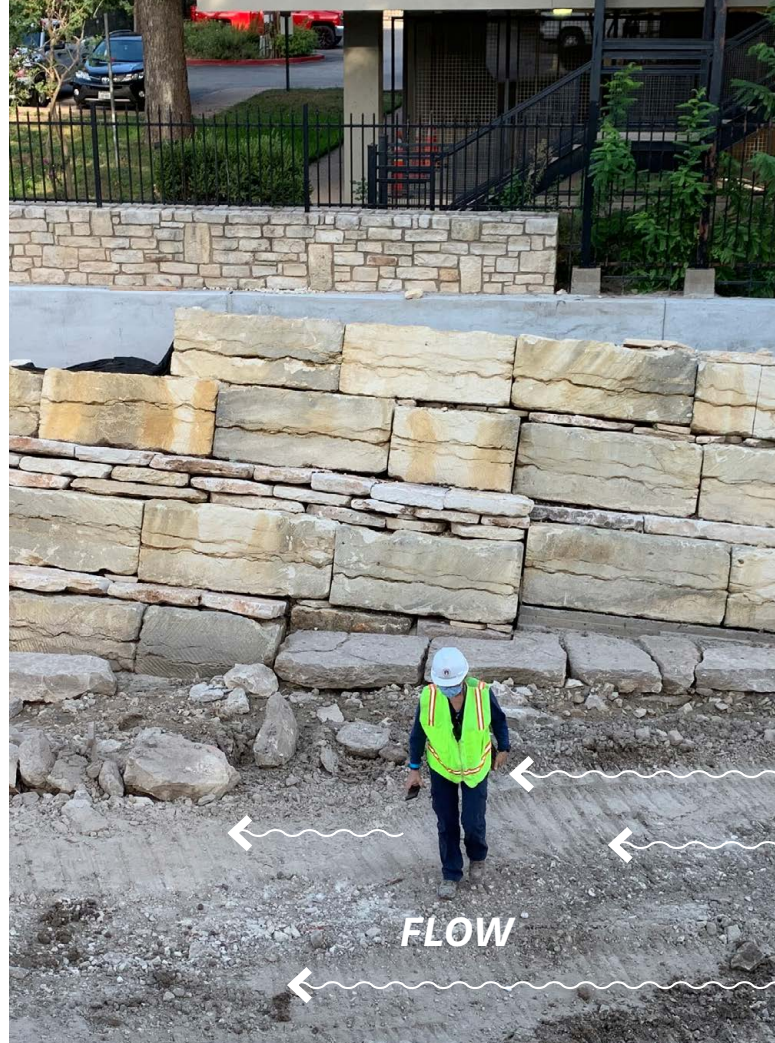
Constructed Geology



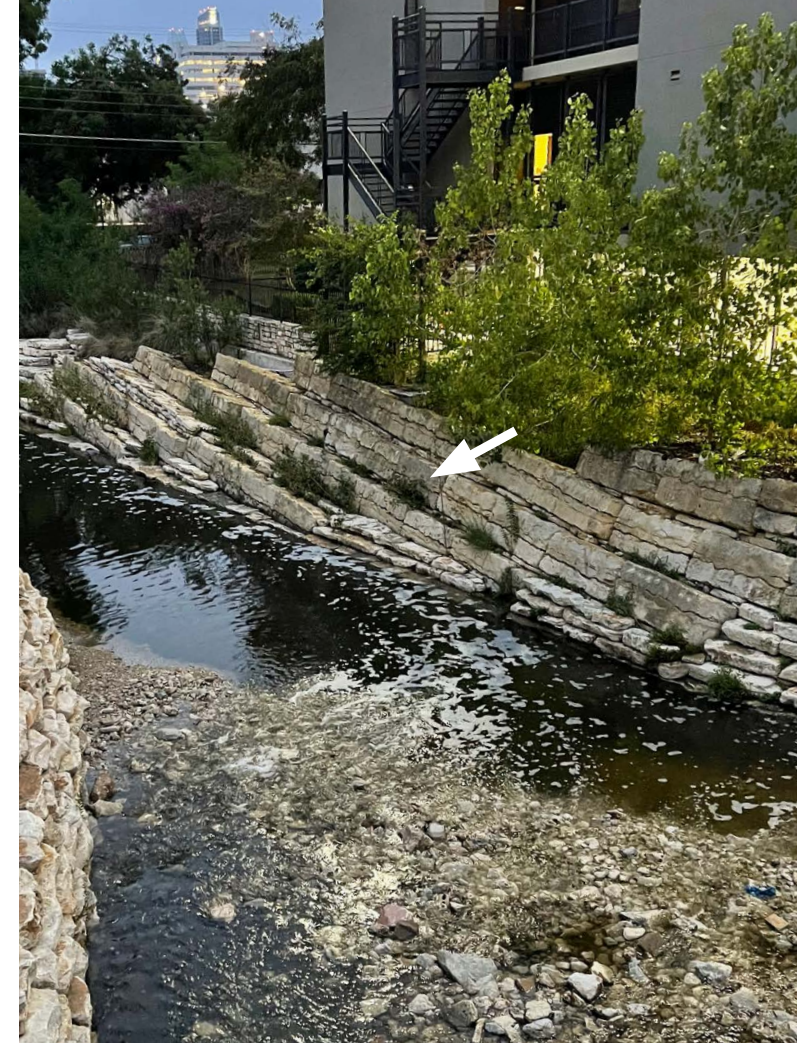
Constructed Geology



Caliche Block
(quarry waste product)



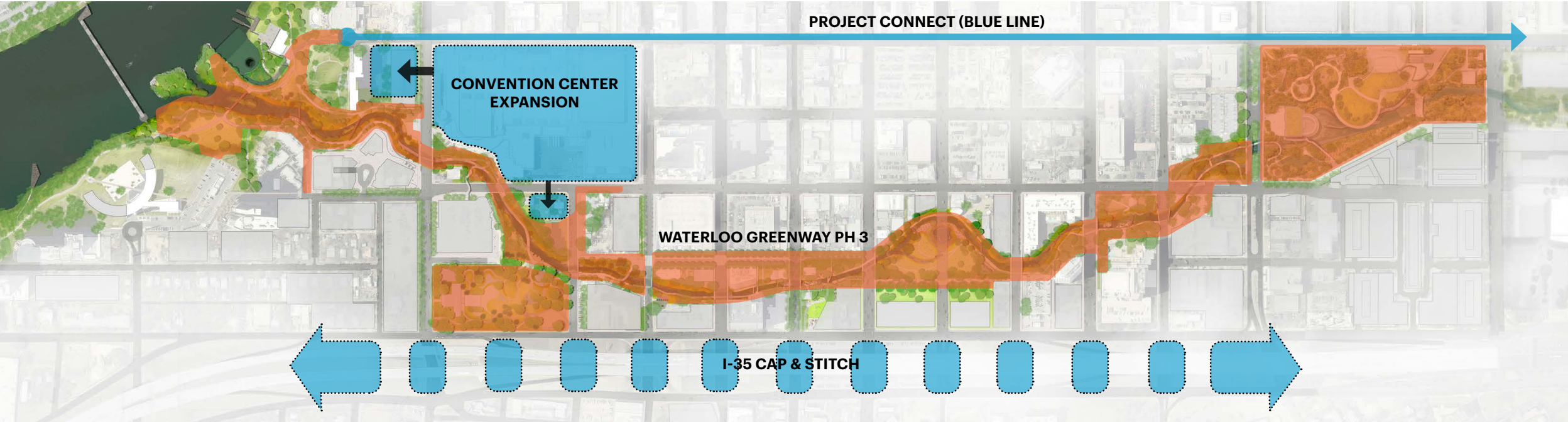
Sediment Ramps
(gravity wall slope retention)



Renaturalizing Banks
(engine for nature succession)

Phase Three: Armature for the Waterloo Greenway District (2023 - ?)

- 66 end-of-pipe water quality improvements from downtown
- Dozens of new connections to adjacent ROWs
- 5 miles of pedestrian trails + bikeways
- 4 parks to anchor sub-districts
- 38 acres of new urban canopy
- Armature for parallel infrastructure projects



Building Confidence in Infrastructure Delivery



Leading with Landscape

**Waterloo
Greenway**



**Project Connect
(Blue Line)**



**Interstate 35
Cap & Stitch**



**Convention Center
Expansion**

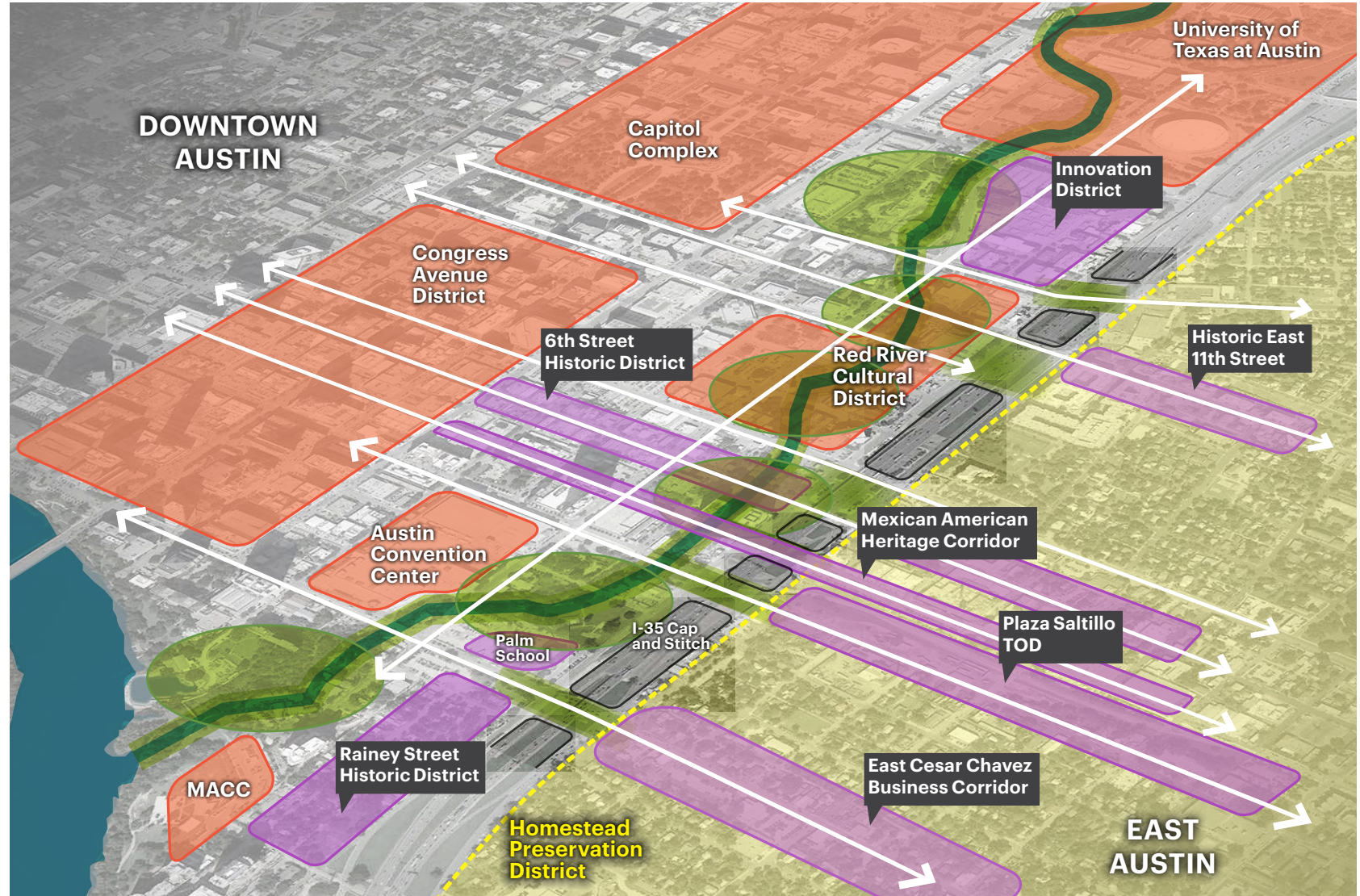
Building Confidence in Green Infrastructure

- The U.S. Army Corps of Engineers is investing \$12 million in federal funding in Phase 2 of the project
- It is the first Environmental Infrastructure project in the State of Texas for the USACE
- \$5.3 million grant from the Urban Forest Tree Fund awarded for the first time to a park project due to the high level of environmental design standards



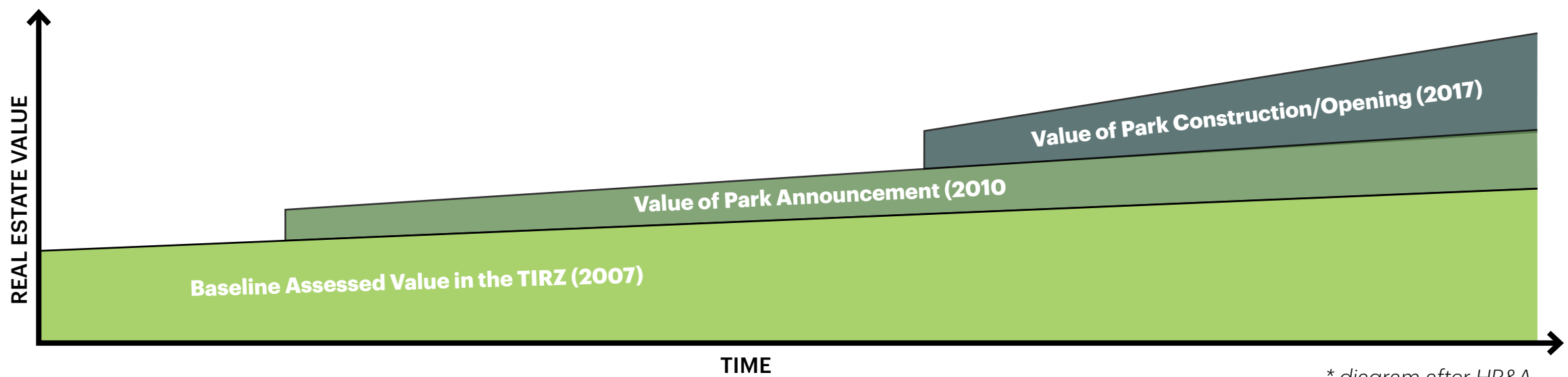
Becoming a "One Environment" Infrastructure

- Connect disparate cultural resources
- Consolidate corridors of activity and animation
- Overcome major barriers between communities



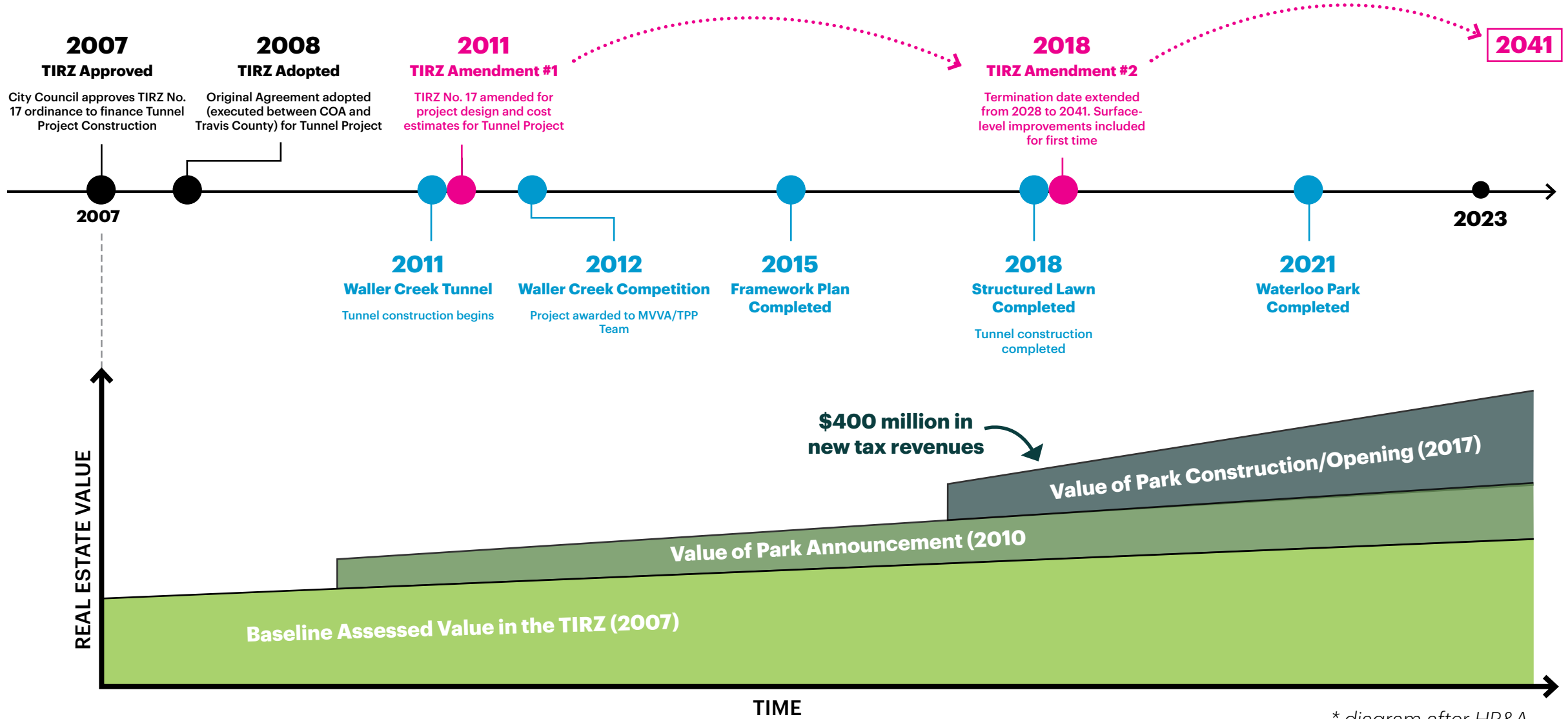
Waterloo Greenway Economic Development

- Potential to catalyze over \$2 billion in real estate value over 20 years
- Generate \$500 million in enhanced value to existing real estate assets
- Catalyze \$1.5 billion in incremental real estate development
- Greenway projected to create \$400 million in new tax revenues (City of Austin & Travis County)



* diagram after HR&A

Waterloo Greenway Economic Development



* diagram after HR&A

Nature in the City

ULI Case Study #1

30 March 2023

Gullivar Shepard, Partner

RLA, ASLA, ULI

MVVA – Brooklyn, NY

Waterloo Greenway





Henning
Larsen

ULI InfraXchange # 1 Nature in the City Jurong Lakeside Garden

Jelle Hendrik Therry
Design Director Singapore

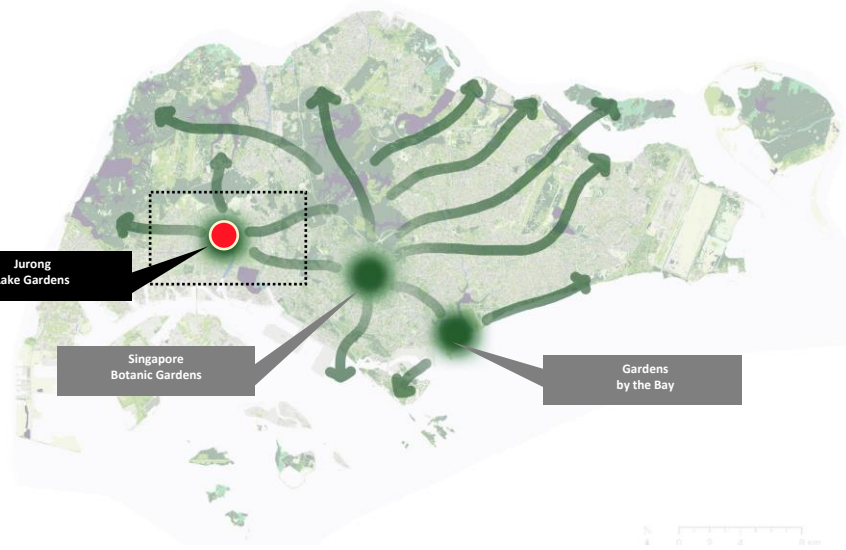
March 30th, 2023

Welcome to the Singapore





Jurong Lakeside Garden



Being one of the three national gardens in Singapore, Jurong Lake Gardens is envisioned to be the catalyst of regeneration of the entire Jurong District



Jurong Lake District



Jurong Lakeside

Taman Jurong before industrialization

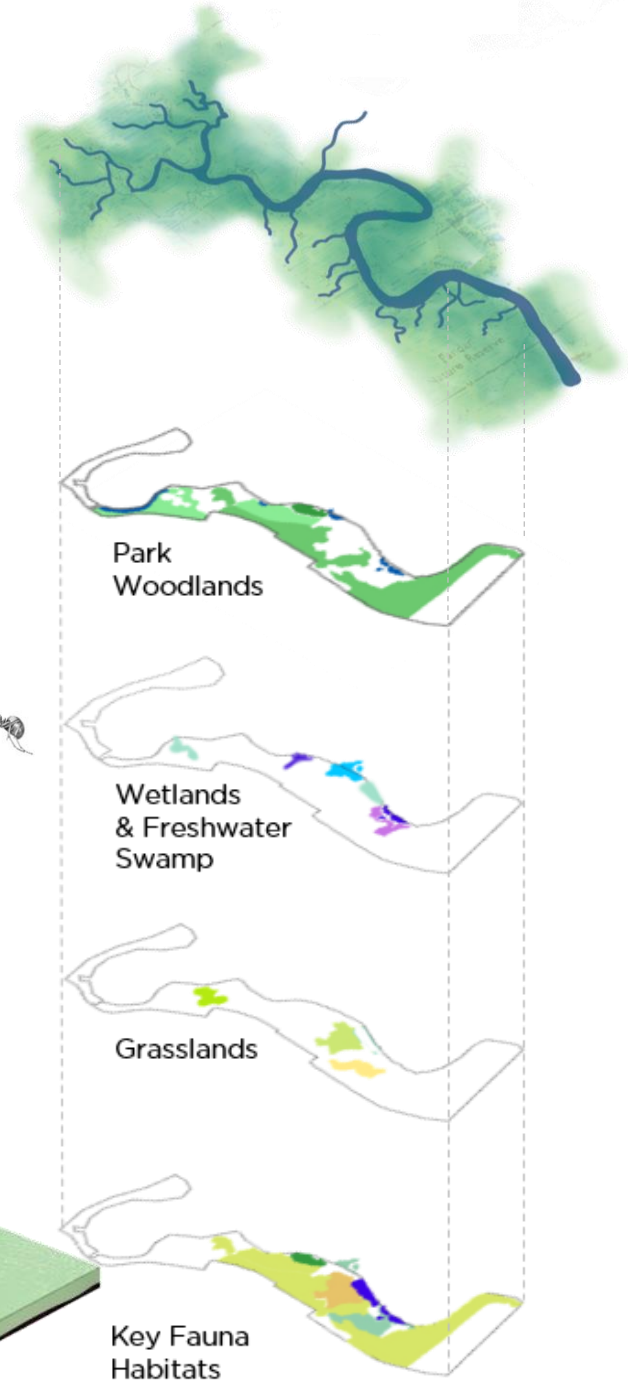
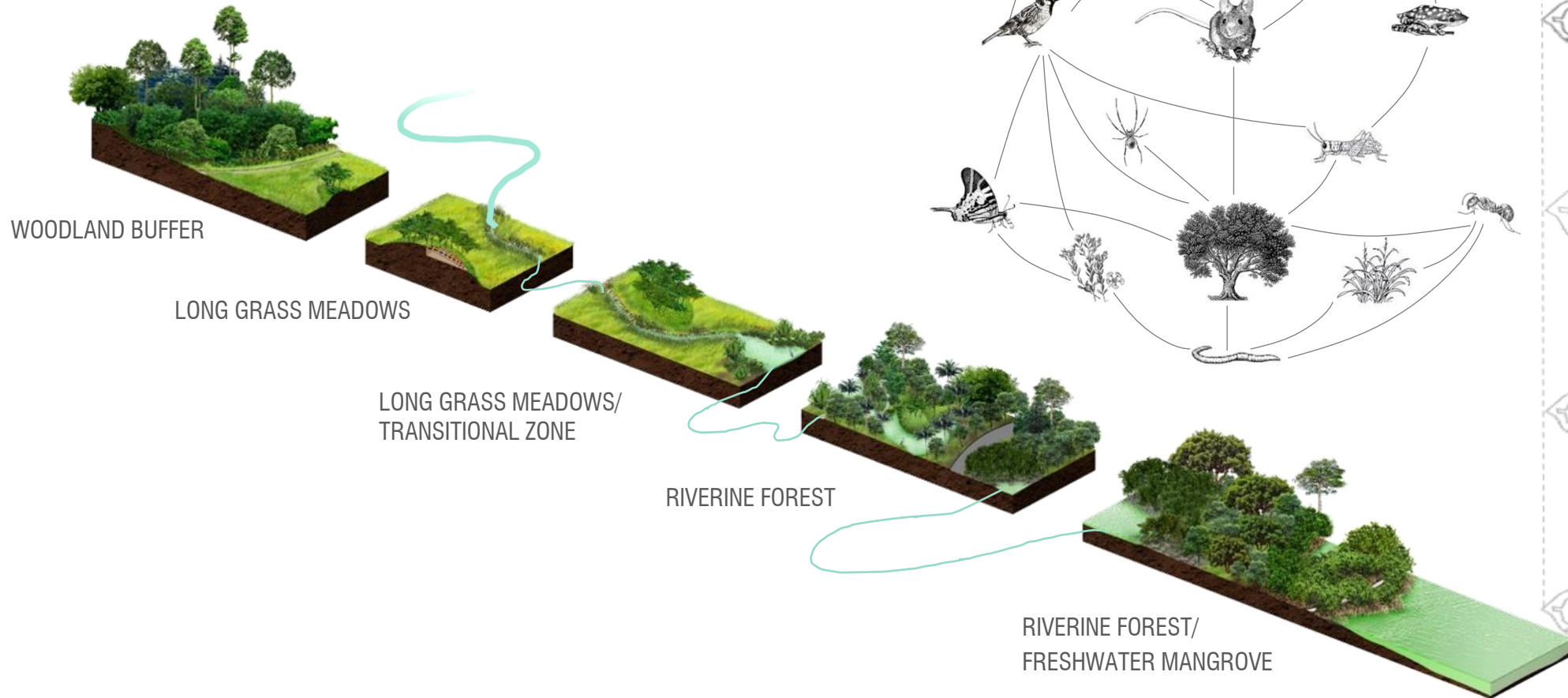


Jurong Lakeside Garden

Bring back the freshwater swamp

*Rich in biodiversity, the park will have plenty of **natural spaces and trails** to allow the public to get closer to nature.*

*Jurong Lake Park Will Be Part Of Island-Wide Green Corridor,
-Channel News Asia 28 April 12*



Creating Habitats for Bio-Diversity



Creating Habitats for Bio-Diversity

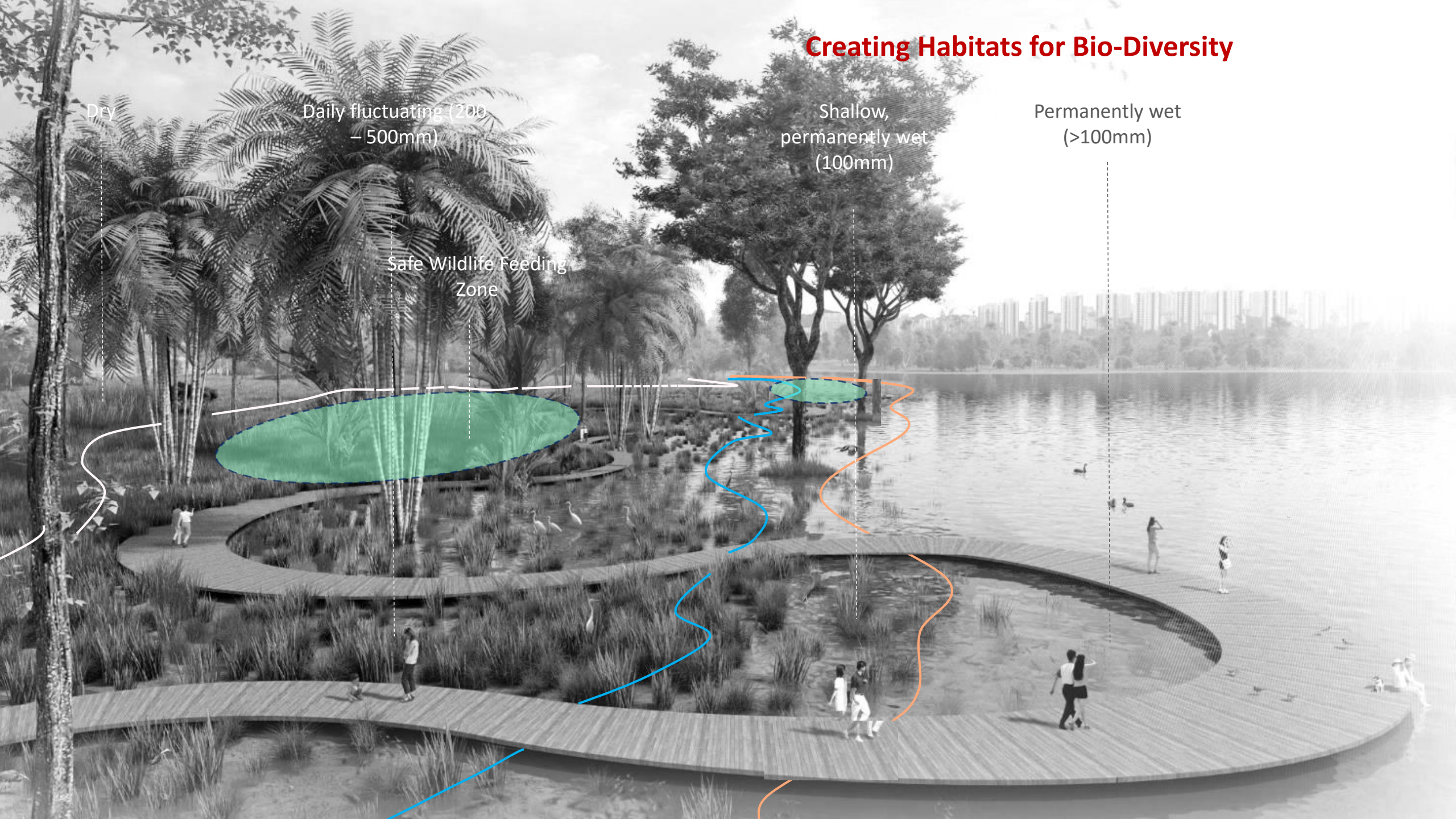
Dry

Daily fluctuating (200 – 500mm)

Shallow, permanently wet (100mm)

Permanently wet (>100mm)

Safe Wildlife Feeding Zone



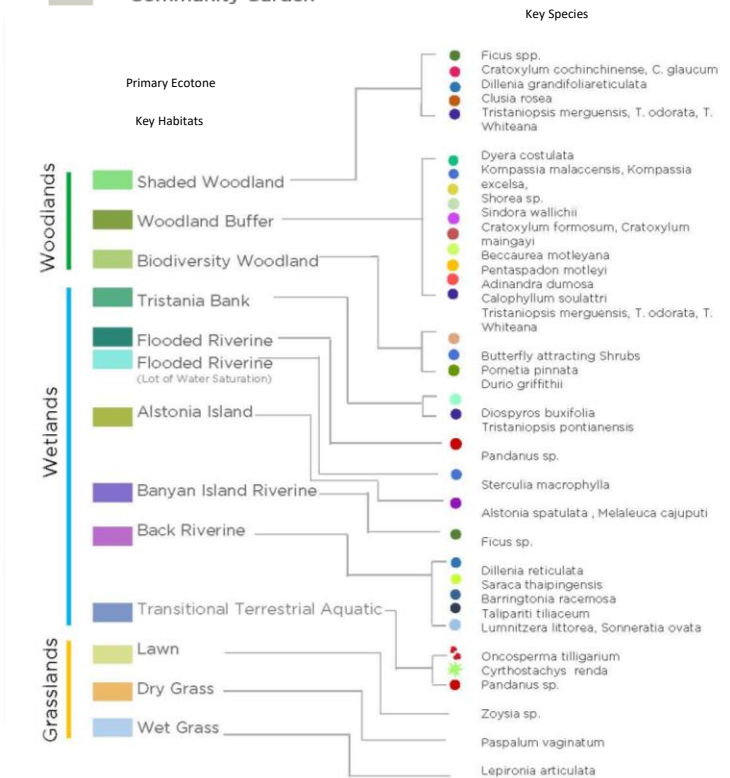
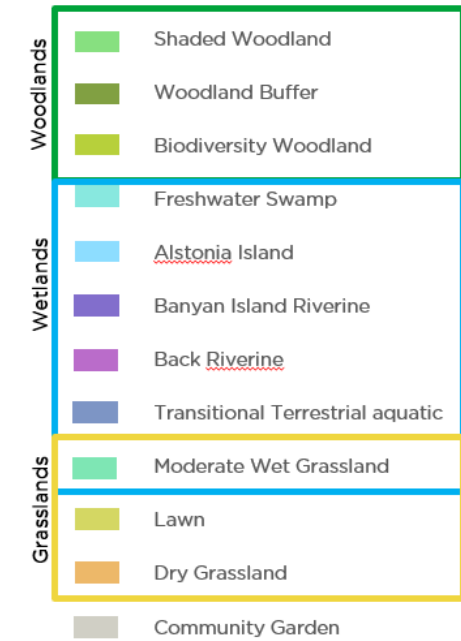




Jurong Lakeside Garden

Transformation of the existing landscape

into new narratives and habitats



Clusia Cove

Different experience

3ha

Singapore's first closed-loop water playground that utilizes ABC features as part of the recycle process

Uses water from Jurong Lake



Clusia Cove

Cleansing biotope



Clusia Cove

Ripple pond





Forest Ramble

Different experience

2.3ha

Largest nature playgarden in the heartlands

13 different play areas, inclusive play design



Forest Ramble

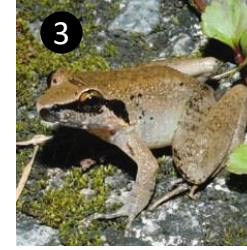
Different experience



1
Drift like a Butterfly,
Troides helena



2
Fly like a Grey Heron
Ardea cinerea



3
Hop like a Masked Swamp Frog
Limnonectes oparamacrodon



4
Burrow like a
Swamp Forest Crab,
Parathelphusa reticulata



5
Dig like a
Small-clawed Otter
Aonyx cinerea



6
Slither like a Red-tailed
Racer, *Gonyosoma
oxycephalum*



7
Jump like a
Slender Squirrel,
Sundasciurus tenuis



8
Build like a
Giant Forest Ant,

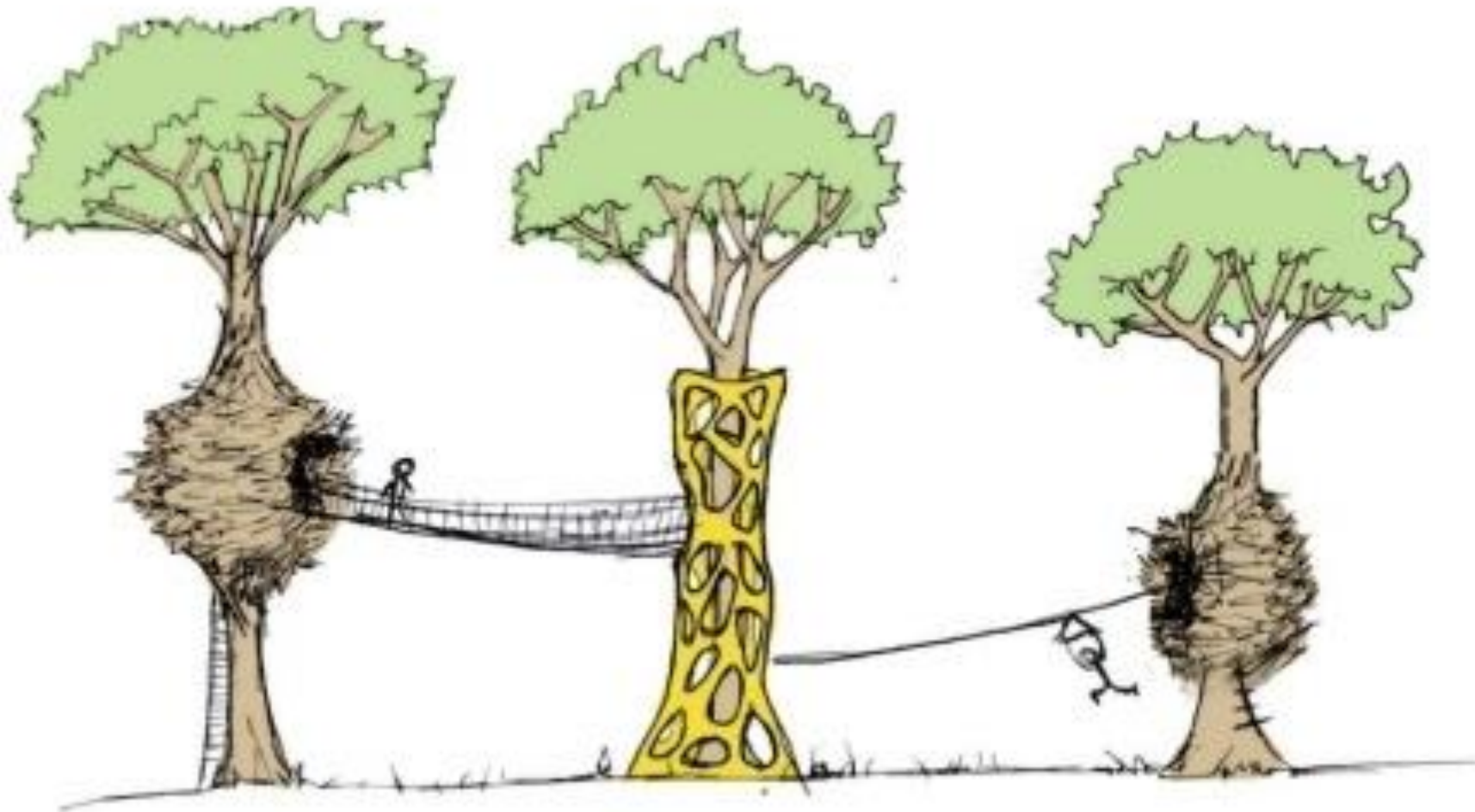


9
Swing like a
Banded Leaf-monkey,
Presbytis femoralis

Discover the wildlife
as you play!

Forest Ramble Natural Play Area

Fly like a Grey Heron *Ardea cinerea*















Alstonia Island

Different experience

Landscape restoration of the freshwater swamp



Alstonia Island



Neram Stream

Different experience

Transforming engineered objects into a natural landscape with a rich diversity of habitats











Neram Stream

Different experience

**Transforming the water's edge into a rich biodiverse landscape accessible to the community.
Creating an intertidal boardwalk**











Grassland

Different experience

3.5ha

Intertidal transitional conditions, with bird hides, mounds, lone tree features





Reference Site (Spontaneous Vegetation)









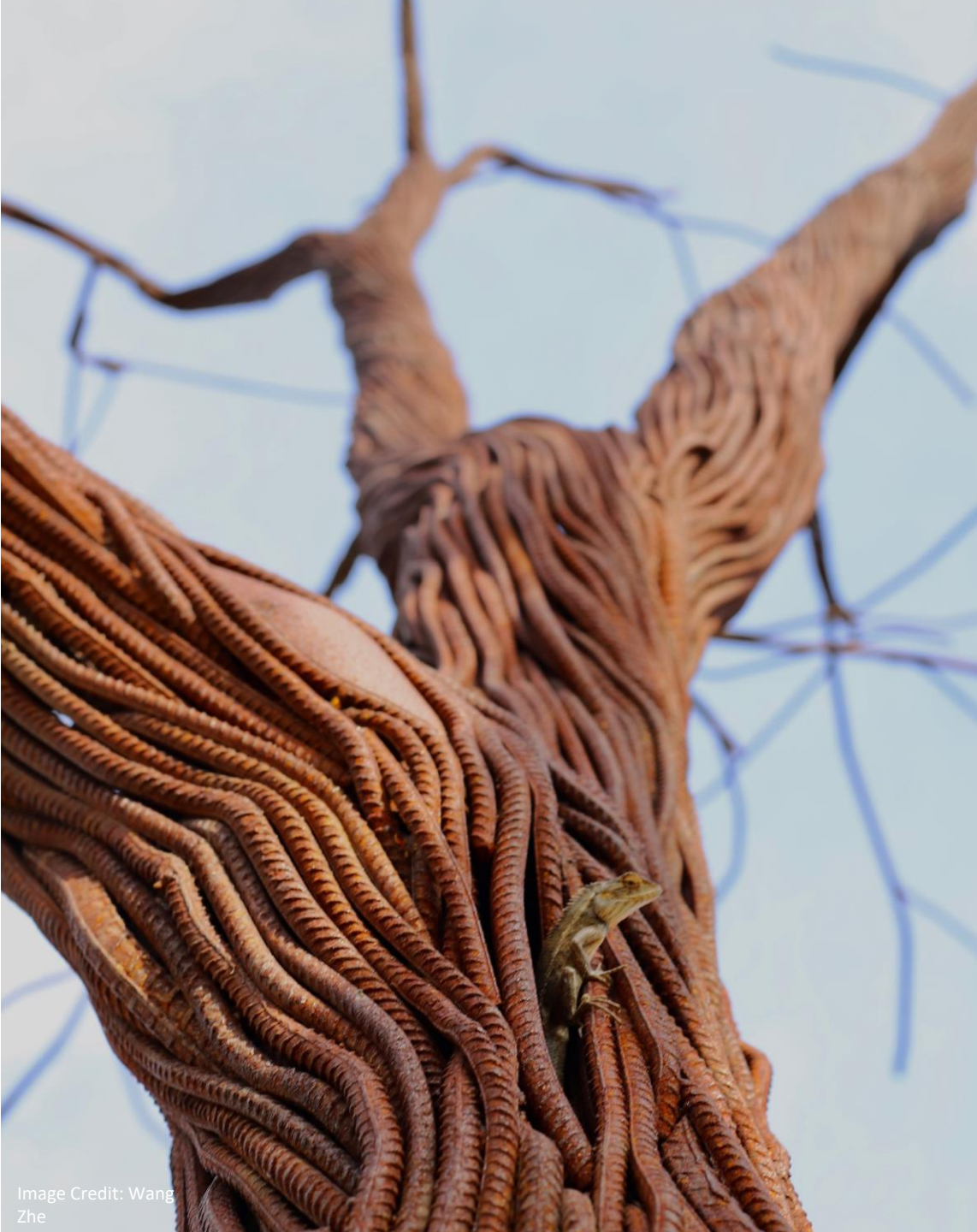


Image Credit: Wang Zhe





In a corner of

realising it's a

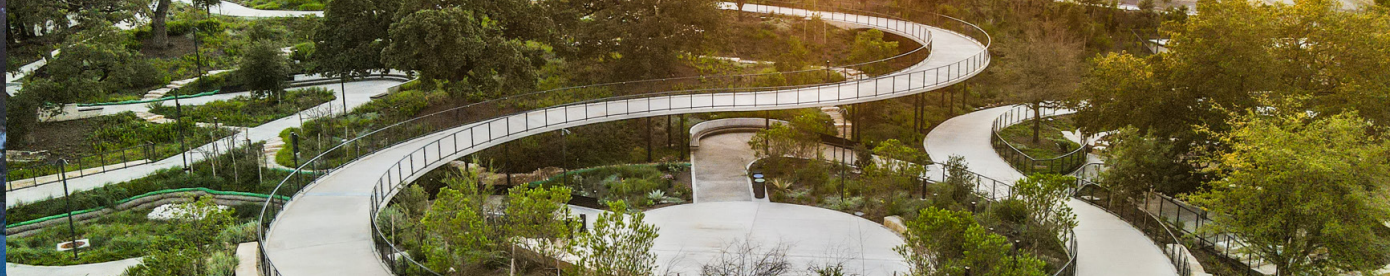
The resia

The Tree is a

A natural he

rise

#singaporewildlife #wildlifephotos
#juronglakepark #wildlifephotography
#wildlifebirds #naturelovers
#natureshots #jurong #wildlife #wildlifeofinstagram #naturewalk
#landscap #trees #naturelover #plant #morning
#lake #sky #greenery #park #sunset #reflection #beautiful
#sgbiodiversity #chinese garden
#naturephotography #garden #sg #landscapephotography #singaporeinsiders
#birds nature #birdslife #nature #birds #nparksbuzz #juronglake
#birdstagram #juronglakegardens #tamanjurong #travelphotography
#singaporebirds #birdwatching #birdphotos #nparks #photographylovers #thisissingapore #singaporetimes
#visitsingapore #travelgram
#birdphoto #bird #birdphotography #singapore #igsg #photoshoot #portraitphotography
#birdsofsingapore #birds_of_instagram #JurongLakeGardens #sgig #whatissingapore #Singapore
#photographer
#birdfreaks #bird_lovers #birdsofinstagram #lakeside #photography #exploresingapore
#photooftheday #lakesidegarden #photo #festivaloflights
#birdplanet #sgbirds #ilovebirds #bird_lovers_daily #photographs #instadaily
#birding #birdlovers #juronglakegarden #shotoniphone #instasg
#nuts_about_birds #birdslovers #bird_lover #instagood #photoart
#birds_captures #motivation



One Environment Infrastructure: Combine Public Space with Flood-proofing, Biophilia, and Utility Upgrades in One Project

Leadership Framework

Lead – how to leverage co-leadership to lead forward motion

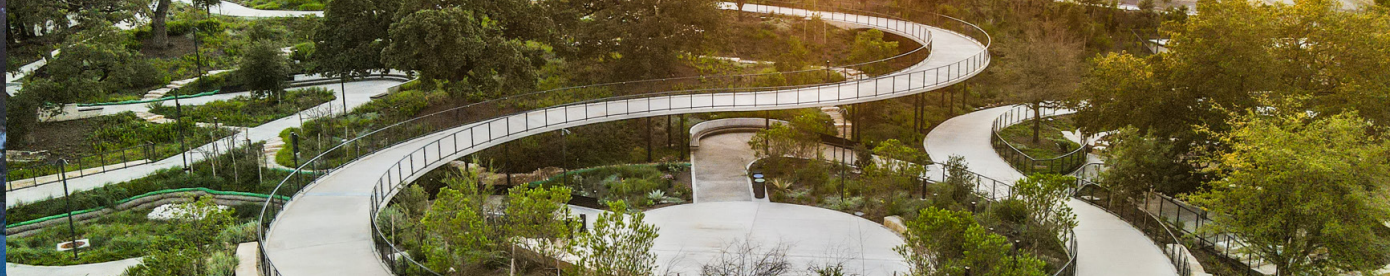
Market – how to leverage shared data to assess needs and stay current with policies/trends

Engage – how to create community champions through engagement

Entitlement – how to co-create community-scale performance metrics

Design – how to develop interdisciplinary design frameworks to bring the best in industries

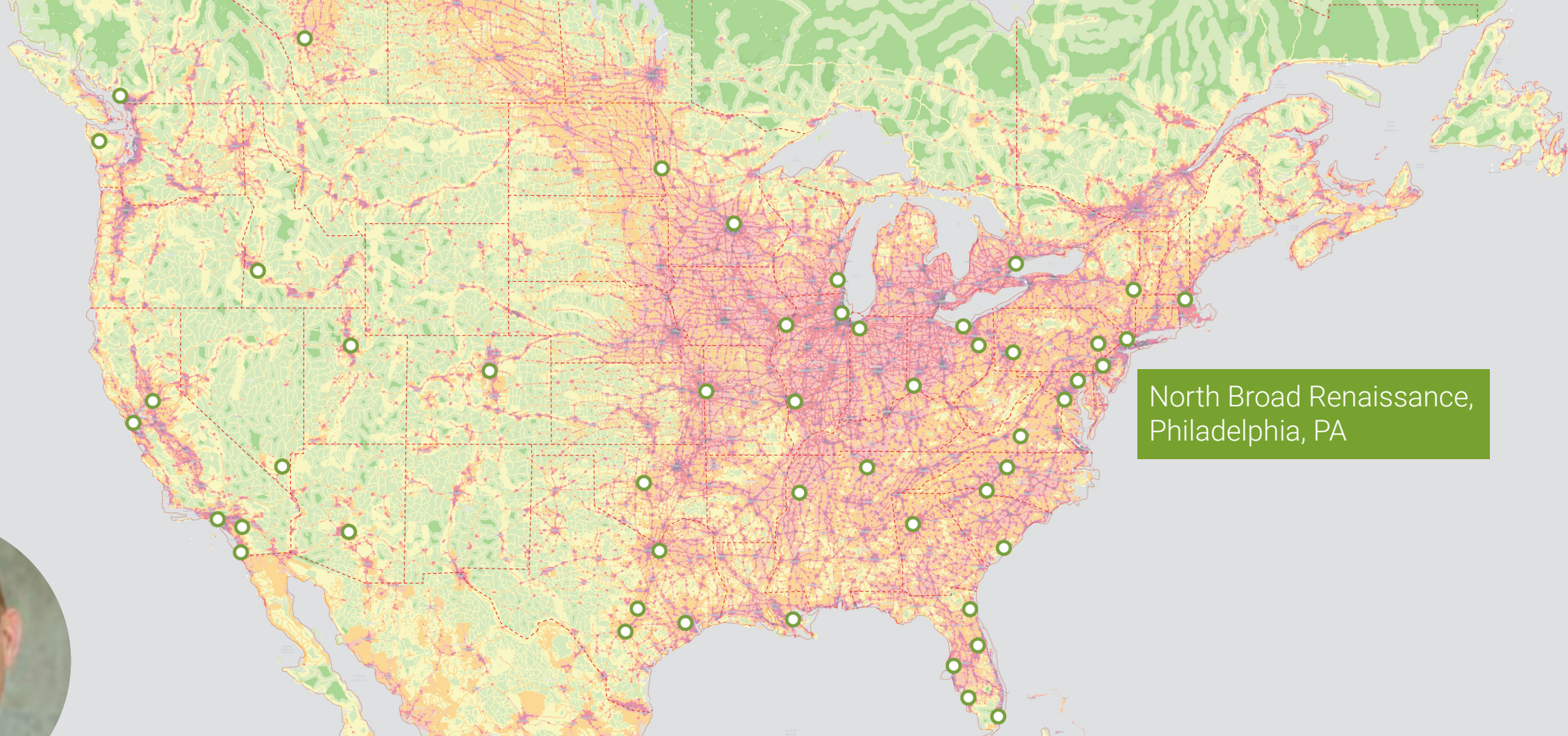
Finance – how to structure financing partnerships to accelerate delivery, reduce uncertainty and costs



One Environment Infrastructure: Combine Public Space with Flood-proofing, Biophilia, and Utility Upgrades in One Project

Key Leadership Takeaways

1. **Leading by landscape** to build confidence and invite other infrastructure
2. **Thinking across boundaries** and design with craftsmanship from the outset
3. **Sequence to succeed** and re-integrate nature through open space and infrastructure
4. **Re-engineer infrastructure** to create urban value and connect communities
5. **Reconstruct nature** to increase natural resources and create urban memories
6. **No value capture without value creation**; center the plan by a 'green first' approach
7. **Accelerate culture shift** by Gen Alpha, inspire the love of nature by play



Kevin Moran
Executive Director
ULI Philadelphia

speaker

Local InfraXchange: Equitable Maintenance of 'Nature in the City'



Philadelphia

North Broad Renaissance

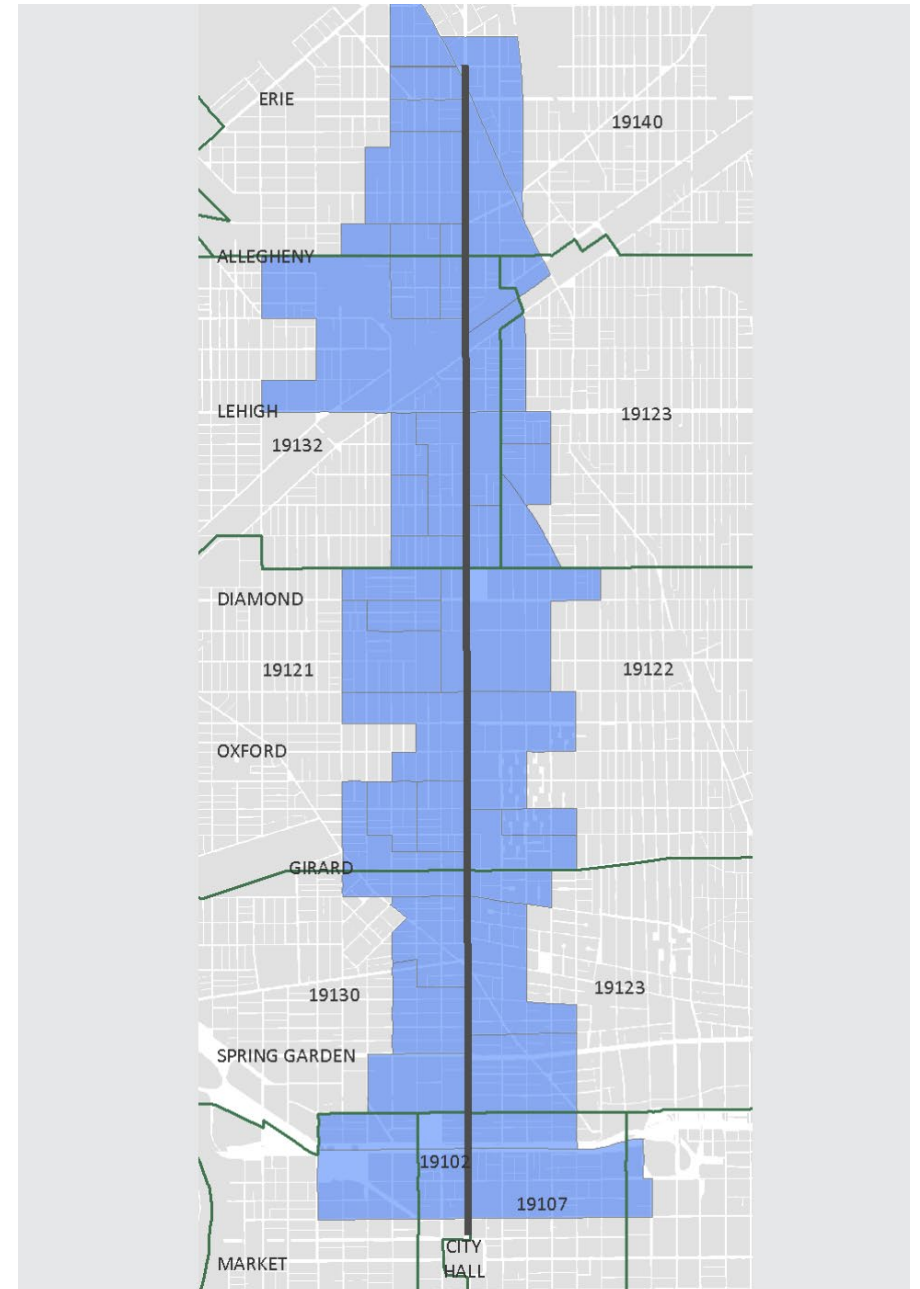
TECHNICAL ASSISTANCE PANEL

JUNE 23, 2022



Overview

- **The Issue** – What vehicles exist for providing ongoing support for infrastructure maintenance in communities with limited or developing resources?
 - Broad challenge that faces many cities nationwide
- **Ideal** – Communities have adequate financial and institutional support
- **Reality** – When communities lack financial and institutional support they are faced with challenge of improving and maintaining infrastructure with severely limited resources





1. Engage Local Businesses at the Triangle
2. Enhance Marketing and Communications Opportunities
3. Monetize Assets
4. **Develop Policy Framework for Resource & Financial Independence**
5. Evaluate, Refine and Realign NBR's Mission and Strategy



Develop Policy Framework for Resource & Financial Independence

- **Create a Business Improvement District**
- “Adopt a Highway”
- Community Benefit Agreements
- Individual & Corporate Sponsorship
- Grant Agreements
- **Earned Revenue Stream**
- **Real Estate and Land Leases**
- **Stormwater Management and Greening**



THANK YOU

philadelphia.uli.org



Kalasadama, Helsinki

Canoe Landing, Toronto ON

Thank you!

Next ULI InfraXchange: Aging Up in the City

Thursday, April 20, 2023 12-1:30pm EST

uli.org/infrastructure

Paul Stevens
ZAS Architect
Toronto, Canada
speaker

William Anderson
University of California,
San Diego, USA
moderator

Marjo Kyllönen
Development Service Director
City of Helsinki, Finland
speaker