

# LIONS GATE

## SECONDARY Wastewater Treatment Plant

**Utilities Committee  
Special Workshop Meeting  
Indicative Design**

**September 24, 2013  
1:30 – 5:30 pm**

# Key Project Objectives

Secondary Wastewater  
Treatment

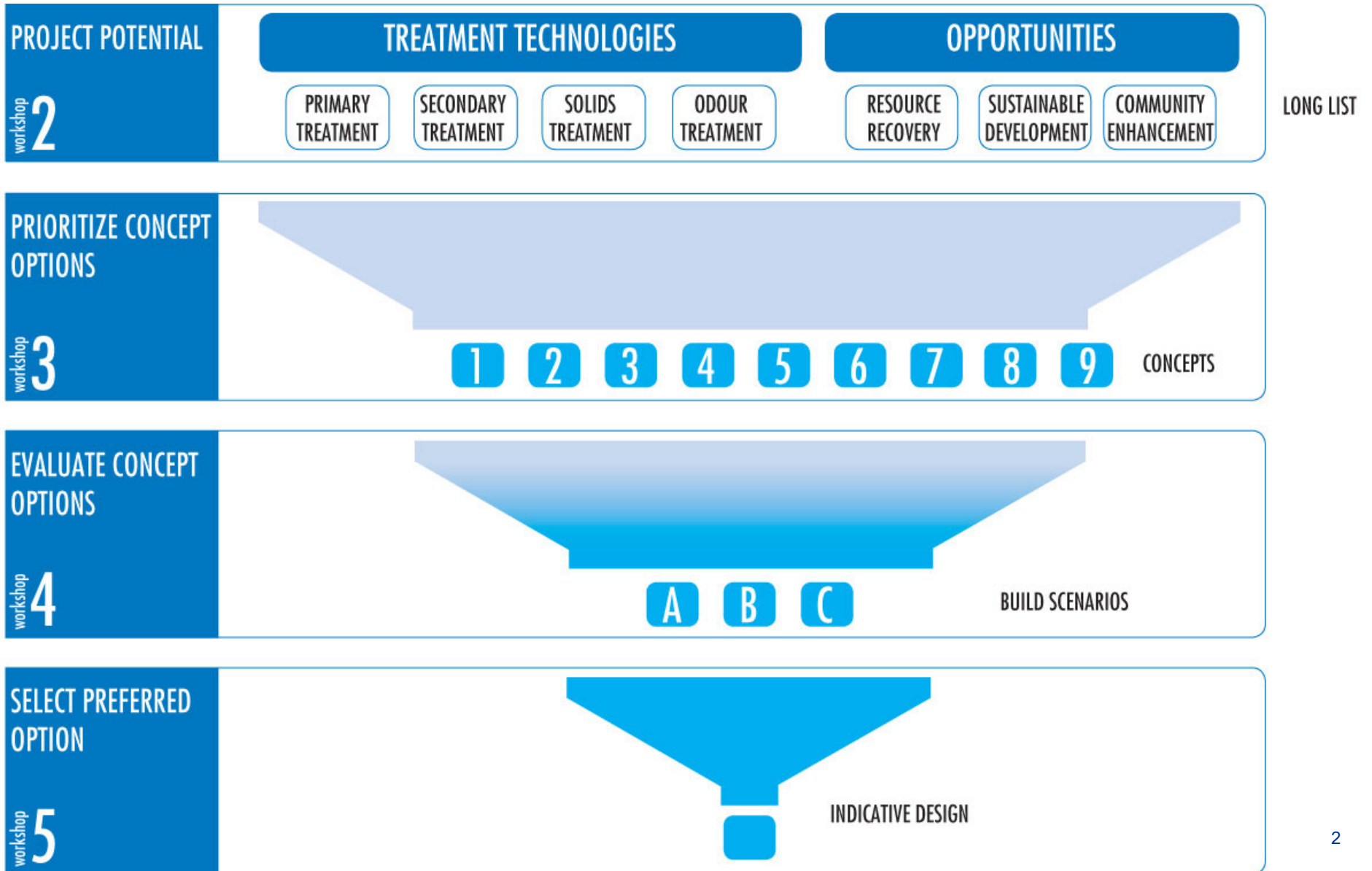
Sustainability

Environmental, Social, Economic

Integrated Resource Recovery

Community Integration

# Approach



# RESOURCE BUILD SCENARIO A



**The Build Scenario**  
**TRANSFORMS RESOURCES INTO VALUABLE CIRCULARITIES**  
 An integrated approach to resource management and circular economies is achieved by treating the potential of an area to be transformed. Generation of urban resources leads through GIS and urban development.

**Secondary Wastewater Treatment**  
 Treats wastewater from residential, commercial, and industrial sources. The treated effluent is used as an alternative resource for energy, water, and other uses.

**Sustainability Targets**  
 Reduce emissions of greenhouse gases by providing a source of renewable energy. Maximize resource efficiency by recovering the energy and materials from waste.

**Integrated Resource Recovery**  
 Recover and reuse resources from waste. Recover and reuse resources from waste. Recover and reuse resources from waste.

**Community Integration**  
 Create an urban environment that is integrated with the surrounding community. Create an urban environment that is integrated with the surrounding community.

## RESOURCE BUILD SCENARIO A

Resources from Waste



**Regional Context**  
 Shows the location of the site within the regional context.

**Neighborhood Context**  
 Shows the location of the site within the neighborhood context.

**Community Context**  
 Shows the location of the site within the community context.

**Public / Private Program**  
 Shows the location of the site within the public/private program context.

## BUILD SCENARIO A RESOURCE

Resources from Waste



**Regional Context**  
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**Public / Private Program**  
 Shows the location of the site within the public/private program context.

**CASE STUDIES**

**East Bay Municipal Utility District (EMUD)**  
 EMUD is a public utility district in Oakland, California, that provides water, wastewater, and solid waste services to the city of Oakland and surrounding areas.

**Reverend Power (Reverend)**  
 Reverend Power is a community-owned energy company in Oakland, California, that provides renewable energy services to the community.

**Rock Creek Energy Center (Rock Creek)**  
 Rock Creek Energy Center is a community-owned energy facility in Oakland, California, that provides renewable energy services to the community.

# COMMUNITY BUILD SCENARIO B



**The Build Scenario**  
**ENGAGES THE COMMUNITY IN AN ACTIVE PARTNERSHIP**  
 An active partnership between the community and the developer is achieved by treating the potential of an area to be transformed. A unique partnership is achieved through social construction and building community relationships.

**Secondary Wastewater Treatment**  
 Treats wastewater from residential, commercial, and industrial sources. The treated effluent is used as an alternative resource for energy, water, and other uses.

**Sustainability Targets**  
 Reduce emissions of greenhouse gases by providing a source of renewable energy. Maximize resource efficiency by recovering the energy and materials from waste.

**Integrated Resource Recovery**  
 Recover and reuse resources from waste. Recover and reuse resources from waste. Recover and reuse resources from waste.

**Community Integration**  
 Create an urban environment that is integrated with the surrounding community. Create an urban environment that is integrated with the surrounding community.

## COMMUNITY BUILD SCENARIO B

Strengthening Partnerships



**Regional Context**  
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**Community Context**  
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**Public / Private Program**  
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## BUILD SCENARIO B COMMUNITY

Strengthening Partnerships



**Regional Context**  
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**Neighborhood Context**  
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**Community Context**  
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**Public / Private Program**  
 Shows the location of the site within the public/private program context.

**CASE STUDIES**

**Bay Area Rapid Transit (BART)**  
 BART is a regional public transit agency in the San Francisco Bay Area, that provides rail services to the region.

**UPA Park (UPA Park)**  
 UPA Park is a community-owned park in Oakland, California, that provides recreational services to the community.

**UPLC (UPLC)**  
 UPLC is a community-owned utility company in Oakland, California, that provides utility services to the community.

# NATURAL BUILD SCENARIO C



**The Build Scenario**  
**RESTORES AN ECOLOGICALLY DAMAGED SITE**  
 An ecologically damaged site is restored by treating the potential of an area to be transformed. Through ecological restoration, through ecological restoration, through ecological restoration.

**Secondary Wastewater Treatment**  
 Treats wastewater from residential, commercial, and industrial sources. The treated effluent is used as an alternative resource for energy, water, and other uses.

**Sustainability Targets**  
 Reduce emissions of greenhouse gases by providing a source of renewable energy. Maximize resource efficiency by recovering the energy and materials from waste.

**Integrated Resource Recovery**  
 Recover and reuse resources from waste. Recover and reuse resources from waste. Recover and reuse resources from waste.

**Community Integration**  
 Create an urban environment that is integrated with the surrounding community. Create an urban environment that is integrated with the surrounding community.

## NATURAL BUILD SCENARIO C

Brownfield to Greenfield



**Regional Context**  
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**Community Context**  
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**Public / Private Program**  
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## BUILD SCENARIO C NATURAL

Brownfield to Greenfield



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**Neighborhood Context**  
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**Community Context**  
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**Public / Private Program**  
 Shows the location of the site within the public/private program context.

**CASE STUDIES**

**Water Bay (Water Bay)**  
 Water Bay is a community-owned park in Oakland, California, that provides recreational services to the community.

**Bay Area Rapid Transit (BART)**  
 BART is a regional public transit agency in the San Francisco Bay Area, that provides rail services to the region.

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 BART is a regional public transit agency in the San Francisco Bay Area, that provides rail services to the region.

# Review - Liquid Treatment Comparison

## Scenario B meets the secondary treatment objective, with:

- Lowest electrical consumption
- Lowest greenhouse gas emissions
- Minimal chemical addition
- Lowest life cycle cost
- Flexibility for future adaptation

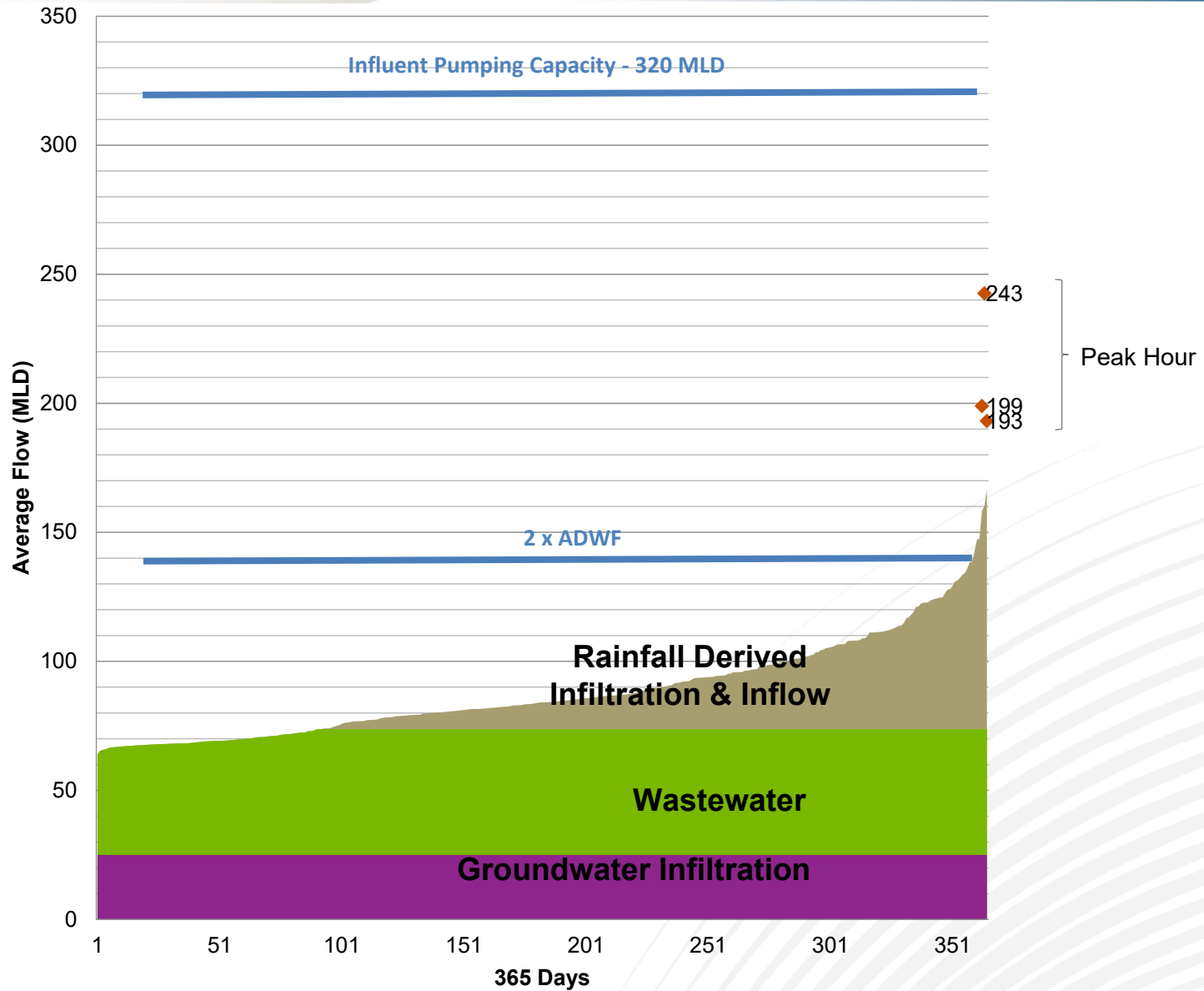
# Review - Solids Management Comparison

- Co-management of food waste/yard waste and wastewater solids not advantageous
- On site digestion of wastewater solids
  - Lowest costs
  - Best energy use potential
  - Lowest greenhouse gases

# Indicative Design

- Secondary Treatment for 2 x Average Dry Weather Flow
- 320 MLD wet weather capacity
- Biogas production and energy recovery
- Low grade effluent heat recovery
- Reclaimed water recovery
- Phosphorus recovery – future potential

# Lions Gate Wet Weather Flow





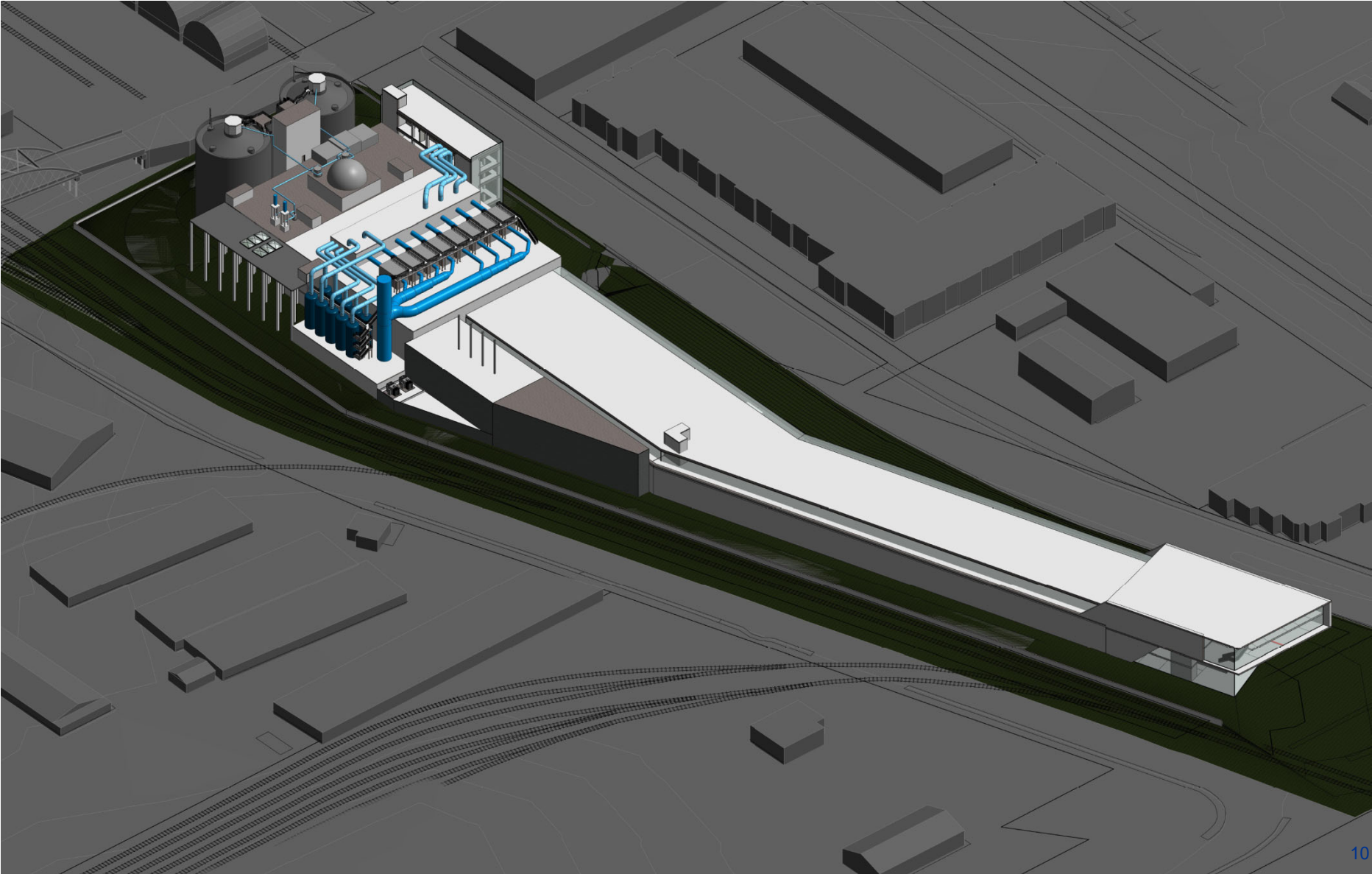
# Lions Gate Capacity Staging



# Plant Layout – Indicative Design



# Plant Layout



# District Energy



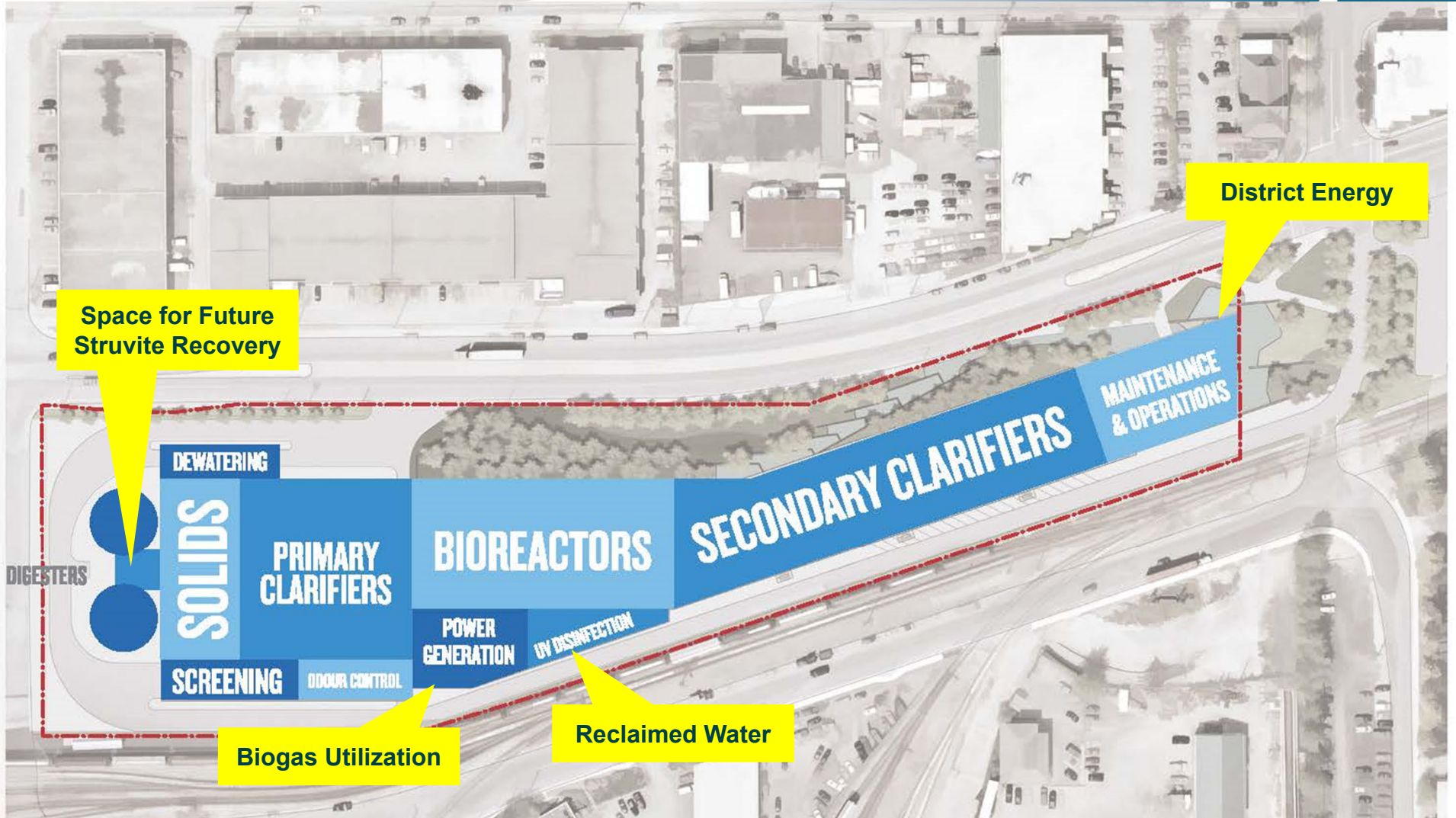
# Reclaimed Water



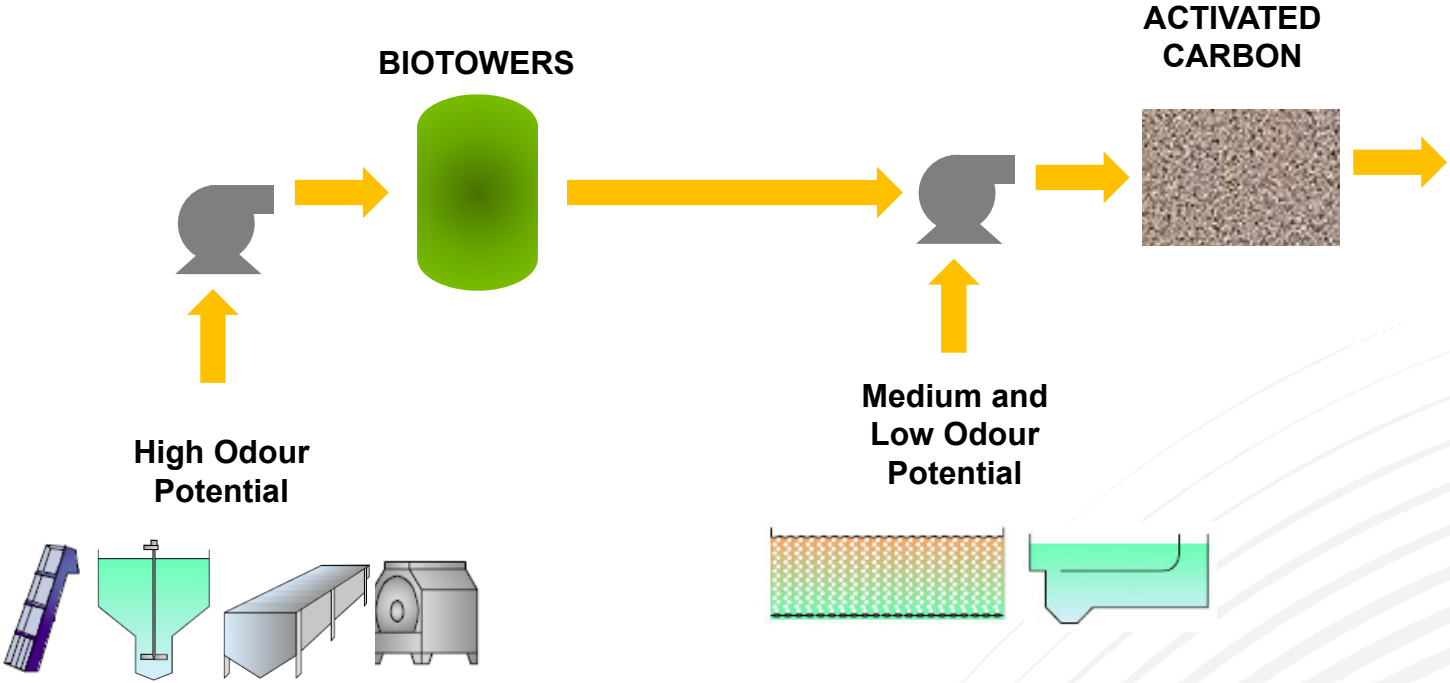
# Biogas Utilization



# Integrated Resource Recovery



# Odour Control Schematic





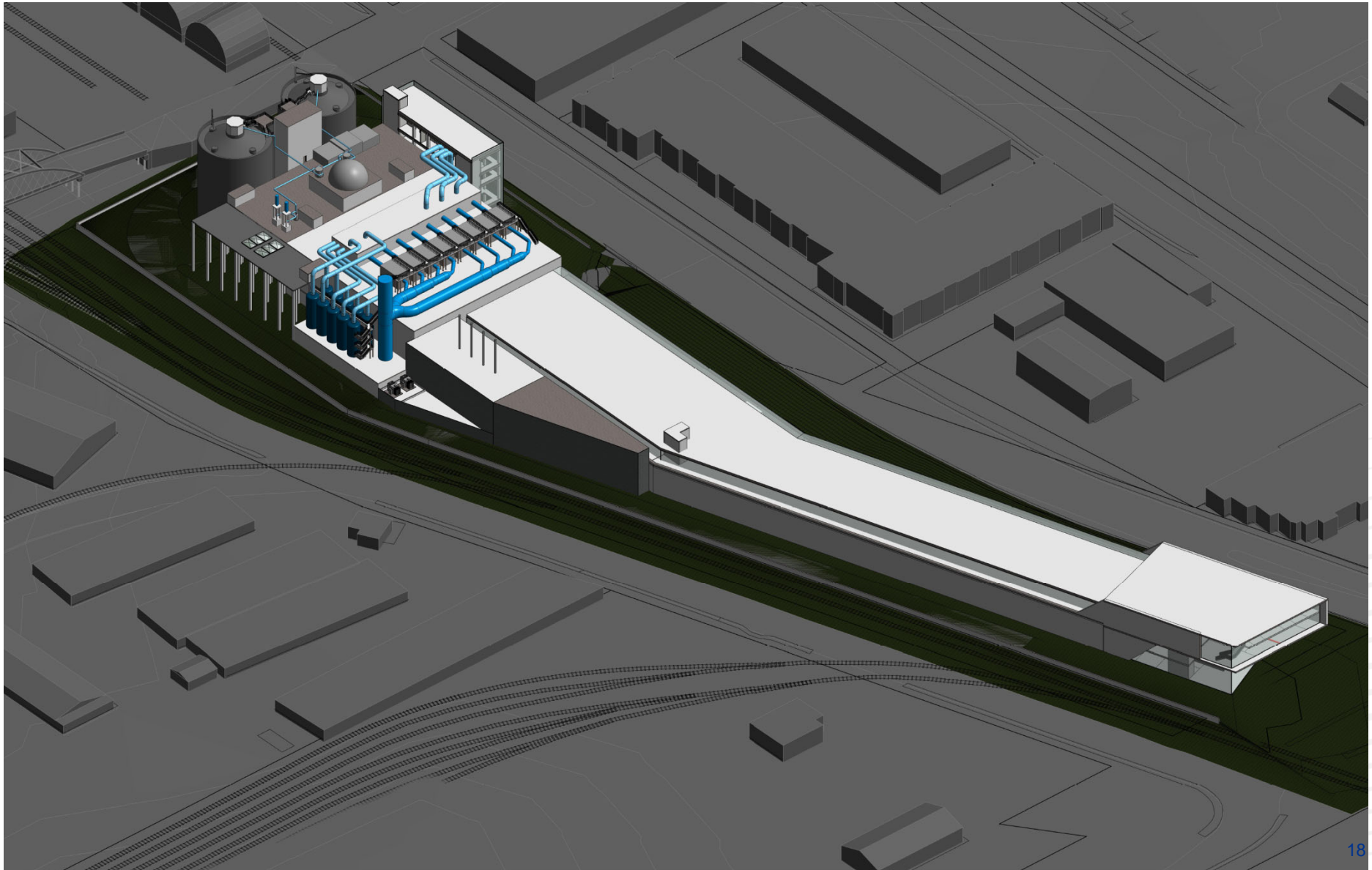
# Biotowers



# Activated Carbon



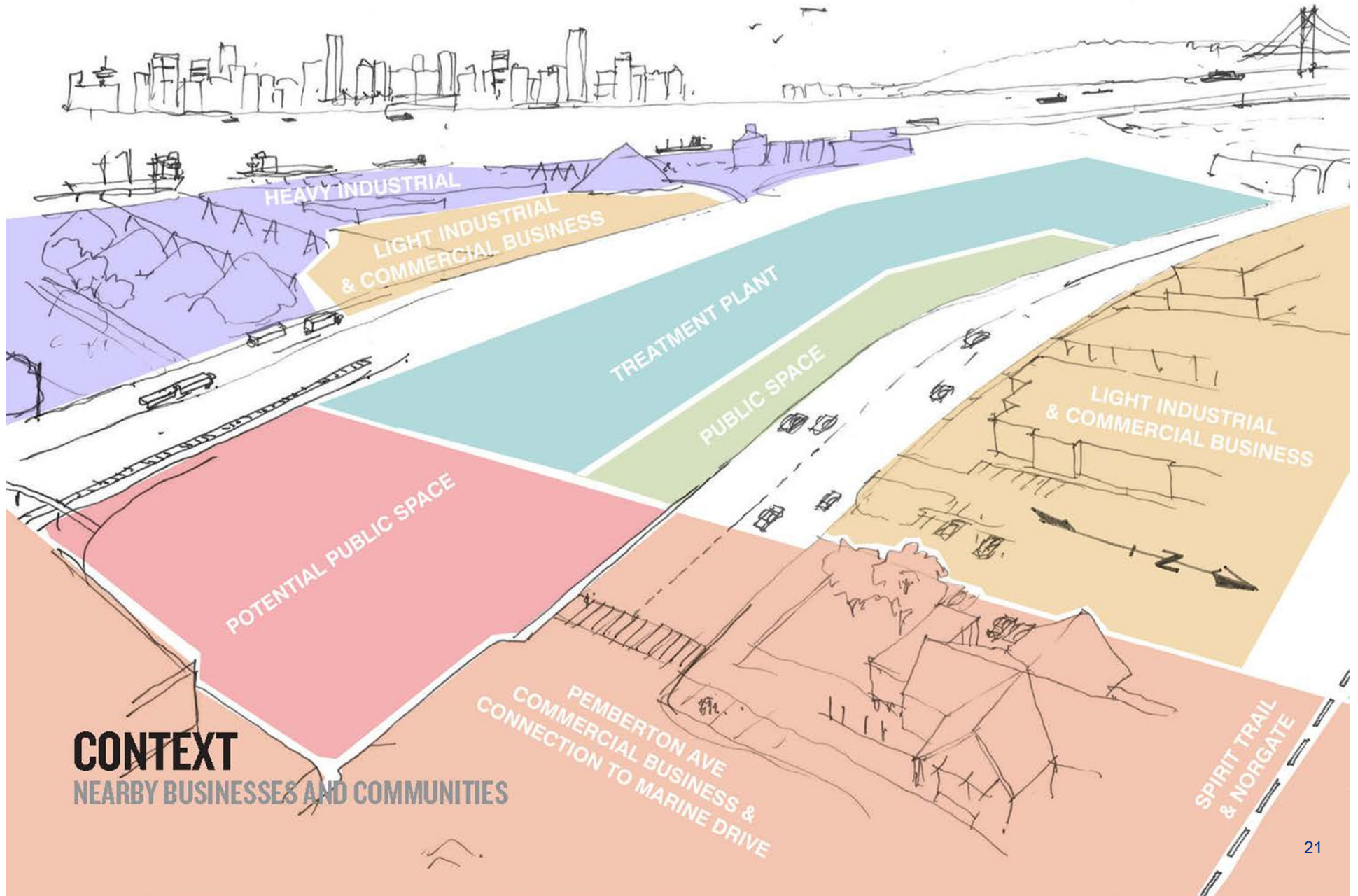
# Odour Control System

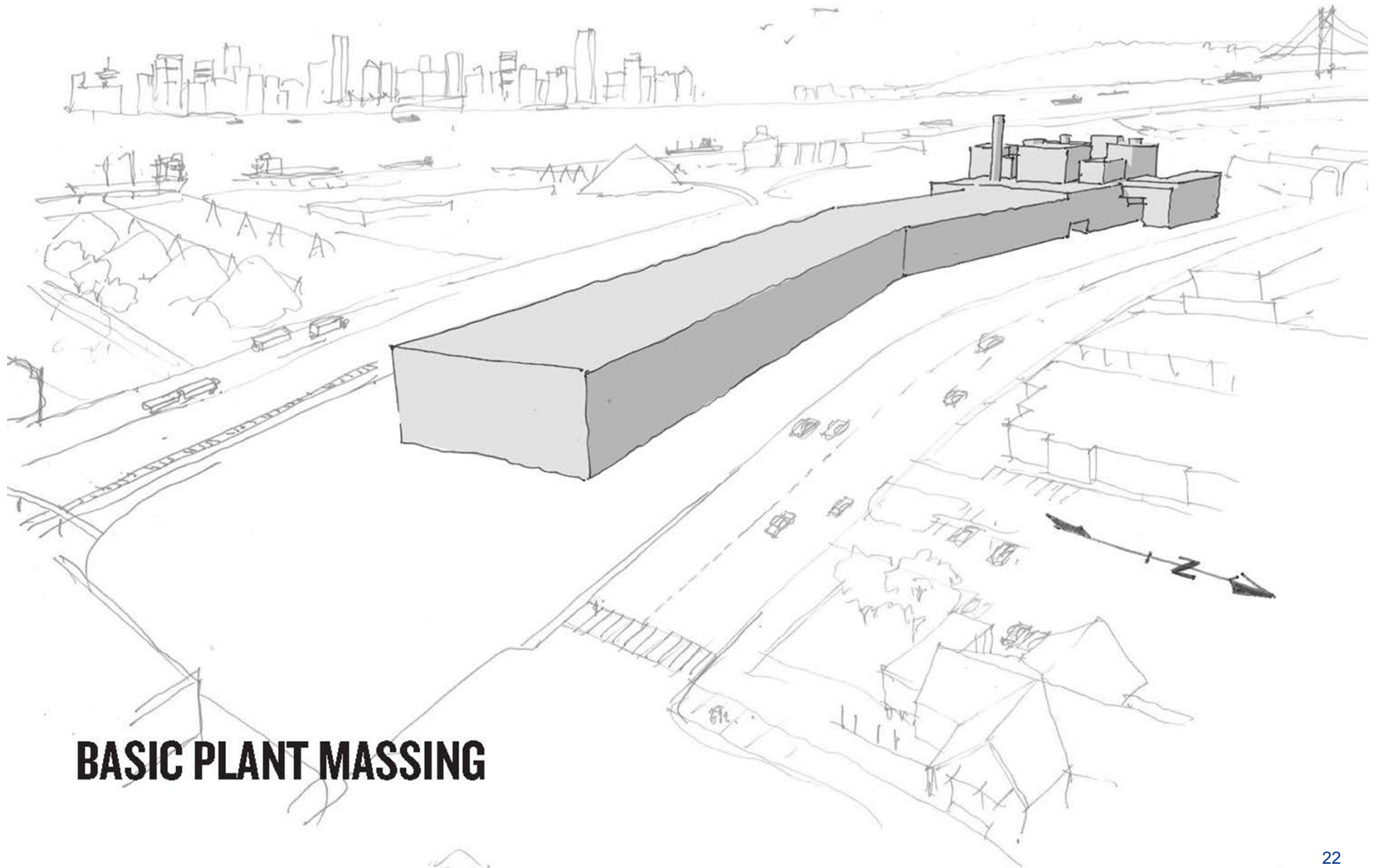


# **MASSING STRATEGIES**

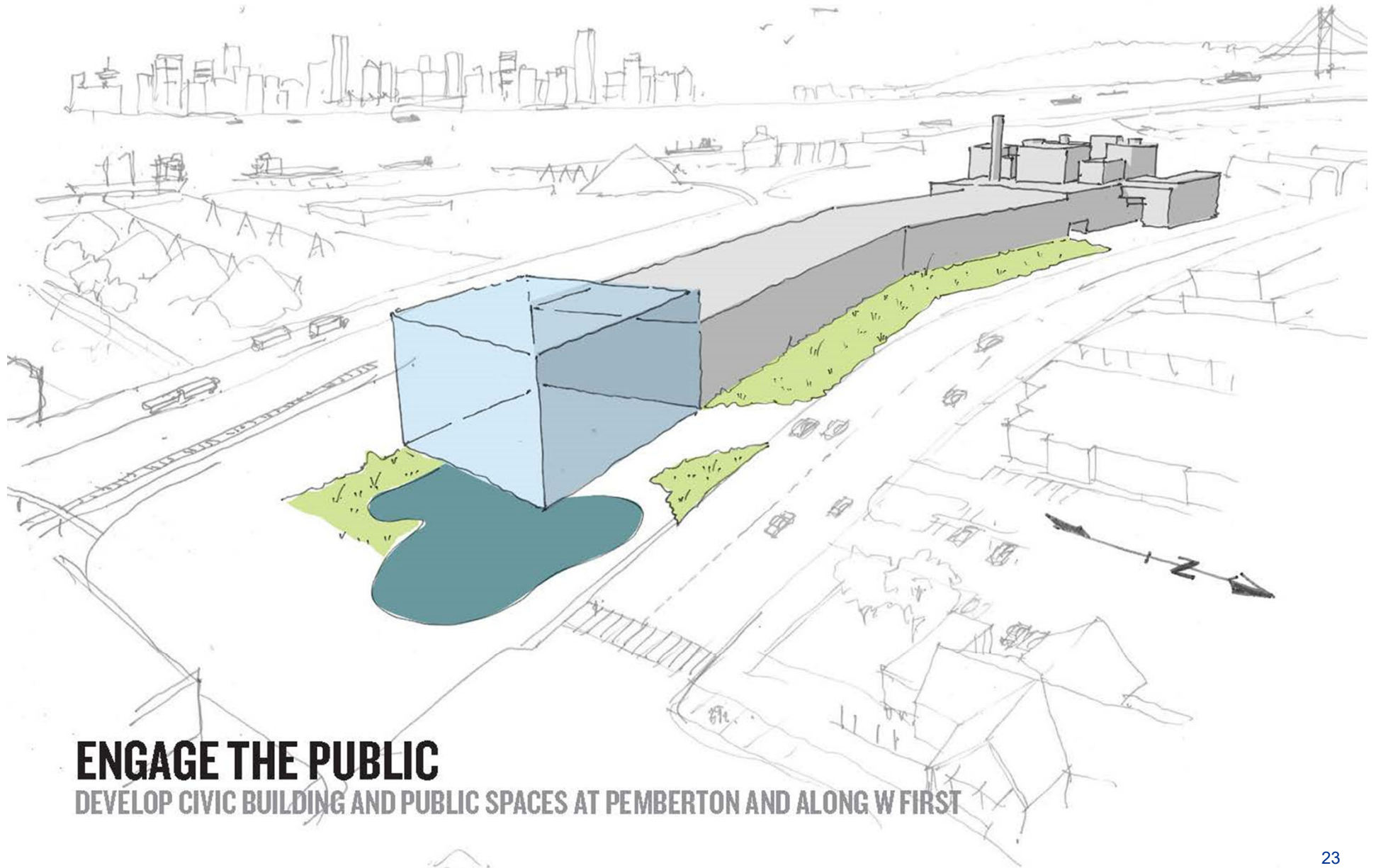


**SCENARIO B**





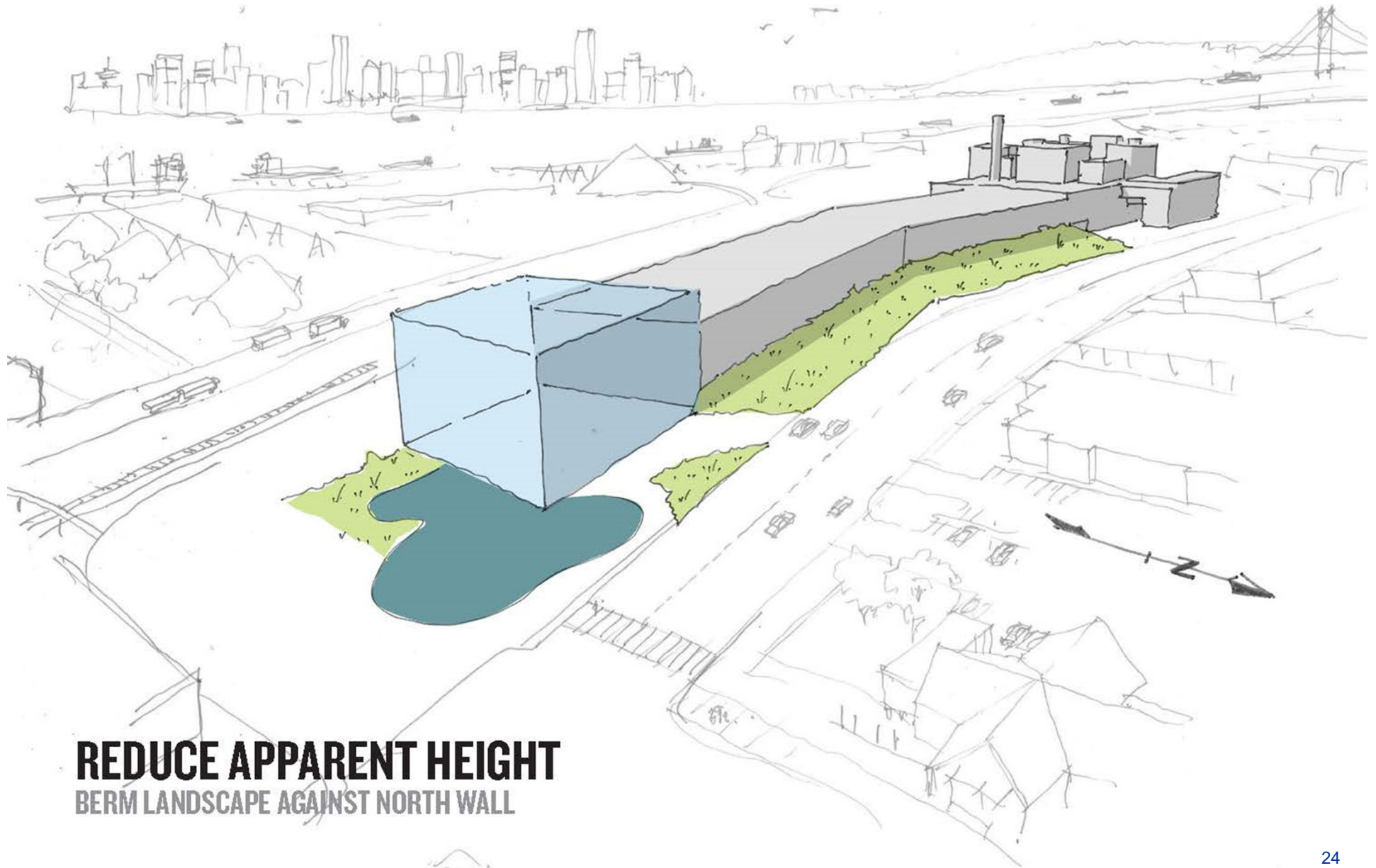
**BASIC PLANT MASSING**



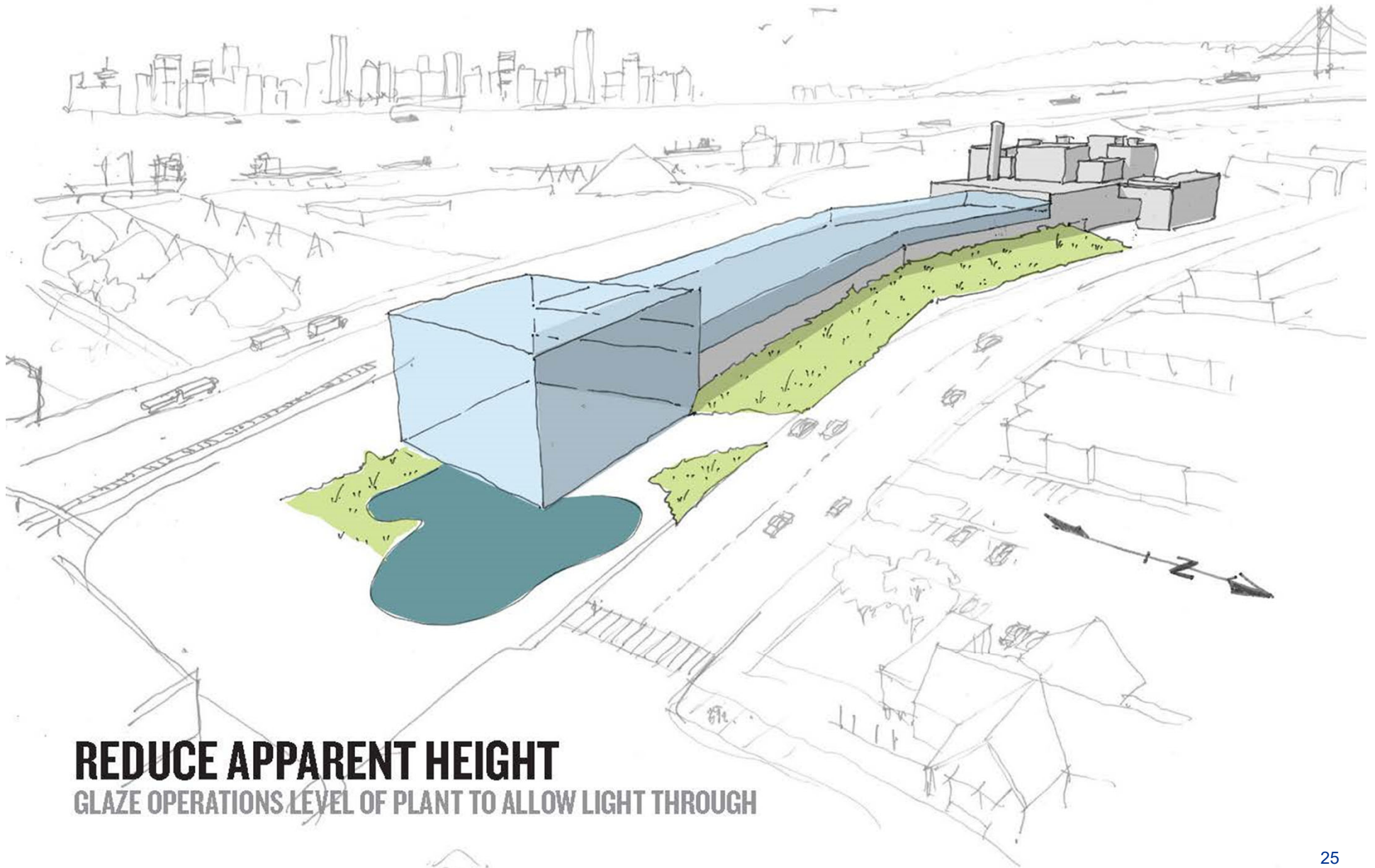
## **ENGAGE THE PUBLIC**

**DEVELOP CIVIC BUILDING AND PUBLIC SPACES AT PEMBERTON AND ALONG W FIRST**

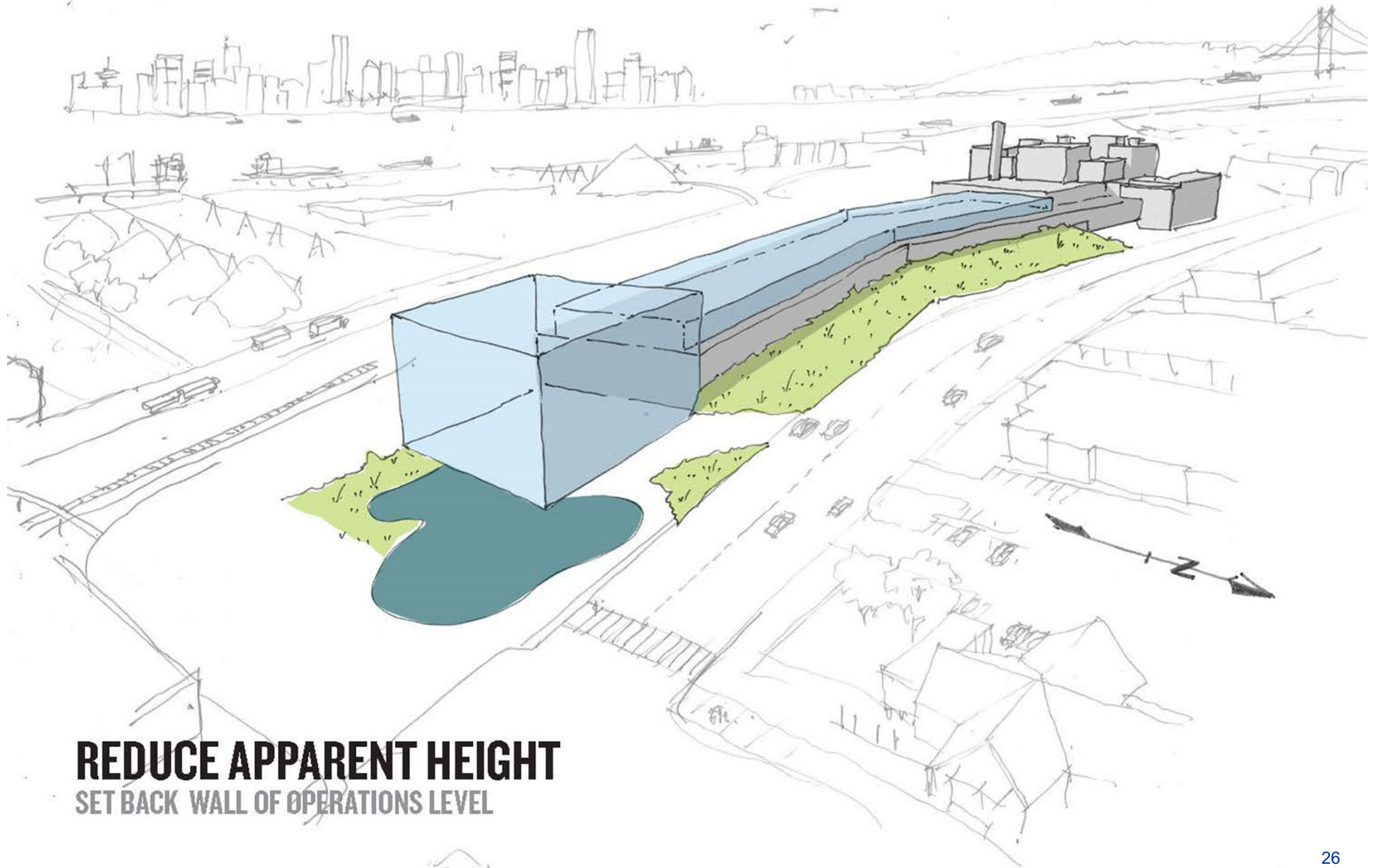




**REDUCE APPARENT HEIGHT**  
BERM LANDSCAPE AGAINST NORTH WALL



**REDUCE APPARENT HEIGHT**  
GLAZE OPERATIONS LEVEL OF PLANT TO ALLOW LIGHT THROUGH



**REDUCE APPARENT HEIGHT**  
SET BACK WALL OF OPERATIONS LEVEL

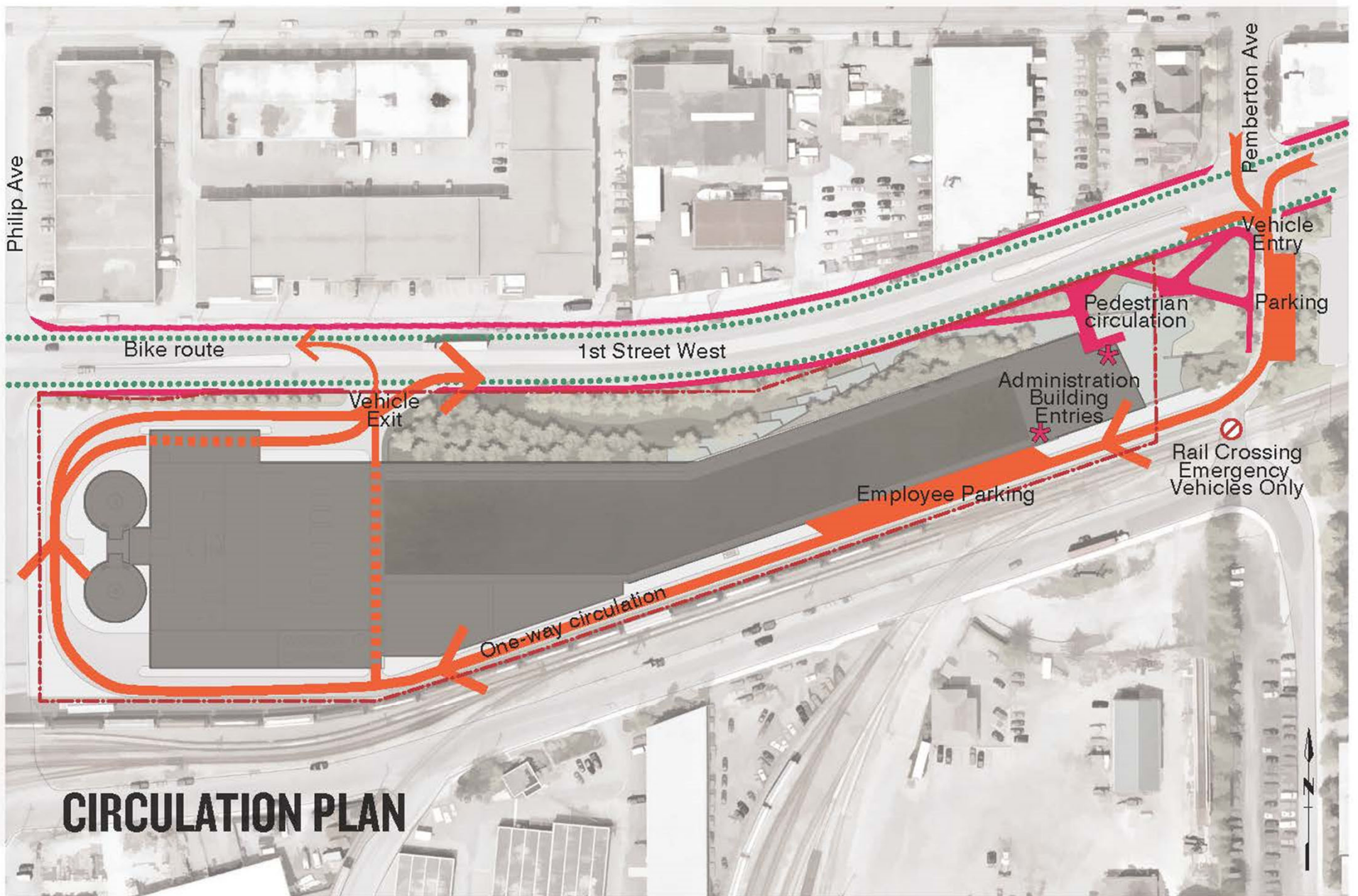


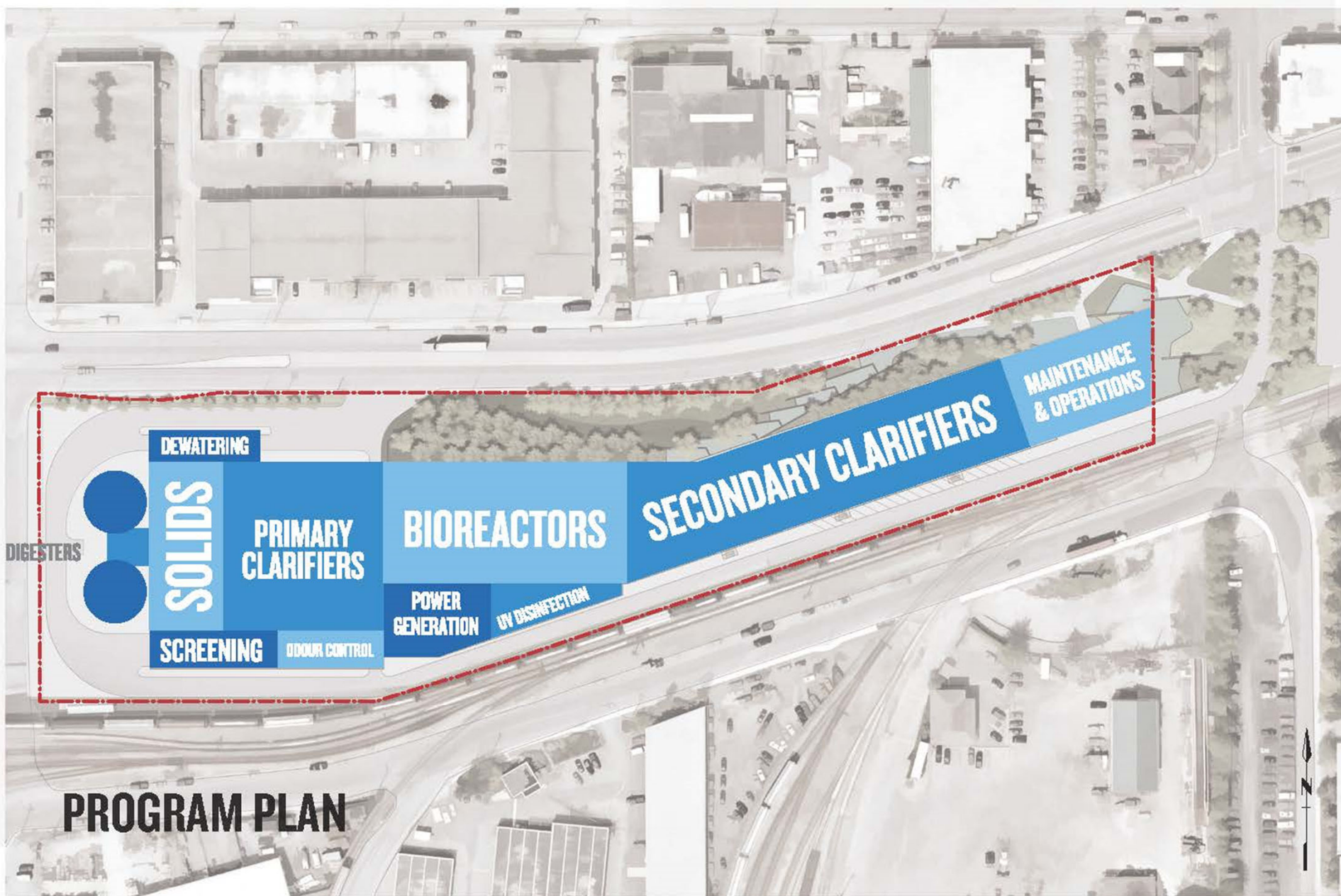
**DEVELOP CLEAN, UNIFIED EXPRESSION**  
TIGHTEN UP BUILDINGS AND EQUIPMENT AT INTENSIVE END OF SITE

# SITE LAYOUT



**SITE PLAN**





# PROGRAM PLAN



# **VISUALIZATIONS**























