

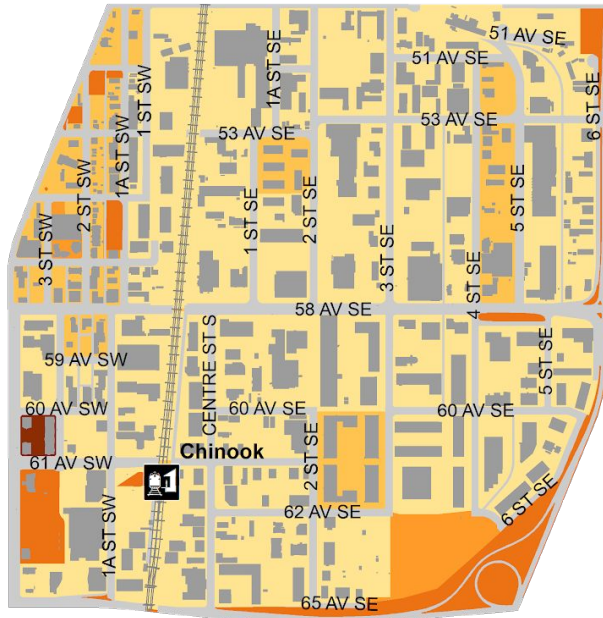


Conceptual Designs of Low Carbon Sustainable Infrastructure

RENEWABLE-MANCHESTER // A LOW-CARBON SUSTAINABLE DISTRICT



Kevin Webber, Melissa Tang, Scott Thompson + Bronwyn Culham

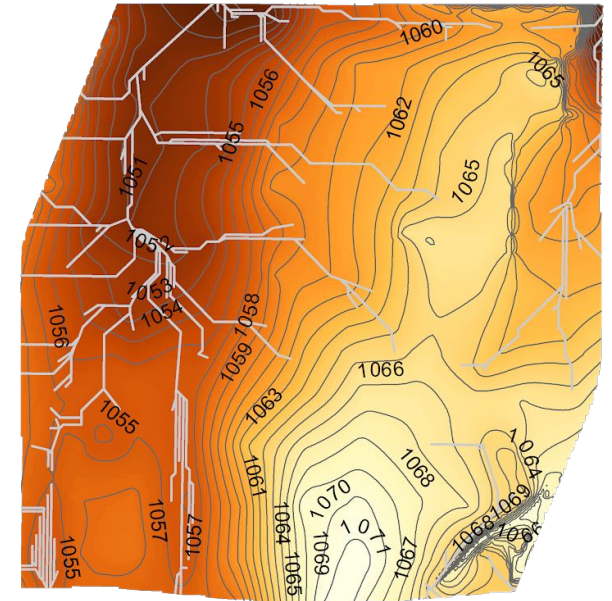
SITE ANALYSIS









-  LRT Station
-  LRT Line
-  Building Footprints
-  Road ROW
- Land Use Designation**
-  Commercial
-  Government and Institutional
-  Open Area
-  Parks and Recreational
-  Residential
-  Resource and Industrial
-  Waterbody



- Solar Radiation**
- Value**
-  High
-  Low



- Predicted Drainage Paths**
- Level of Accumulation**
-  Low
-  Medium
-  High
-  1m Contour
- Project DEM**
- Value**
-  High : 1071.98
-  Low : 1044.13

SITE PLAN



Site boundaries:

- Macleod Trail
- Glenmore Trail
- Blackfoot Trail
- 50th Avenue

The future Manchester District will integrate a safe multi-modal transportation network favoring walking, cycling, and transit while optimizing on community resilience through sustainable infrastructure design.

BACKGROUND

VISION

Renewable-Manchester District, Calgary's most sustainable and resilient community.

OBJECTIVES

- 100% renewable energy
- Allow all residents to be within 600m walkshed to transit and streetcar connection
- Allow for 100% of stormwater and greywater to be treated on site
- Reduce GHG emissions by 80%
- Create a district that accommodates for 50,000 residents and 17,500 jobs

LAND USE



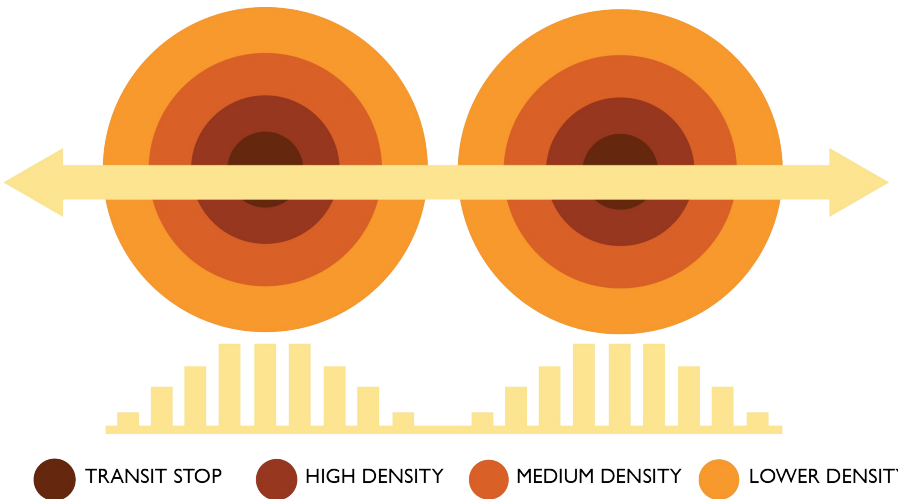
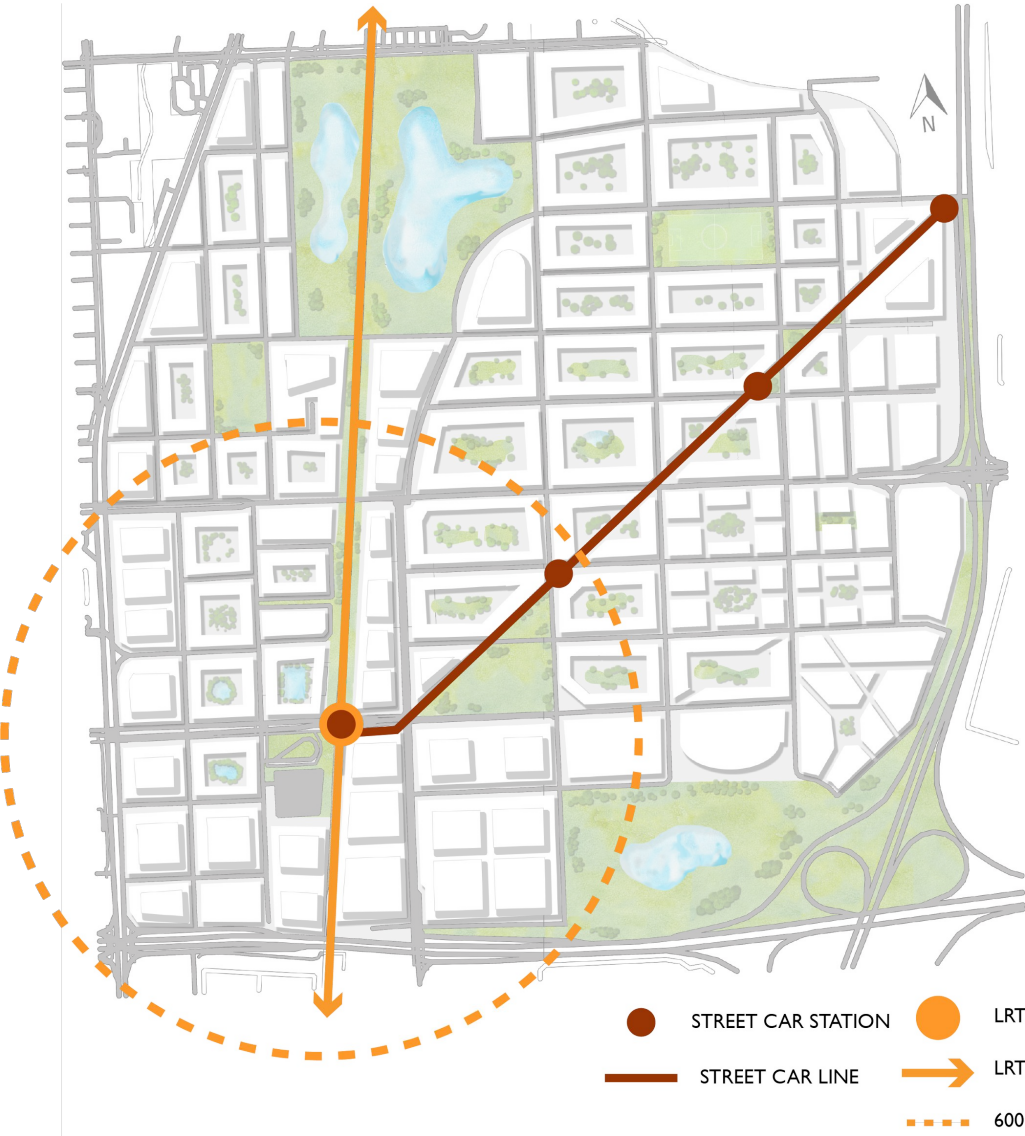
A unique land-use system that integrates:

- Low impact industrial
- Traditional commercial-residential
- Mixed density residential
- Parks and open spaces

The community will offer employment flex opportunities with its live-work studios in combination with traditional jobs in fields such as retail, energy, technology, and water treatment.

TRANSIT ORIENTED DEVELOPMENT

RAIL NETWORK



TRANSIT ORIENTED DEVELOPMENT

The Avenue, Washington

Key Elements



Mixed-use High Street Design
Cambie Corridor,
Vancouver



Industrial Live Works,
Strathcona, Vancouver








Multimodal Transportation,
Portland

TRANSPORTATION

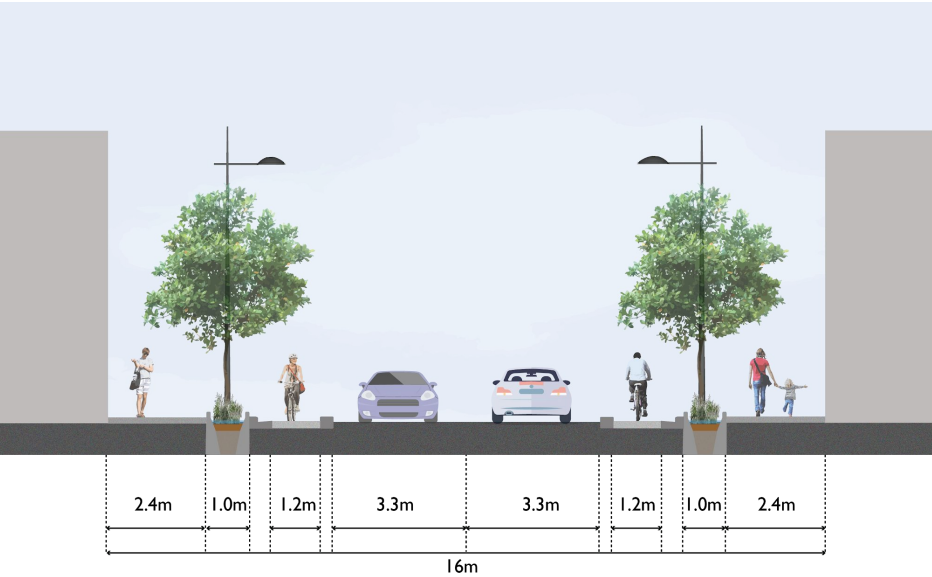
ROAD NETWORK



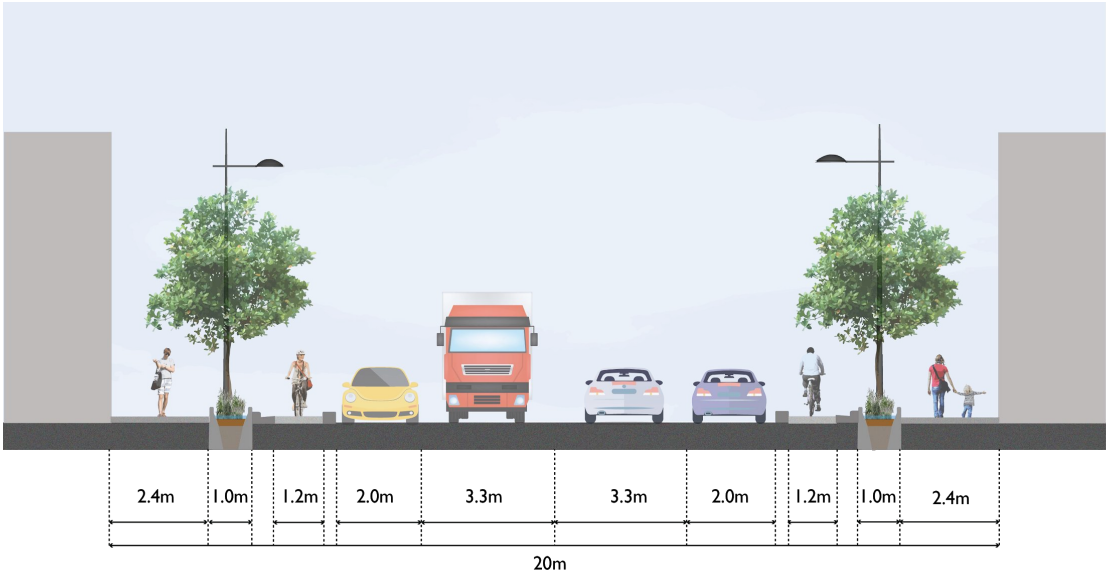
-  SKELETAL ROADS
-  ARTERIAL STREETS
-  PROMENADE
-  COLLECTOR STREET
-  RESIDENTIAL STREET

TRANSPORTATION

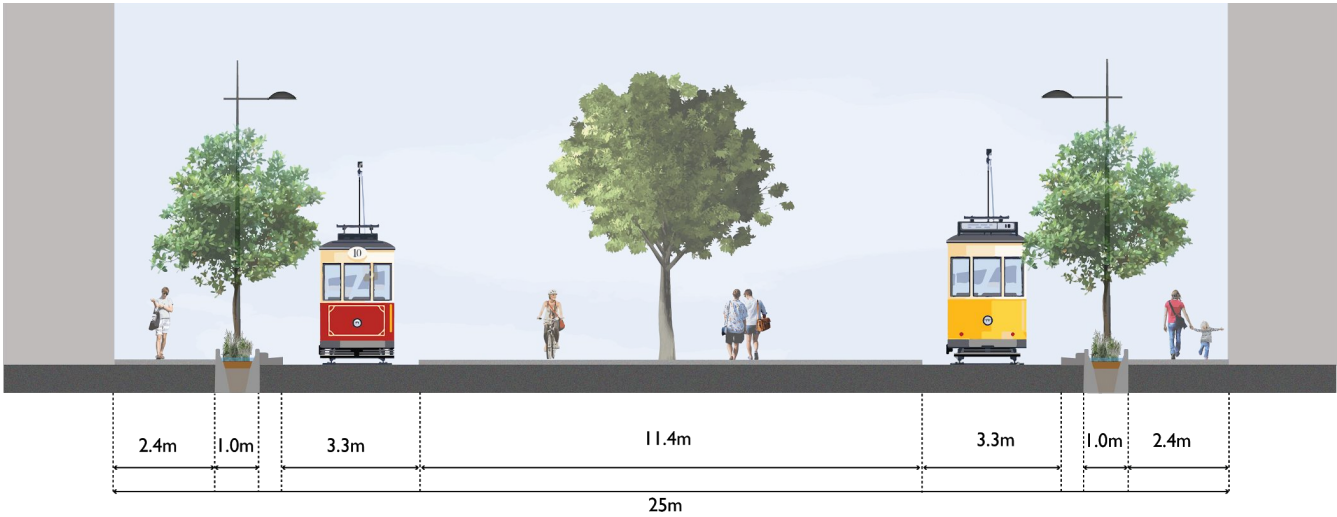
STREET SECTIONS



Residential Street



Collector Street



Streetcar Promenade

DISTRICT ENERGY

St Paul Energy District, Minnesota



Key Element



Roof-Top Solar Panel
Saint Paul River Centre,
Minnesota

Metrics:

St. Paul Energy District, Minnesota

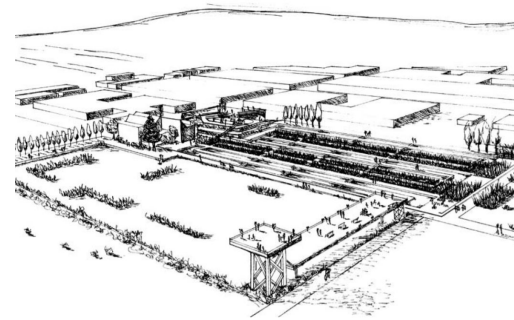
- 144 panels covers 23,000 ft² (2136.7m²) and produces 1000 mWh of energy / year
- Average Alberta house consumes 7,200 kWh / year
- Assumption-4-people / home, average Albertan consumes 1,800 kWh / year
- Therefore, Manchester district needs 12,960 solar panels, covering 19.2 hectares squared to serve a population of 50,000 residents

WETLAND-GREYWATER

Shepard Wetland, Calgary



Key Elements



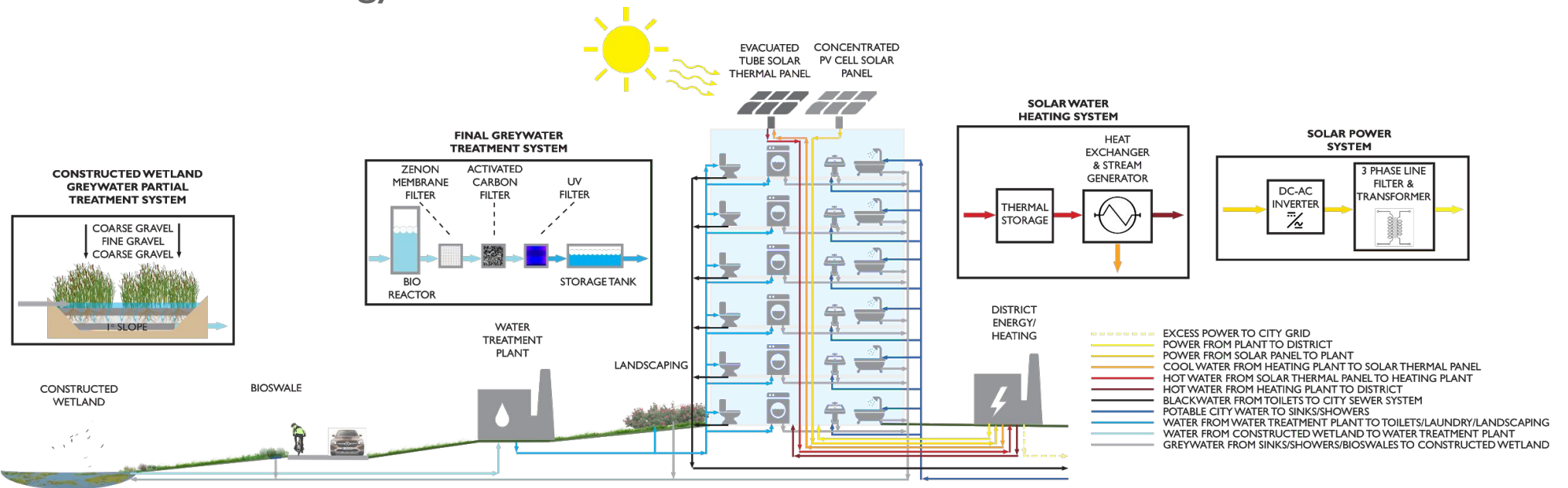
**Multi-Purpose
Wetland**
San Francisco,
California

Metrics:

- Precedent: 36,000m² treats 3,407m³/day
- Multi-purpose wetlands will cover 10% of our site (0.24km²)
 - Treating on average 100% of 50,000 residents' 22.5ML/day of greywater and storm runoffs
 - Dry conditions - wetlands will only serve 54% of residential greywater and storm runoff, the difference will be addressed through the community's bioswale system and wastewater treatment plant

WASTEWATER // ENERGY // HEATING

Materials // Energy Flows





THANK YOU