

CHINOOK-MANCHESTER LOW CARBON SUSTAINABLE DISTRICT

Vision and Principles

Chinook-Manchester is the epicenter of Low Carbon Infrastructure diversity, providing the community with clean energy, accessible and diverse mobility options, and low impact stormwater management to reduce greenhouse gas emissions, minimize ecological footprint, and foster a self-sufficient community.

01. Utilize renewable solar energy to meet the community's energy requirements
02. Provide multi-modal mobility options to increase pedestrian & cyclist circulation
03. Manage, treat and reuse stormwater within the community to reduce the impact on the Bow River aquatic and riparian area
04. Encourage other sustainable practices that support the nexus of clean energy provision, mobility, and stormwater management

Community & Land Use Statistics



Solar Energy Provision

With Calgary being one of the sunniest cities in Canada, the provision of 100% renewable energy is proposed through the use of photo-voltaic solar cells. Using solar energy will also contribute to the goal of an 80% reduction in greenhouse gas emissions.

Covering Electricity Demand

Predicted Electricity Demand in South Manchester = 810,000 MWh/year

Required site coverage @ 44% efficiency = 25%

12.5% - Solar Landfill



12.5% - Solar Roofs



Converting Natural Gas Use to Electricity Demand

Predicted Natural Gas to Electricity Demand = 410,000 MWh/year

Required site coverage @ 22% efficiency = 25%

20% - Solar Roads



5% - Building Facade



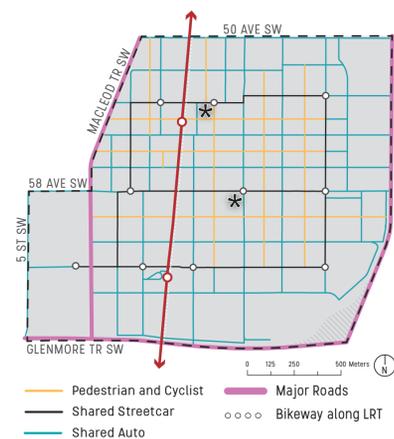
Land Use Concept & Mobility Network

To accommodate 50,000 residents, a medium density district is at the centre of the site surrounded by medium and high density mixed use districts.

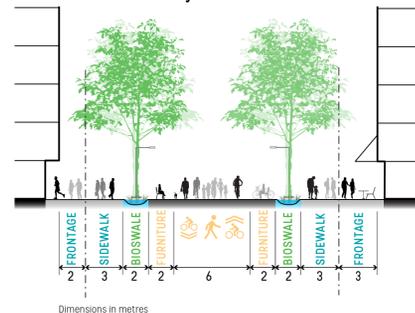
Employment will be concentrated in the north area and will focus on research and development of solar energy, LID, green infrastructure, mobility, distribution (10,000 jobs). A secondary employment concentration will be in the southwest (Chinook) with the existing commercial evolving into a mixed use commercial/office/residential district (5000 jobs). Employment will also be supplemented through urban farming in the south, industrial in the northeast, and retail, commercial, light industrial uses within mixed use areas (2500 jobs).



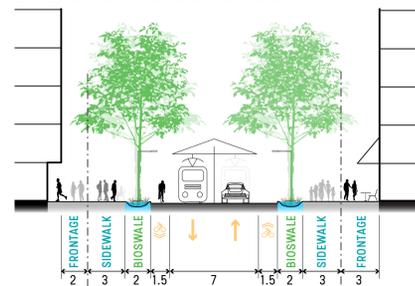
Street Network



Pedestrian & Cyclist Street



Shared Streetcar Street



Transportation Membership

As requirement of living in the community, residents are required to participate in the transportation program. The transportation membership is designed to encourage active transportation modes and reduced dependency on automobiles. All services are managed by an all-in-one phone app.

Mandatory:

- unlimited street car use
- car-sharing co-op fleet of electric vehicles (5 trips/week before additional charges)
- bike sharing program

Optional:

- subsidized Calgary Transit membership
- secure bike storage

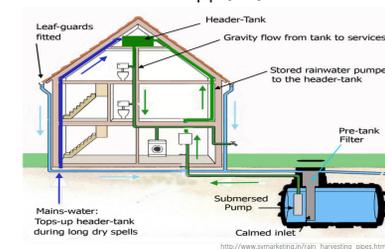
Central Parkades

To encourage alternative transportation modes, underground parking is not provided in every building. Two underground parkades centrally located near LRT and/or streetcar stations provide stalls for private vehicles as well stalls for the electric vehicle fleet. Stalls for private vehicles are limited and available at premium price.

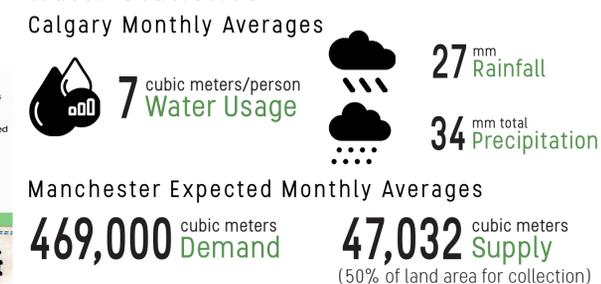


Stormwater Management

Rainwater Harvesting



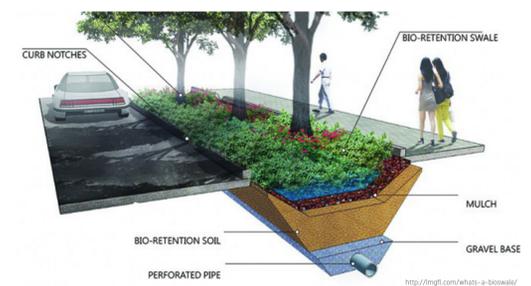
Water Statistics



Bioswales

Provision of bioswale to collect and manage storm water

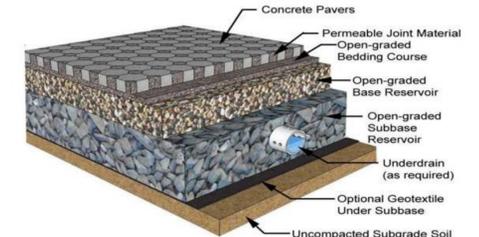
- Reduction in peak water flow
- Removal of pollutants from stormwater
- Improved stormwater infiltration
- Decreased downstream/riverback erosion
- Improving aesthetic of the area



Permeable Pavements

Provision of permeable surfaces to support storm water management

- Refill ground water level
- Reduce peak runoff periods
- Reduce the total volume of stormwater
- Filtering pollutants



Precedents

Capital Regional District
625 Fisgard Street,
Victoria, BC



The building uses a 60,000 litre concrete cistern to capture rainwater for reuse in low flow/dual flush toilets. The filtration and chlorination of roof water was required by plumbing code, as was a sign warning toilet users not to drink the water.

Gulf Islands National Park Reserve, Operations Centre
2220 Harbour Road, Sidney, BC



A 30,000 litre underground storage tank for roof rainwater provides water for reuse in low flush toilets and for washing saltwater from marine equipment. Up to 108,000 litres of rainwater can be collected and reused annually.

Nexus Applications

Solar + StormH2O



- Solar & green roofs can be integrated together into a comprehensive system
- Solar Roadways integrates a stormwater capture system, can be pumped to a treatment facility, or pre-treated on site and released into aquifer

Solar + Mobility



- Panels power streetlights, urban furniture, traffic lights
- LED lights replace paint to make road lines and signs
- Maintains a temperature above freezing, preventing snow and ice accumulation
- Can provide built in electric vehicle charging

Mobility + StormH2O



- Powers streetlights, urban furniture, traffic lights
- LED lights replace paint to make road lines and signs