

LOW-CARBON! MANCHESTER

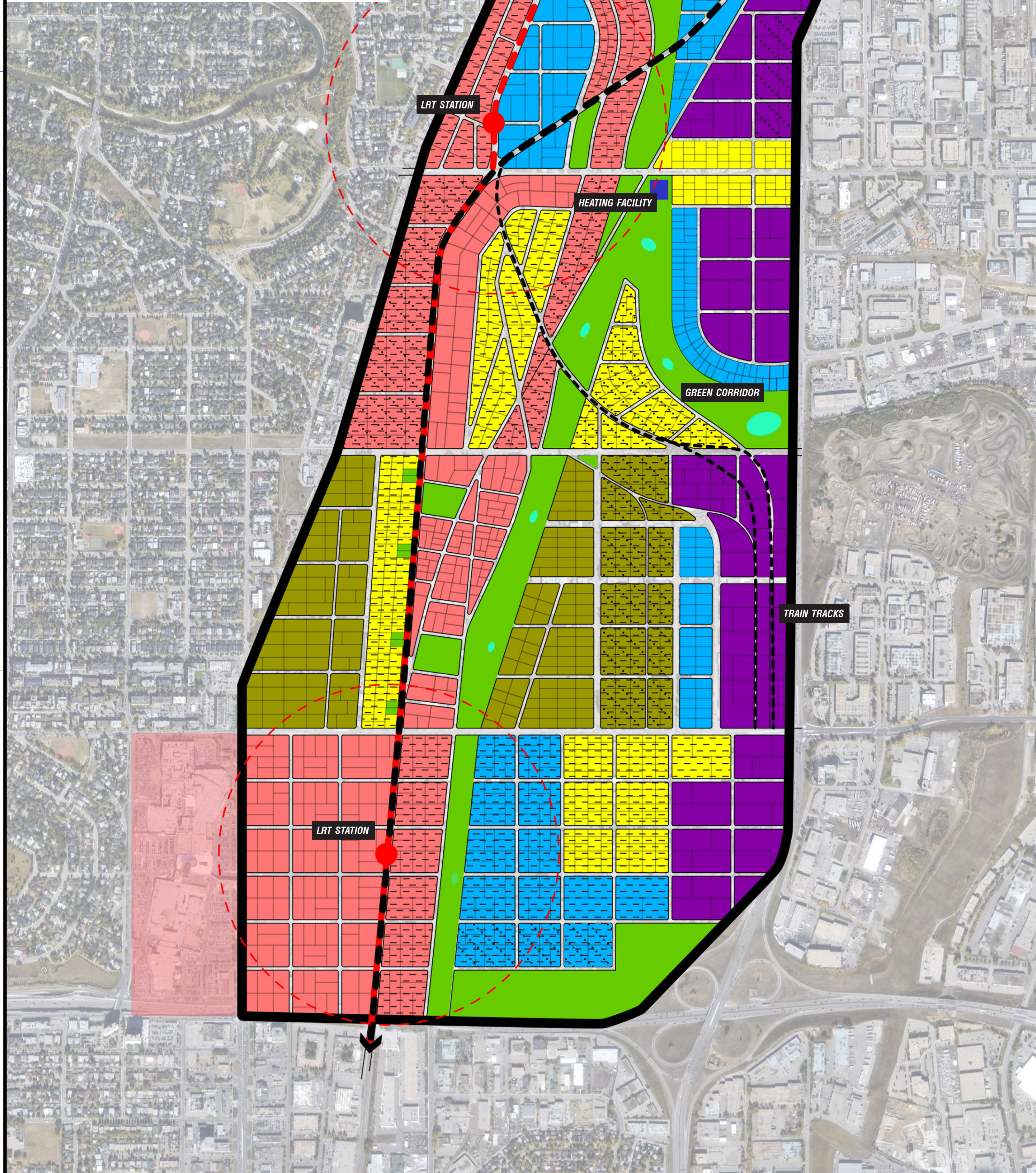
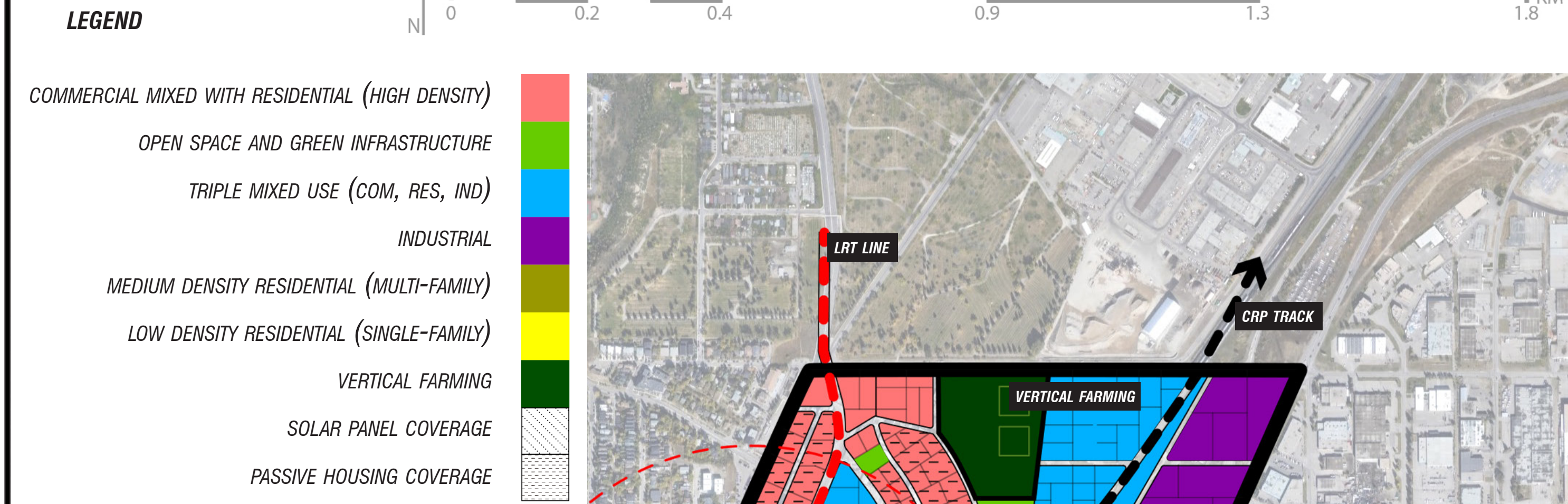
XINYU CHEN
JAKE JELLIS
AZADEH RASOULI
URBAN INFRASTRUCTURE

Manchester District in Calgary has historically been used as an industrial park, servicing one type of land use at the expense of the promoting a green, habitable infrastructure, that encourages people to occupy the site. Accordingly, the need exists to modify the District into a location with a wider spectrum of land-uses that promote pedestrian-oriented, sustainable infrastructures. With this consideration in mind, the urban redevelopment proposal that comprises this project centres on three main goals. The first is to create a pedestrian-friendly neighbourhood that encourages people to take advantage of sustainable means of transportation by focusing on promoting transit-oriented development strategies and reducing car ownership.

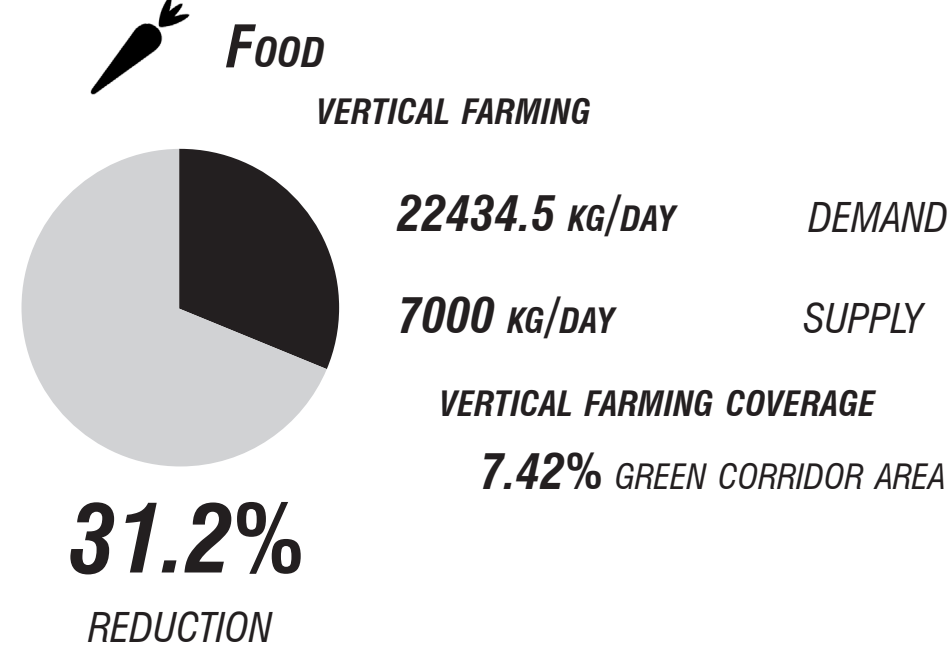
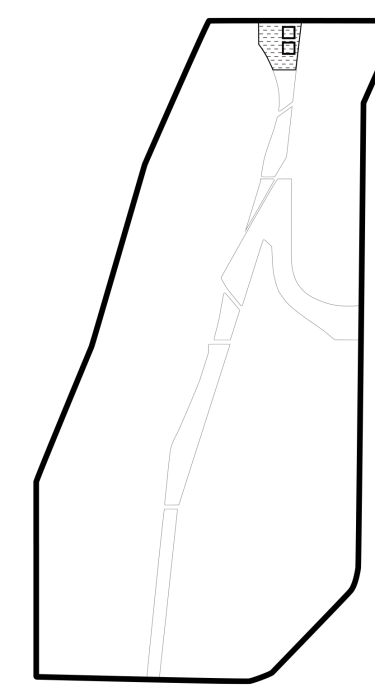
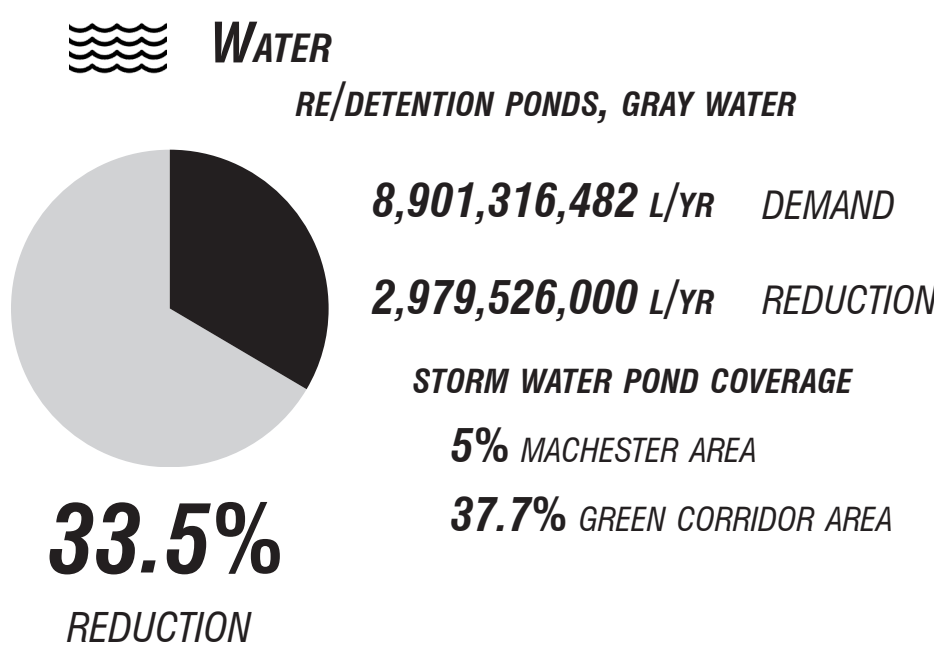
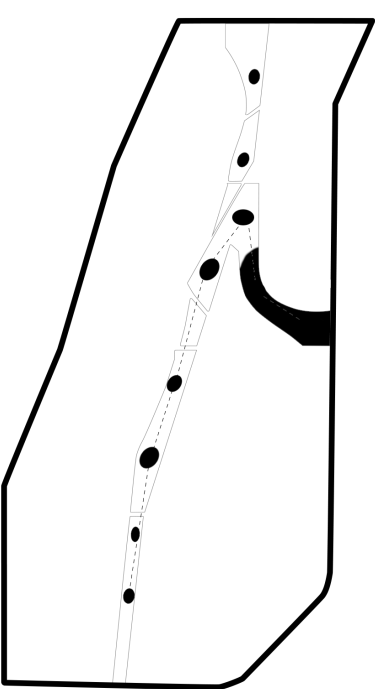
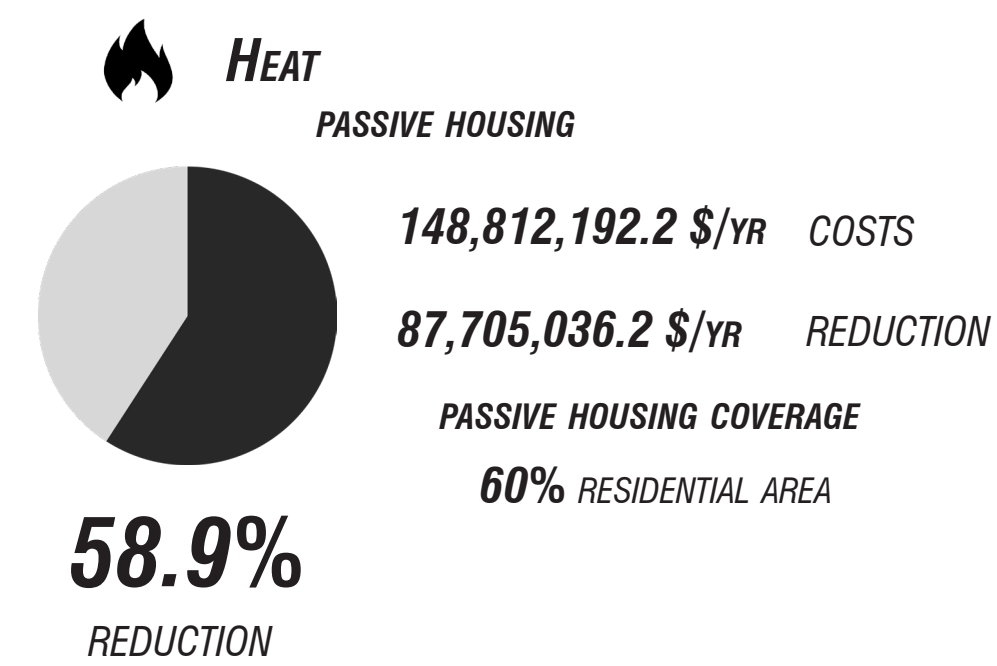
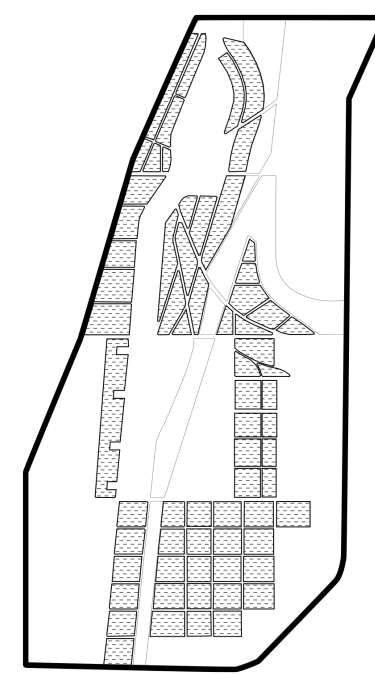
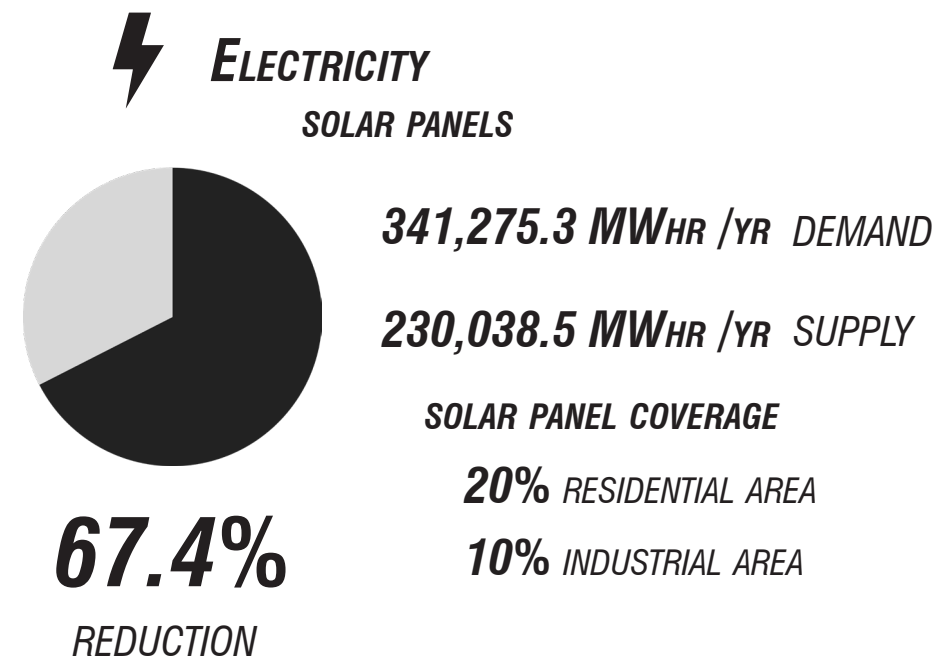
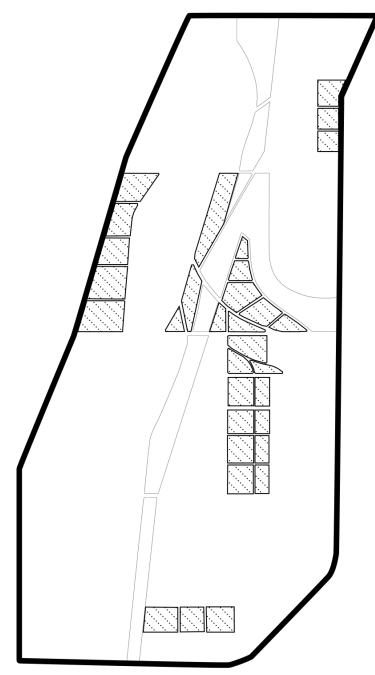
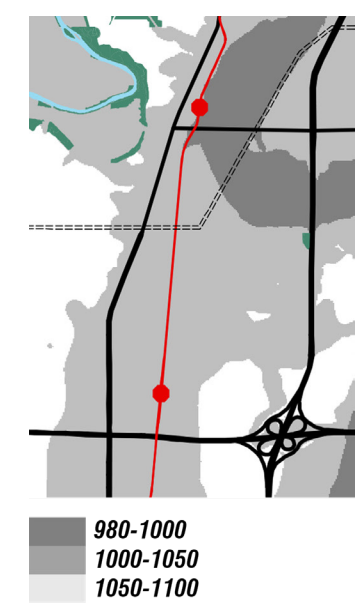
The second strategy focuses on the food resource production in the area with the aim of reducing resource consumption and promoting the community's self-reliance. An open green corridor has been introduced in the region with the aim of introducing a green infrastructure where local food production can occur, and the impacts of the region's GHG emissions can be mitigated. The proposed concept also takes into consideration energy, heating, and water consumption through the introduction of urban infrastructure strategies that seek to take advantage of the site's natural environment to help offset a portion of the increased demand of these resources that follow from the increase in population in the area.

This proposal seeks to adapt the Manchester District into a transit-oriented, mixed-use neighbourhood that is able to rely on its own internal resource productions to help meet its resource demands. It does so through the implementation of mixed-use transit-oriented developments and pedestrian-oriented systems along the existing LRT line, the introduction of a green, agricultural infrastructure corridor through the area, and the integration of energy and water collection strategies to increase the local supply of these resources, thereby reducing the demand on the city's infrastructure. By implementing these strategies, Manchester can become less car-dependent, move in the direction of renewable energy reliance, and reduce carbon emissions, to create a vibrant and active community for people.

PROPOSED VEGETATION IN THE GREEN CORRIDOR FOR MAXIMUM CO₂ ABSORPTION



SLOPE AND ELEVATION



PRECEDENTS



The City of Woodbury Minnesota constructed stormwater reuse for irrigation systems at Eagle Valley golf clubs. The system collects runoff from a large drainage area containing roads, housing developments, and a golf course and stores it in a centralized pond. The Golf Course used to pump 30 million gallons of well water annually to irrigate approximately 60 acres of golf course turf and landscaping. This project collects stormwater runoff from a 430-acre drainage area covering the golf course, surrounding neighbourhoods, and Woodbury Drive into a storage pond on the course.

DP Energy is proposing a 156-acre solar energy production facility with 4 sites in Calgary. The panels would be installed on a concrete base. The proposed project would see the construction of 1,576 solar panels arranged in 78 rows and is expected to generate 25-megawatt hours of renewable electricity annually. That kind of production could power between 3,500 and 4,000 homes. The Green Line LRT will benefit from that too.

Sky Greens commercial vertical farming system uses hydraulic structures to slowly rotate the produce troughs that make up each of its towers. The entire system is housed in a controlled environment, allowing for better control of the quantity and quality of food produced. The A-shaped frames used in the system are customizable for specific plant types, modular in design, and have a small footprint - making this system scalable for implementation almost anywhere.

First home to be built to the Passive House Standard in Manitoba. The site location, orientation, construction materials, and best building science practices for insulation and air sealing were considered. Solar panels were added to make this home net zero. Material they used including Duxton Windows and Doors supplied fiberglass frames, large south-facing windows, QUAD-pane glass, a double set of entry doors. Galvalume roof and wall cladding, heat recovery ventilator and components from Pinwheel Building Supplies, mineral wool and cellulose insulation.

Beltline By the Numbers:
Ranking: 1/185
2017 population: 23,219
Population growth rate since 2015: 0.06%
Walk Score: 90
Transit Score: 76
Recreation facility points: 54
Engagement ranking: 9/185
Median assessment value: \$306,000
Traffic Volume:
14 St: 27000-30000
9 Ave: 13000-38000
17 Ave: 9000-20000
7 St: 6000-11000