EXISTING SITUATION

Public transport and cars at 50km/h

INTERVENTION using SUPER ISLANDS

Public transport and cars at 50km/h

Private vehicles at 20km/h

Pedestrian and cycle zone

The city roads will be organised into two different networks informed by their traffic volume.
- Primary Network, - high traffic volumes used by public transport and private motorized vehicles;
- Secondary Network, - low traffic volumes and roads are included in the island to be primarily used by local traffic.

Inside an island, access is only granted to residents' cars, emergency vehicles and freight distribution vehicles.

Background and Motivation

This is an initiative of recreating public spaces in the city centre of Bulawayo through reclamation of the spaces from vehicular traffic in the streets. The aim is to provide a solution that fosters attractive spaces incorporating different social public activities of which outdoor thermal comfort is a requirement.

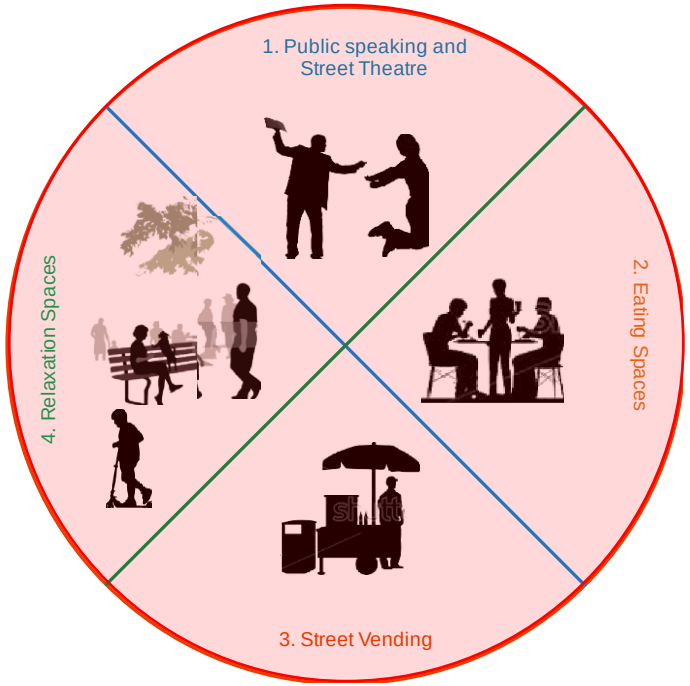
The central business district is 5.4 square kilometres and in a grid pattern with 17 avenues and 11 streets which are wide (approximately 27-32 metres). The city centre is on a fairly flat terrain which makes it easy for cycling though its not fun because of the erratic driving. The wide streets are attracting more vehicles including a concentration of vendors lining up on the streets selling their wares for survival. This has resulted in a city centre without usable public and pedestrian space which people can use safely.

The Approach

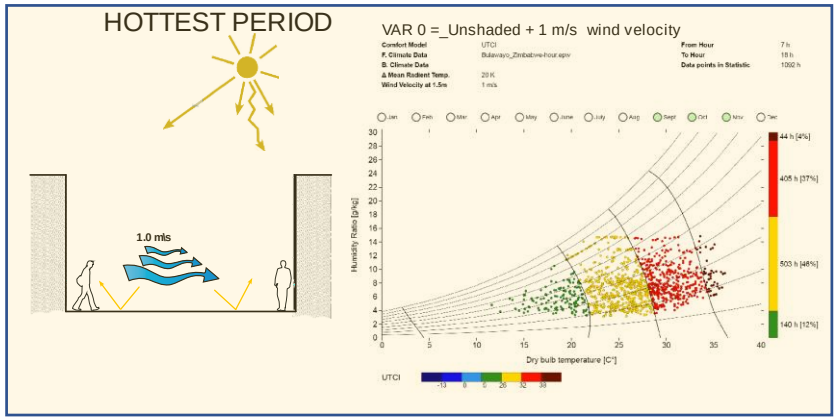
To achieve the goal the needs of the people were identified which include: Eating spaces, relaxation spaces, street vending spaces and public speaking and street theatre.

To be able to create space for the people needs, the city centre was put into islands, making it easier to select streets for pedestrian and cycle zoning. The islands organize city roads into two different networks. The Primary network has high traffic volume and is for public transport and vehicles at a higher speed of 50km/h. The Secondary network has low traffic volumes moving at speeds not more than 20km/h. This one is used by local traffic only and emergency vehicles. The key pedestrian link is from the City Hall to the monument at the intersection of J.Nkomo Street and 9th Avenue.

PROPOSED ACTIVITIES



CURRENT THERMAL PERCEPTIONS



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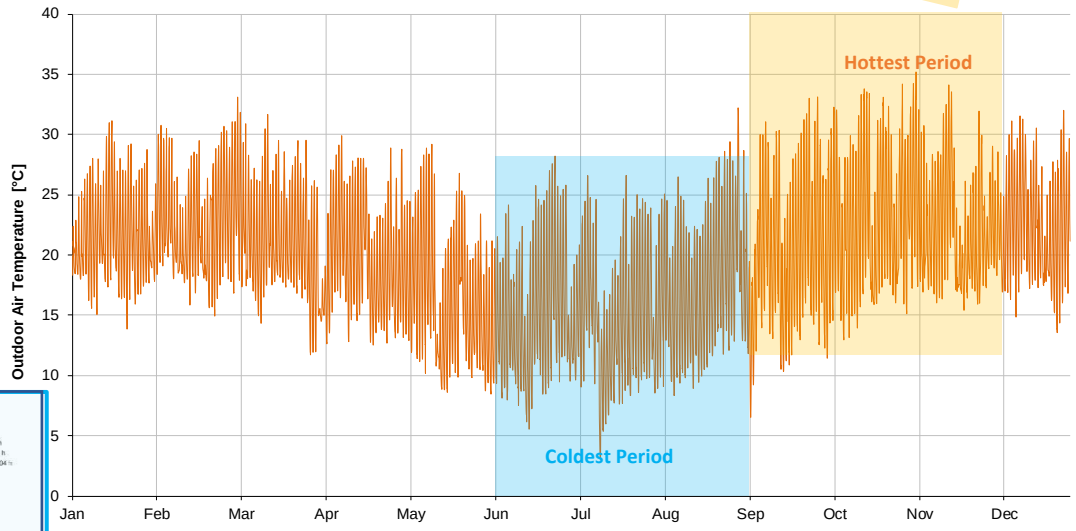
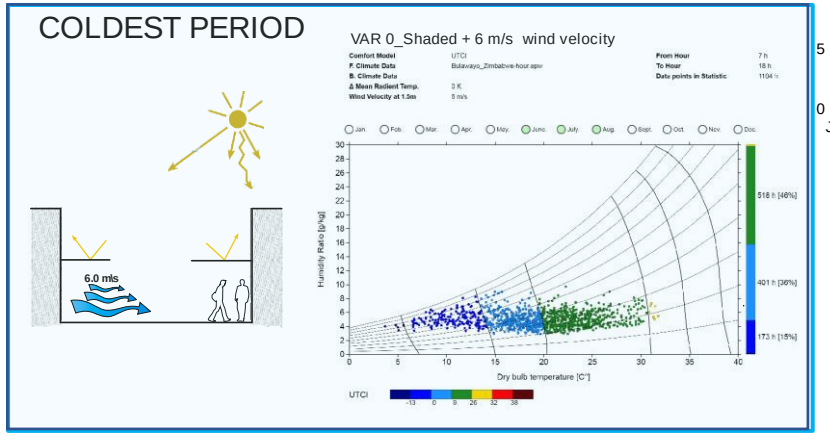


CURRENT THERMAL PERCEPTIONS



After identifying the space, there was need to find ways of achieving thermal comfort when people use them since the streets are all exposed to weather elements. A climate analysis of Bulawayo was done to inform the designing of the outdoor street spaces in the identified area for thermal comfort between 0700hrs till 1800hrs.

The Universal Thermal Climate Index (UTCI) outdoor comfort analysis results show that in the coldest season (June to August) there is a 70% comfortable (no thermal stress) perception and the hottest season (September to November) it appears a 40% comfortable (no thermal stress) perception. This is as a result of high solar radiation which shows an hourly horizontal insolation of above 500 W/m² between 0700hrs till 1800hrs during the hottest season in Bulawayo.

Outdoor Thermal Comfort

Thermal behaviour analysis of the existing streets' condition are still underway using TRNLIZARD from which design strategies to achieve thermal comfort will be derived. The results are compared in terms of thermal comfort performance using the Universal Thermal Climate Index (UTCI).

The potential solutions for the hottest period include:

1.Protection from direct solar radiation by shading.
2.Increasing air movement using fans.
3.Adiabatic cooling.
4.Cooling by plants through evapotranspiration.
5.The use of cool and green surfaces.