**Cool It Project**

**Mapping Methodology**

Objective: Pinpoint the intersection of Social Vulnerability, Pedestrian Intensity and Heat (defined as higher imperviousness). (Coseo and Larsen, 2013)

**Social Vulnerability Data**

Derived from 2016 Census. Bendigo, Ballarat and Whittlesea data were accessed from Social Atlas id, the others using ABS tablebuilder. Indicators are taken from Loughnan, 2013.

SV Indicators:

**SEIFA Disadvantage:**

Anything below a score of 1000 is considered disadvantaged, though this encompasses a large portion of many communities.

Cut off is therefore 900 and below.

**Children Aged 0-4:**

Regional Vic is 5.8%

Victoria average is 6.3%

High concentrations considered to be 10% and above (or top 20th percentile)

**Older Lone Persons (Bendigo, Ballarat and Whittlesea only)**

Regional Vic is 12.1%

Victoria is 9.2%

High concentrations considered to be 15% and above (or top 20th percentile)

**Older Persons (Pyrenees, Central Goldfields, Ararat, Mildura, Buloke, Gannawarra)**

Those over 65 years of age: anything over 10% (or top 20th percentile)

**Those not fluent in English (NES)**

Regional Vic is 1%

Victoria is 4.5%

High concentrations considered to be over 5% (or top 20th percentile)

**Rent Social Housing (SH)**

Regional Vic is 3.3%

Victoria is 2.8%

High concentrations considered to be over 11% (or top 20th percentile)

Each Council has been given their Census based data as shapefiles and csv to utilise themselves.

**Pedestrian Intensity**

Indicators of pedestrian intensity range considerably depending on availability of Council held data.

All have:

Schools (Data.vic) saved as a csv.

Commercial zone 1 (others depending on planning scheme (includes all neighbourhood shops and CBD)

Parks – usually PPZ in planning overlay.

Others:

Childcare centres, Maternal Child Health, Community centres, Neighbourhood centres, Preschools, Education facilities, Libraries, playgrounds, public transport stops, hospitals, shared paths, senior citizens centres, corner shops, council open air carparks

**Other**

Industrial Zones (interested not so much in the zone but surrounding socially vulnerable residential areas)

**Selection of Priority SA1’s**

In order to select those which were to be measured for imperviousness, priority SA1’s had to have:

* at least 2 of the above criteria of social vulnerability and
* at least 2 counts of pedestrian intensity either shops, playground, childcare centre, schools
* Proximity to industrial areas and concentration of commercial areas should also be taken into account.

A maximum of 8 parcels were selected for each Municipality to be measured for imperviousness (indicator of heat) and tree canopy cover.

**Measuring imperviousness**

Next step was to measure imperviousness of these priority areas using point sampling methodology in QGIS. Then each SA1 could be prioritised based on % imperviousness but also canopy cover as a %.

Each of the 9 Councils had their top 8 parcels point sampled for:

* Imperviousness (included roads, roofs, carparks, footpaths, driveways, buildings, sheds etc)
* tree cover
* dirt gravel (which was predominant in the more rural Councils)
* and other (which included grass, water, shrubs so is essentially another indicator of permeability)

Note that Councils had less than 8 priority parcels.

Most parcels measured were at SA1 level, though in the more rural townships the SA1s were clipped to cover only the urban area and exclude farmland.

1000 points per parcel were coded as follows:

1 = impervious

2= tree

3 = Gravel or bare dirt

4 = other

All sample points have been included in the package of files for each Council as a shapefile and csv for each individual parcel.

**Final prioritisation**:

The results were then tabled for each Municipality to rank the presence of SV and pedestrian intensity as well as % imperviousness. Scores were attributed to each SA1 parcel for these three indicators with the lowest scores achieving recognition as a priority parcel for cooling measures.

The top 3 parcels were then analysed further for recommendations relating to on-ground works e.g. street tree planting, open space improvements and water sensitive urban design.

The methodology can be easily replicated across all Municipalities.

**Outputs for Each Councils:**

Prioritised parcels x 8 for cooling based on SV, PI and imperviousness

Impervious and tree canopy cover measured for each 8 parcel

All data in shapefile and csv formats

Final Mapping and Prioritisation report

Final Action Plan

All associated maps.