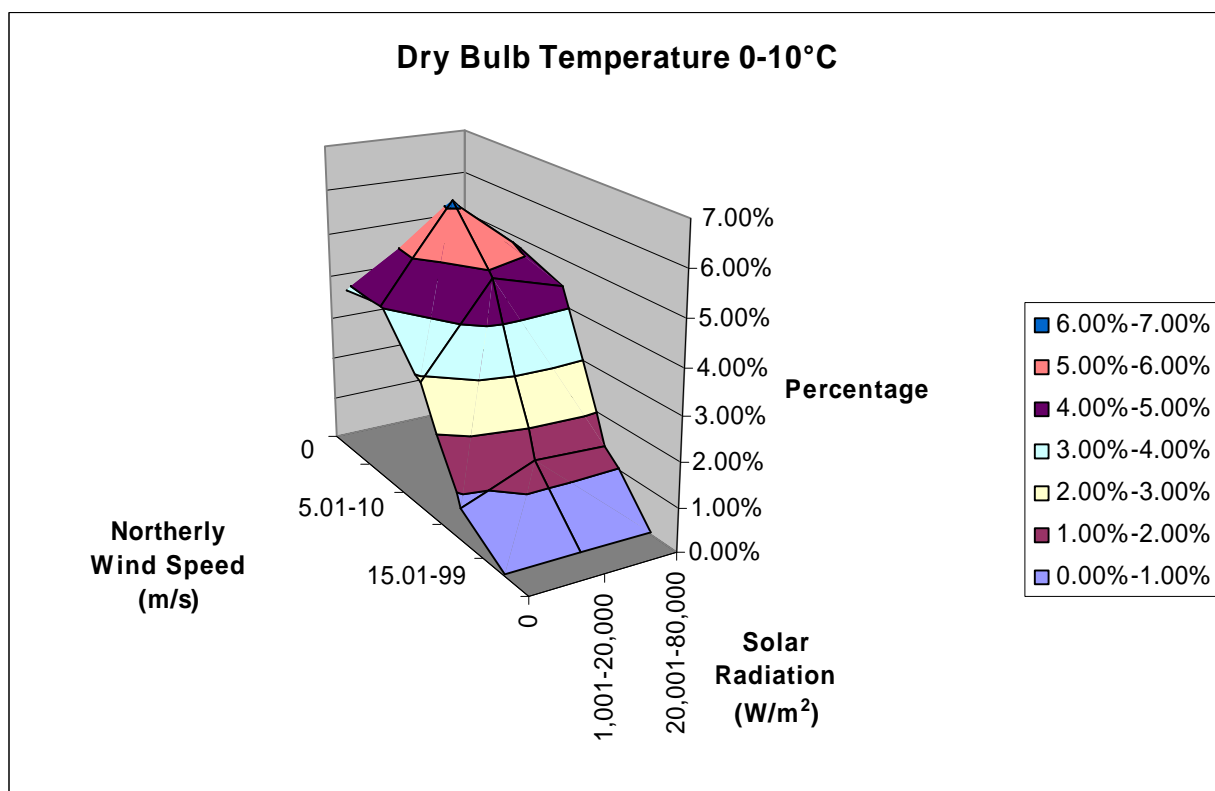


15.0 Appendix F

Data Tables and Graphs

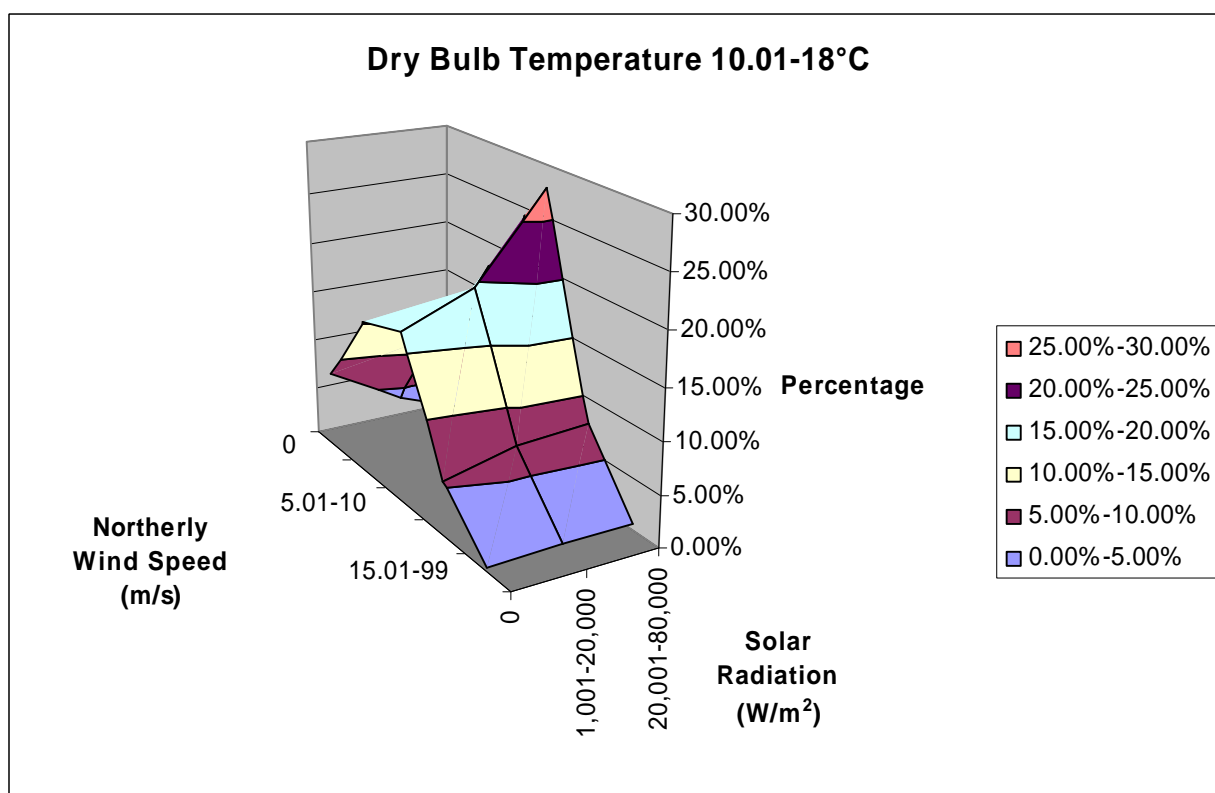
Dry Bulb Temperature 0-10°C

Northerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	3.89%	3.26%	0.72%
0.01-5	4.05%	6.13%	4.83%
5.01-10	2.88%	4.88%	4.41%
10.01-15	0.74%	1.42%	1.35%
15.01-99	0.06%	0.07%	0.08%



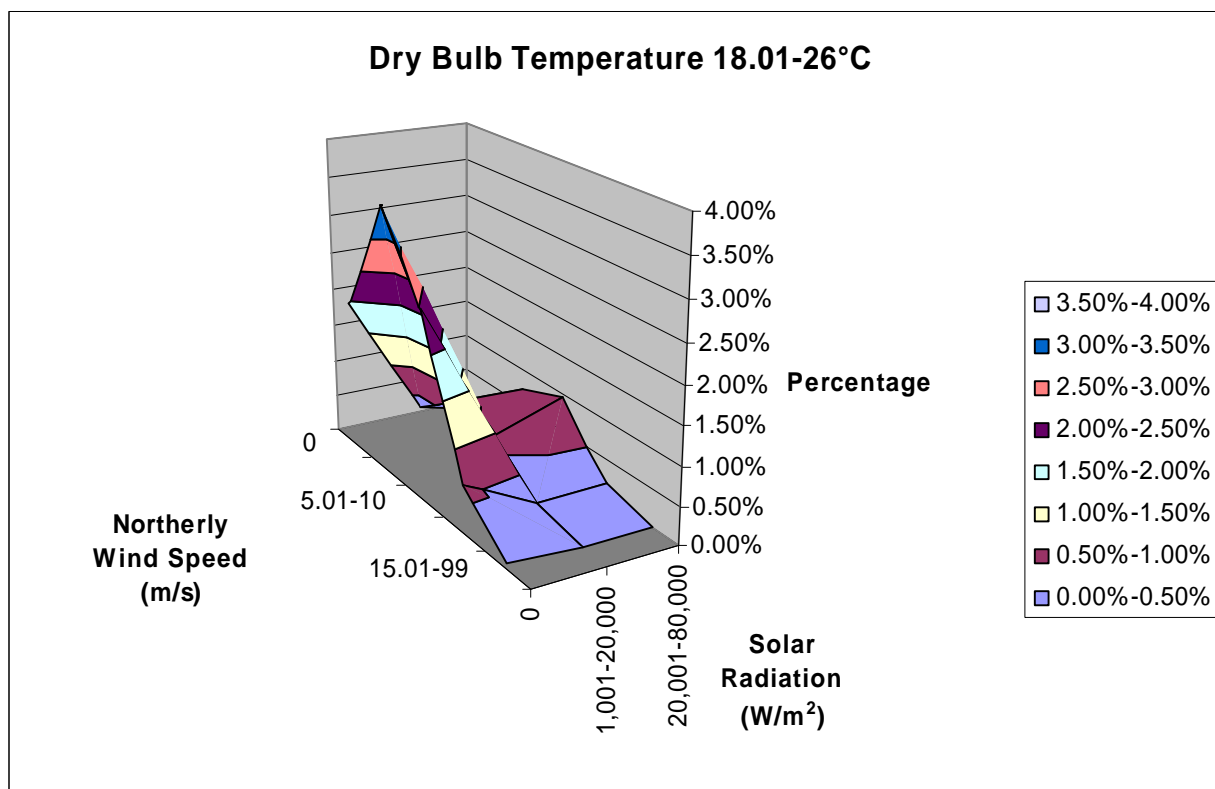
Dry Bulb Temperature 10.01-18°C

Northerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	7.60%	3.68%	0.92%
0.01-5	15.36%	12.60%	14.60%
5.01-10	16.76%	19.64%	27.74%
10.01-15	5.36%	6.93%	7.55%
15.01-99	0.46%	0.65%	0.67%



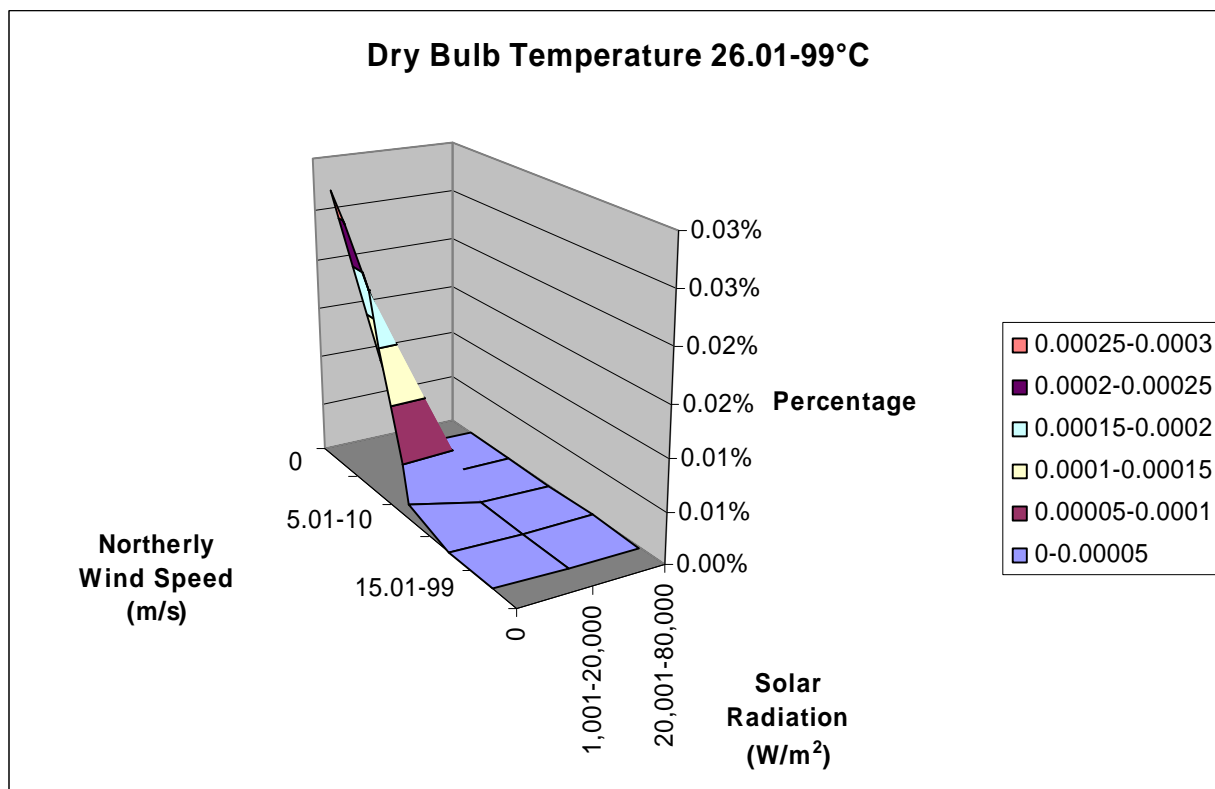
Dry Bulb Temperature 18.01-26°C

Northerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	1.95%	0.32%	0.06%
0.01-5	3.51%	0.75%	0.71%
5.01-10	2.48%	0.66%	0.95%
10.01-15	0.64%	0.14%	0.16%
15.01-99	0.07%	0.01%	0.02%



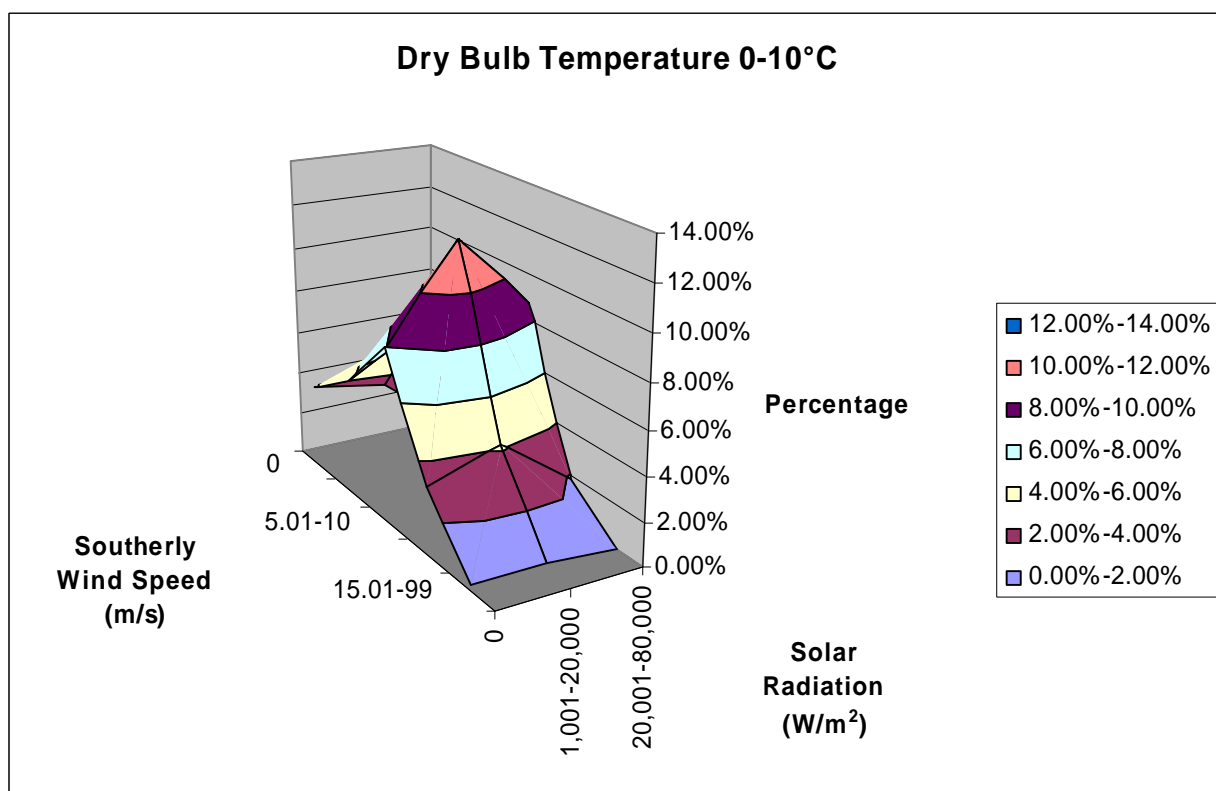
Dry Bulb Temperature 26.01-99°C

Northerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	0.03%	0.00%	0.00%
0.01-5	0.02%	0.00%	0.00%
5.01-10	0.00%	0.00%	0.00%
10.01-15			
15.01-99			



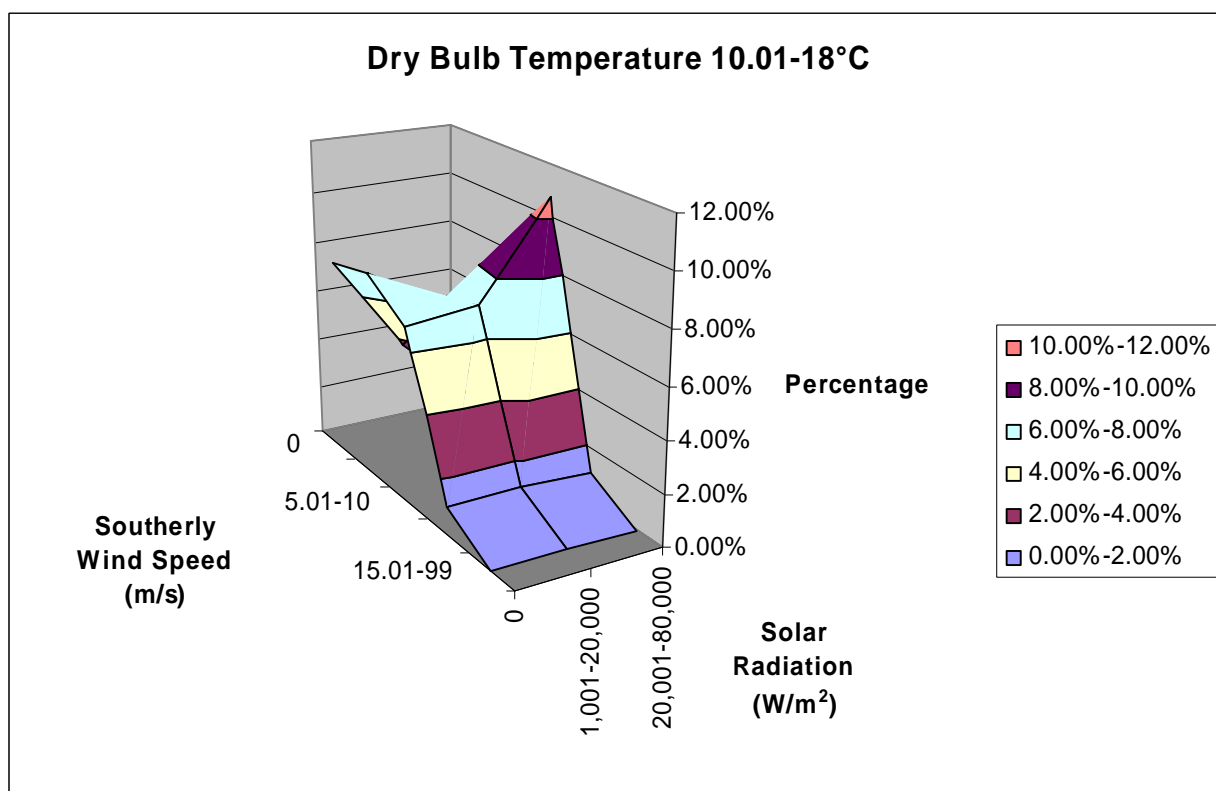
Dry Bulb Temperature 0-10°C

Southerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	3.89%	3.26%	0.72%
0.01-5	5.34%	7.12%	4.38%
5.01-10	7.95%	12.13%	8.75%
10.01-15	3.04%	4.20%	1.84%
15.01-99	0.27%	0.32%	0.03%



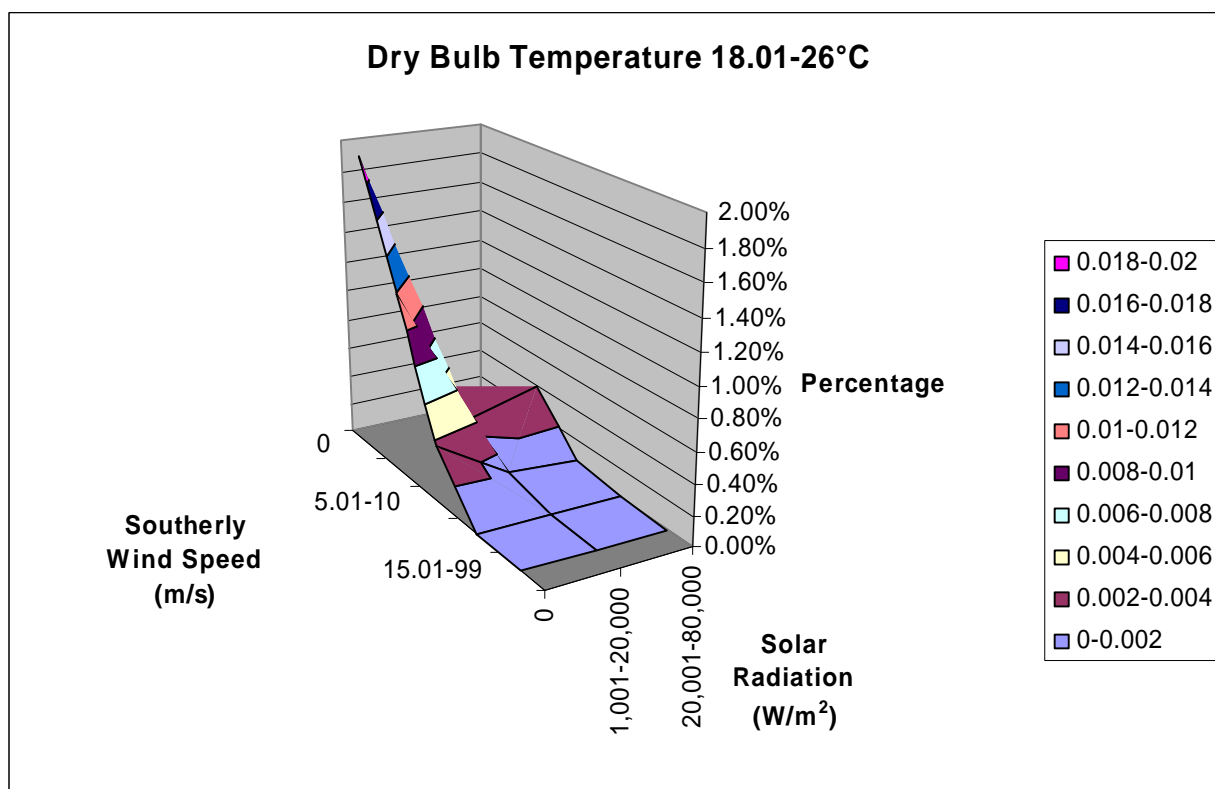
Dry Bulb Temperature 10.01-18°C

Southerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	7.60%	3.68%	0.92%
0.01-5	8.00%	6.38%	8.04%
5.01-10	6.88%	7.14%	10.73%
10.01-15	1.07%	1.13%	1.01%
15.01-99	0.03%	0.08%	0.00%



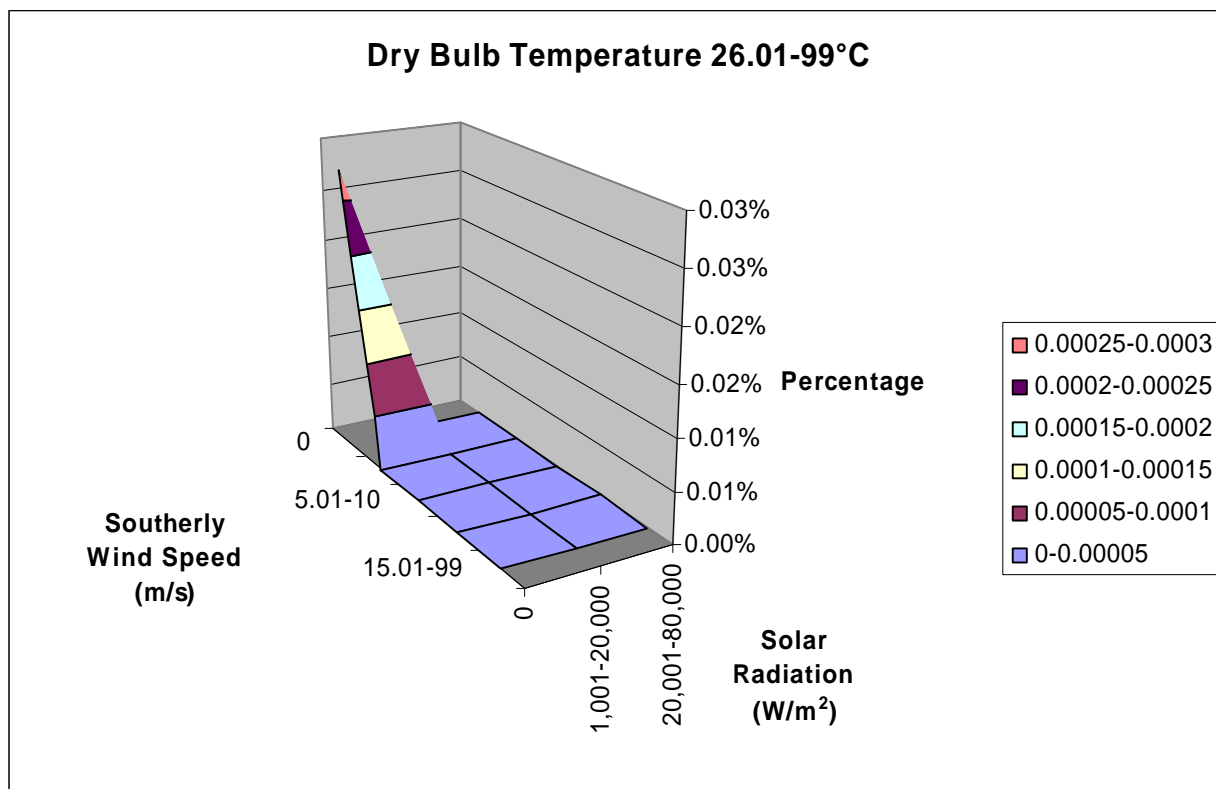
Dry Bulb Temperature 18.01-26°C

Southerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	1.95%	0.32%	0.06%
0.01-5	1.19%	0.26%	0.39%
5.01-10	0.37%	0.08%	0.06%
10.01-15	0.01%	0.01%	0.00%
15.01-99			



Dry Bulb Temperature 26.01-99°C

Southerlies Wind Speed (m/s)	Solar Radiation (W/m ²)		
	0	1,001-20,000	20,001-80,000
0	0.03%	0.00%	0.00%
0.01-5			
5.01-10			
10.01-15			
15.01-99			



16.0 Appendix G

Wind Tunnel Bead Erosion Contours and Hotfilm Wind Speeds

Bead erosion contours from three wind tunnel studies (Century City – 70 Tory Street, Backbencher Apartments – Cnr. Molesworth & Kate Sheppard Place, Vicino Apartments, Stage III – 29 Taranaki Street) have been analysed with a view to determining their suitability for measuring pedestrian level wind speeds that are currently measured using a hotfilm probe.

Contours were produced using scanned photos from the standard bead tests that we currently perform. “Photoshop” was used to process the images (draw the contour lines and combine them into one image). This process was fairly ‘automatic’ with little scope to influence, or mess up, the contours produced. Each contour corresponds to the edge of the beads for a given wind tunnel speed. As the fan control frequency is proportional to the wind tunnel speed, I have assigned to each contour the frequency value that corresponds to the bead erosion pattern in each photograph. The table below is the key to these values.

Photograph	Fan Control Frequency (Hz)	Reference Tunnel Speed (m/s)	Colour (RGB)
0	0.0	0.0	Black (0 0 0)
1	7.7	1.7	Yellow (255 255 0)
2	9.7	2.2	Orange (255 125 0)
3	11.3	2.6	Red (255 0 0)
4	12.9	3.0	Magenta (200 0 255)
5	14.1	3.3	Blue (0 0 255)
6	15.3	3.6	Light blue (0 255 255)
7	16.9	4.0	Light green (0 255 0)
8	18.5	4.4	Dark green (0 125 0)
9	21.3	5.1	Brown (100 50 0)

The least accurate part of the analysis was assigning ‘frequencies’ to the locations where wind speeds were measured with the hotfilm probe. Two problems arose here - 1) identifying the location on the image and 2) interpolating a frequency value from the contours. I made a rough estimate of the potential error associated with each value. Where a location coincided with no bead erosion (even at the highest wind speed) a frequency value of 25 was assigned to that point.

What follows are summary plots of the ‘bead clearance fan frequency’ versus hotfilm wind speeds for all three wind tunnel studies.

