

**Cowichan District Hospital Replacement Project**  
**SCHEDULE 2: ALLIANCE WORKS AND PROJECT DESCRIPTION**  
**PROJECT ALLIANCE AGREEMENT**  
**September 9, 2022**

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**APPENDIX 2N CLIMATE DATA SET**  
**EXECUTION VERSION**  
**SEPTEMBER 9, 2022**

Building Code	Variable	Handbook Past		Model Past		2020s Projection		2020s Change		2020s Percent Change		2050s Projection		2050s Change		2050s Percent Change		2080s Projection		2080s Change		2080s Percent Change	
		Units	Site (Nanaimo)	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%		
Cold Dew Point Temperature 0.4%	degC	-11.6	-15.1	-20.5 to -9.6		-14.2	-18.9 to -9.4	0.8	-0.7 to 2.3	NA	NA	-12.3	-19.1 to -7.9	2.7	0.7 to 3.8	NA	NA	-12.3	-19.9 to -7.4	2.7	1 to 3.8	NA	NA
Cold Humidity Ratio 0.4%	Ratio	1.4	1.3	0.8 to 1.9		1.4	0.9 to 1.9	0.1	0 to 0.2	7.7	0 to 10.5	1.7	0.9 to 2.1	0.3	0.1 to 0.5	23.1	12.5 to 26.3	1.7	0.8 to 2.3	0.3	0 to 0.5	23.1	0 to 26.3
Mean Coincident Dry Bulb (Dew Point 0.4%)	degC	-2	10	10 to 10.1		11.4	10.9 to 11.9	1.4	0.8 to 1.9	NA	NA	12.8	11.6 to 14	2.8	1.5 to 4	NA	NA	14.7	12.9 to 16.3	4.7	2.8 to 6.3	NA	NA
Mean Coincident Wet Bulb (Dry Bulb 99.6%)	degC	17.7	22.2	21.8 to 22.5		23.6	22.7 to 24.3	1.4	0.7 to 2	NA	NA	25.5	23.9 to 27.2	3.3	2.4 to 4.7	NA	NA	27.7	25.5 to 30.1	5.5	3.8 to 7.9	NA	NA
Mean Coincident Wet Bulb (Dry Bulb 99.0%)	degC	17	21.9	21.5 to 22.2		23.3	22.4 to 24	1.4	0.7 to 2.1	NA	NA	25.2	23.5 to 26.8	3.3	2.3 to 4.6	NA	NA	27.3	25.3 to 29.7	5.5	3.8 to 7.8	NA	NA
Mean Coincident Wet Bulb (Dry Bulb 98.0%)	degC	16.3	21.3	21 to 21.5		22.7	21.8 to 23.3	1.4	0.9 to 1.9	NA	NA	24.6	22.9 to 26.2	3.3	2.3 to 4.7	NA	NA	26.8	24.7 to 29	5.5	3.7 to 7.8	NA	NA
Evaporation Wet Bulb 99.6%	degC	18.4	22.1	21.8 to 22.4		23.5	22.7 to 24.2	1.4	0.7 to 2	NA	NA	25.4	23.8 to 27	3.3	2.4 to 4.6	NA	NA	27.6	25.4 to 29.9	5.5	3.8 to 7.8	NA	NA
Evaporation Wet Bulb 99.0%	degC	17.7	21.4	21.1 to 21.6		22.8	21.9 to 23.4	1.4	0.9 to 1.8	NA	NA	24.7	23.1 to 26.3	3.3	2.3 to 4.7	NA	NA	26.8	24.7 to 29.1	5.4	3.5 to 7.7	NA	NA
Mean Coincident Dry Bulb (Wet Bulb 99.6%)	degC	24.9	22.6	22.3 to 22.9		24.1	23.3 to 24.7	1.5	0.7 to 2.1	NA	NA	26	24.4 to 27.7	3.4	2.5 to 4.7	NA	NA	28.2	26.1 to 30.6	5.6	4 to 8	NA	NA
Mean Coincident Dry Bulb (Wet Bulb 99.0%)	degC	23.3	22.2	21.8 to 22.5		23.7	22.9 to 24.3	1.5	0.8 to 2.1	NA	NA	25.6	24 to 27.2	3.4	2.5 to 4.7	NA	NA	27.8	25.6 to 30.1	5.6	3.9 to 8	NA	NA
Warm Dew Point Temperature 99.6%	degC	16	15.9	14.6 to 17.8		16.7	15.6 to 19	0.9	0.5 to 1.1	NA	NA	17.2	15.9 to 19.7	1.4	0.8 to 2.2	NA	NA	17.5	15.7 to 19.6	1.6	0.9 to 2.6	NA	NA
Warm Dew Point Temperature 99.0%	degC	15.3	15.2	14 to 17.2		16.1	14.7 to 18.4	0.9	0.6 to 1.1	NA	NA	16.6	15.1 to 19.1	1.4	0.9 to 2.1	NA	NA	16.8	14.9 to 19	1.6	1 to 2.6	NA	NA
Warm Humidity Ratio 99.6%	Ratio	11.4	11.2	10.3 to 12.7		11.9	11 to 13.7	0.6	0.4 to 0.8	5.4	3.9 to 6.3	12.3	11.2 to 14.3	1.1	0.6 to 1.6	9.8	5.8 to 12.6	12.5	11 to 14.2	1.2	0.7 to 2.1	10.7	6.8 to 16.5
Warm Humidity Ratio 99.0%	Ratio	10.9	10.7	9.9 to 12.2		11.4	10.4 to 13.1	0.6	0.4 to 0.8	5.6	4 to 6.6	11.8	10.6 to 13.8	1	0.6 to 1.5	9.3	6.1 to 12.3	11.9	10.5 to 13.6	1.2	0.6 to 1.9	11.2	6.1 to 15.6
Mean Coincident Dry Bulb (Dew Point 99.6%)	degC	20.5	20.1	19.3 to 21.4		18.2	17.3 to 19.3	-1.8	-2.4 to -1.2	NA	NA	19.7	18.5 to 21.1	-0.3	-1.7 to 1.2	NA	NA	22.1	20.4 to 23.9	2.1	0.4 to 4.2	NA	NA
Mean Coincident Dry Bulb (Dew Point 99.0%)	degC	19.7	19.8	19.1 to 21		18.2	17.3 to 19.1	-1.6	-2.2 to -1	NA	NA	19.8	18.6 to 21	0	-1.1 to 1.2	NA	NA	22.2	20.5 to 24	2.5	0.9 to 4.5	NA	NA
Enthalpy 99.6%	kJ/kg	70	299.1	298.6 to 299.8		300.4	299.6 to 301	1.3	0.5 to 1.9	0.4	0.2 to 0.6	302.4	300.8 to 304	3.3	2.3 to 4.7	1.1	0.8 to 1.6	304.7	302.5 to 307	5.6	3.8 to 8	1.9	1.3 to 2.7
Mean Coincident Dry Bulb (Enthalpy 99.6%)	degC	25	22.6	22.2 to 22.9		24	23.3 to 24.7	1.5	0.7 to 2.1	NA	NA	26	24.3 to 27.6	3.4	2.5 to 4.7	NA	NA	28.2	26 to 30.5	5.6	4 to 8	NA	NA
Annual Maximum Wet Bulb	degC	24	22.7	22.3 to 23		24.2	23.5 to 24.8	1.5	0.7 to 2.1	NA	NA	26.1	24.5 to 27.7	3.4	2.4 to 4.6	NA	NA	28.3	26.2 to 30.6	5.6	3.9 to 8	NA	NA
Heating Dry Bulb Temperature 0.4%	degC	-4.8	-7.1	-7.6 to -6.5		-4.8	-5.6 to -3.8	2.2	1.5 to 3.6	NA	NA	-3.1	-4.2 to -1.7	3.9	2.7 to 5.5	NA	NA	-0.7	-2.3 to 0.9	6.4	4.4 to 7.5	NA	NA
Heating Dry Bulb Temperature 1.0%	degC	-2.7	-5.6	-6.1 to -5.2		-3.6	-4.1 to -2.8	2.1	1.3 to 3.2	NA	NA	-1.9	-3 to -0.2	3.7	2.2 to 5.3	NA	NA	0.3	-1.5 to 1.7	5.9	4 to 7.2	NA	NA
Cooling Dry Bulb Temperature 99.6%	degC	26.8	30.7	30.3 to 31		32.3	31.7 to 33.1	1.7	0.9 to 2.6	NA	NA	34.2	32.8 to 36	3.6	2.3 to 5	NA	NA	36.5	34.2 to 38.9	5.9	3.8 to 8.4	NA	NA
Cooling Dry Bulb Temperature 99.0%	degC	24.7	29.6	29.2 to 29.9		31.2	30.7 to 31.9	1.6	1.1 to 2.1	NA	NA	33.1	31.8 to 34.7	3.5	2.3 to 4.9	NA	NA	35.4	33.1 to 37.8	5.8	3.5 to 8.3	NA	NA
Average Annual Max Dry Bulb Temperature	degC	30.8	31.3	30.9 to 31.7		33	32.5 to 33.8	1.7	0.7 to 2.5	NA	NA	34.9	33.5 to 36.6	3.6	2.2 to 5	NA	NA	37.2	34.9 to 39.4	5.9	3.9 to 8.3	NA	NA
Average Annual Min Dry Bulb Temperature	degC	-6.6	-8.5	-9.5 to -7.9		-6.1	-6.8 to -5.1	2.4	1.6 to 3.7	NA	NA	-4.2	-5.3 to -2.9	4.3	2.4 to 6.1	NA	NA	-1.7	-2.9 to -0.4	6.8	5.3 to 8.1	NA	NA
Average Annual Total Precipitation	mm	1160	1139.6	1114.6 to 1167.8		1168	1138.4 to 1185.4	28.4	3.6 to 6.7	2.5	0.3 to 5.8	1184.8	1138 to 1233.1	45.2	0.8 to 89.8	4	0.1 to 7.7	1256	1183.4 to 1345.1	116.4	22 to 200.6	10.2	2.1 to 17.2
Maximum Annual Total Precipitation	mm	1560	1602.2	1474.3 to 1715.6		1568.8	1462.9 to 1666.7	-33.4	-13.9 to 7.5	1624.4	1491.8 to 1724.5	22.2	-125 to 179.4	1.4	-8.5 to 10.5	1763.8	1590.7 to 2068.9	161.6	67.9 to 330.7	101.4	4.6 to 19.3		
Minimum Annual Total Precipitation	mm	702.5	800.1	751.1 to 843.8		830.2	712.3 to 917.2	30.1	-65.8 to 134.4	829.9	789.2 to 871.2	29.8	-25.6 to 92.2	3.7	-3.4 to 10.9	845.7	727						

Building Code	Variable	Handbook	Past	Model	Past	2020s Projection	2020s Change	2020s Percent Change	2050s Projection	2050s Change	2050s Percent Change	2080s Projection	2080s Change	2080s Percent Change		
Variable	Units	Site	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	10th%-90th%	Average	Average	10th%-90th%	Average	10th%-90th%	
Cool Month Design Temperature 5.0%	degC	NaN	-2.3	-2.5 to -2	-0.5	-1.1 to -0.1	1.7	1.2 to 2.3	NA	NA	0.8	-0.3 to 2.1	3.1	1.7 to 4.2	NA	2.6 0.9 to 4
Cool Month Design Temperature 2.5%	degC	-6	-3.8	-4.1 to -3.4	-1.9	-2.4 to -1.3	1.9	1.3 to 2.8	NA	NA	-0.4	-1.7 to 1.1	3.4	1.4 to 4.8	NA	1.5 -0.1 to 3
Cold Month Design Temperature 1.0%	degC	-8	-5.6	-6.1 to -5.2	-3.6	-4.1 to -2.8	2.1	1.3 to 3.2	NA	NA	-1.9	-3 to -0.2	3.7	2.2 to 5.3	NA	0.3 -1.5 to 1.7
Warm Month Design Temperature 99.0%	degC	NaN	29.6	29.2 to 29.9	31.2	30.7 to 31.9	1.6	1.1 to 2.1	NA	NA	33.1	31.8 to 34.7	3.5	2.3 to 4.9	NA	35.4 33.1 to 37.8
Warm Month Design Temperature 97.5%	degC	28	27.8	27.7 to 27.9	29.4	29 to 29.9	1.6	1.2 to 2	NA	NA	31.3	30.1 to 32.8	3.5	2.2 to 4.9	NA	33.6 31.7 to 36
Warm Month Design Temperature 95.0%	degC	NaN	26	25.9 to 26.2	27.7	27.3 to 28.1	1.7	1.2 to 2	NA	NA	29.6	28.5 to 30.7	3.5	2.4 to 4.6	NA	31.9 30.1 to 33.8
Warm Month Design Wet Bulb Temp 99.0%	degC	NaN	21.4	21.1 to 21.6	22.8	21.9 to 23.4	1.4	0.9 to 1.8	NA	NA	24.7	23.1 to 26.3	3.3	2.3 to 4.7	NA	26.8 24.7 to 29.1
Warm Month Design Wet Bulb Temp 97.5%	degC	19	20.2	20.1 to 20.4	21.7	21 to 22.1	1.4	1.1 to 1.8	NA	NA	23.5	22 to 25	3.2	2.1 to 4.6	NA	25.7 23.5 to 27.8
Warm Month Design Wet Bulb Temp 95.0%	degC	NaN	19.1	18.9 to 19.2	20.5	19.9 to 20.9	1.4	1 to 1.9	NA	NA	22.3	20.8 to 23.6	3.2	2 to 4.4	NA	24.5 22.4 to 26.5
Heating Degree Days (18 degC)	DD	2980	2986.4	2965.9 to 3018.9	2536.2	2368.2 to 2701.6	-450.2	-599.5 to -270.5	-15.1	-20.2 to -9	2160.1	1813 to 2490	-826.3	-1154.6 to -482.1	-27.7	-38.9 to -16
Heating Degree Days (18.3 degC)	DD	NaN	3086.4	3065.8 to 3118.9	2629.3	2458.6 to 2798.8	-457.1	-607.6 to -273.5	-14.8	-19.8 to -8.8	2244.8	1889.1 to 2582.2	-841.6	-1177.2 to -490.1	-27.3	-38.4 to -15.7
Cooling Degree Days (18.3 degC)	DD	NaN	50.6	45.7 to 54.6	110.5	76.1 to 124.9	59.8	36.8 to 77.7	118.2	80.5 to 142.3	234.6	123.1 to 338.7	184	83.8 to 287.1	363.6	183.4 to 525.8
Annual Maximum Daily Precipitation	mm	NaN	51.4	49.1 to 55.3	53.6	50.5 to 56.3	2.2	-2.1 to 6.4	4.3	-4.3 to 11.6	56.3	52.7 to 61.5	4.9	1.6 to 10.1	9.5	3.3 to 18.3
Annual Average Total Precipitation	mm	1050	1139.6	1114.6 to 1167.8	1168	1138.4 to 1185.4	28.4	3.6 to 67.3	2.5	0.3 to 5.8	1184.8	1138 to 1233.1	45.2	0.8 to 89.8	4	0.1 to 7.7
5-Year Return Period Daily Total Precipitation	mm	NaN	61	57.5 to 65.4	64	60.7 to 67.7	3	-1.8 to 6.8	4.9	-3.1 to 10.4	67.2	62.5 to 72.8	6.2	1.3 to 13.1	10.2	2.3 to 20
10-Year Return Period Daily Total Precipitation	mm	NaN	68.8	64.8 to 73.5	73.5	68.1 to 78.1	4.7	-2.2 to 11.6	6.8	-3.4 to 15.8	75.9	69.4 to 83.5	7.1	-1.2 to 17	10.3	-1.9 to 23.1
20-Year Return Period Daily Total Precipitation	mm	NaN	76.4	71.4 to 81.7	83.2	75.1 to 88.7	6.9	-4.2 to 15.1	9	-5.9 to 18.5	84.6	73.1 to 94.4	8.3	-4.5 to 21.6	10.9	-6.3 to 26.4
50-Year Return Period Daily Total Precipitation	mm	103	86.5	79.1 to 93.9	97	82.9 to 107.8	10.5	-7.4 to 24.2	12.1	-9.4 to 25.8	97	78.9 to 120.4	10.5	-10.6 to 37	12.1	-13.4 to 39.4