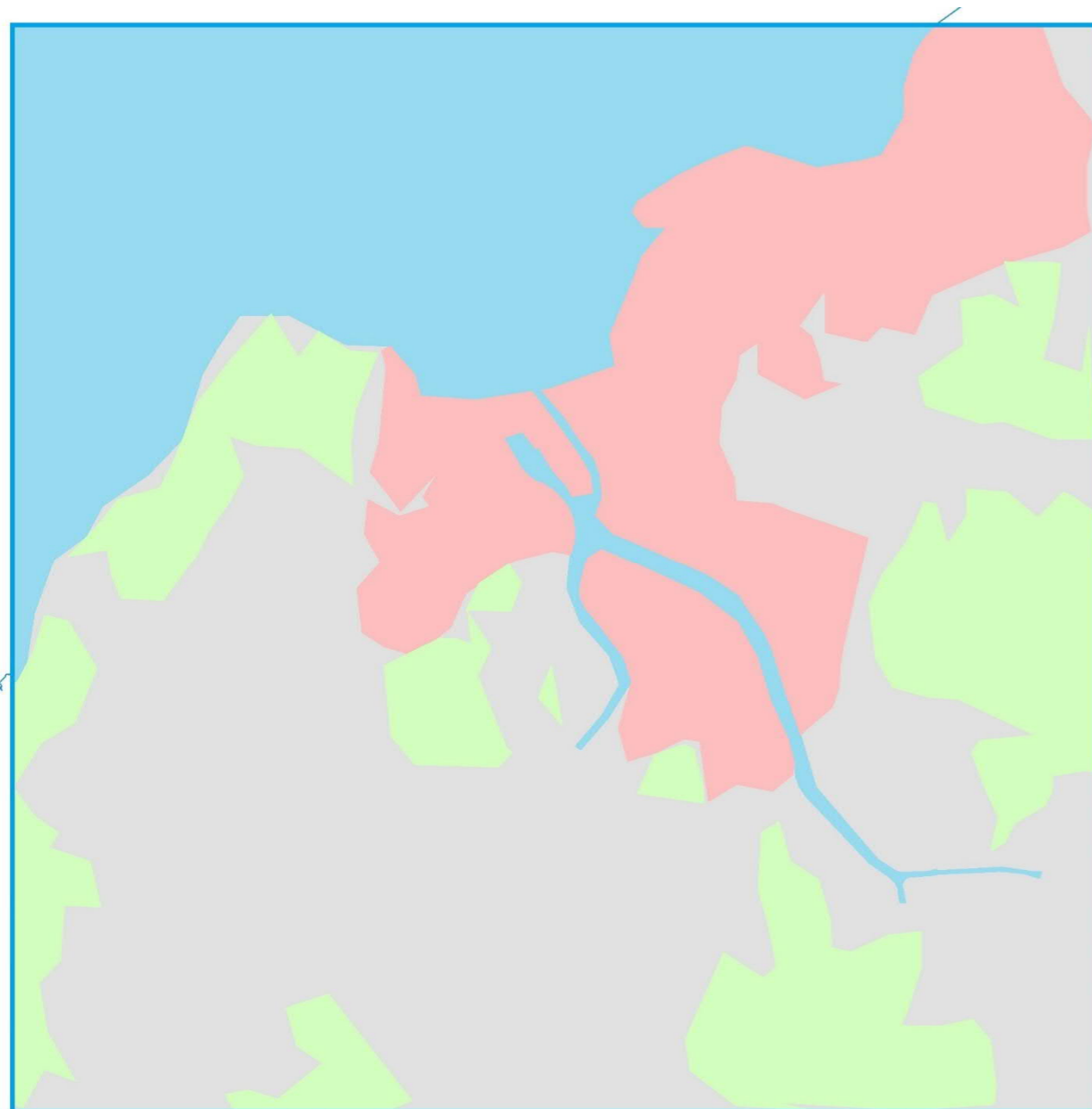


## Appendix 3.7 Determination of Surface Characteristics Parameters for AERMET

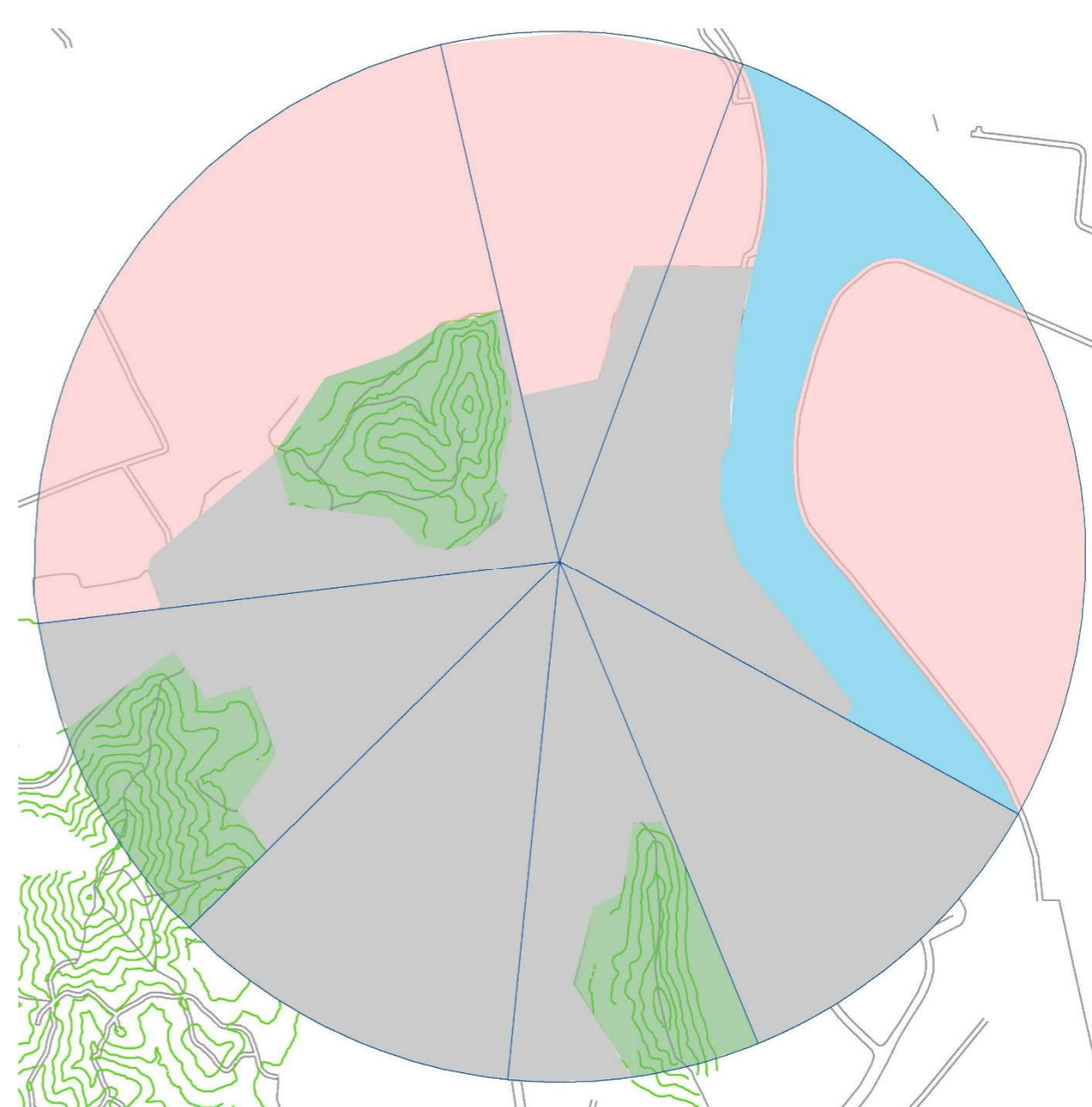
### 10km by 10km Region Centered on the Project Site



#### Legend

- 10km by 10km Region Centered on the Project Site

### 1km Boundary from Grid 2549



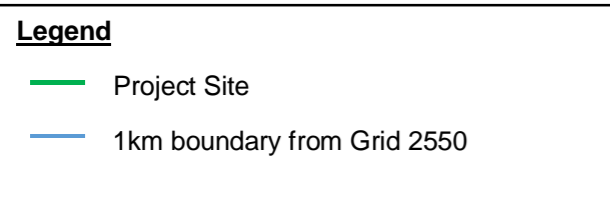
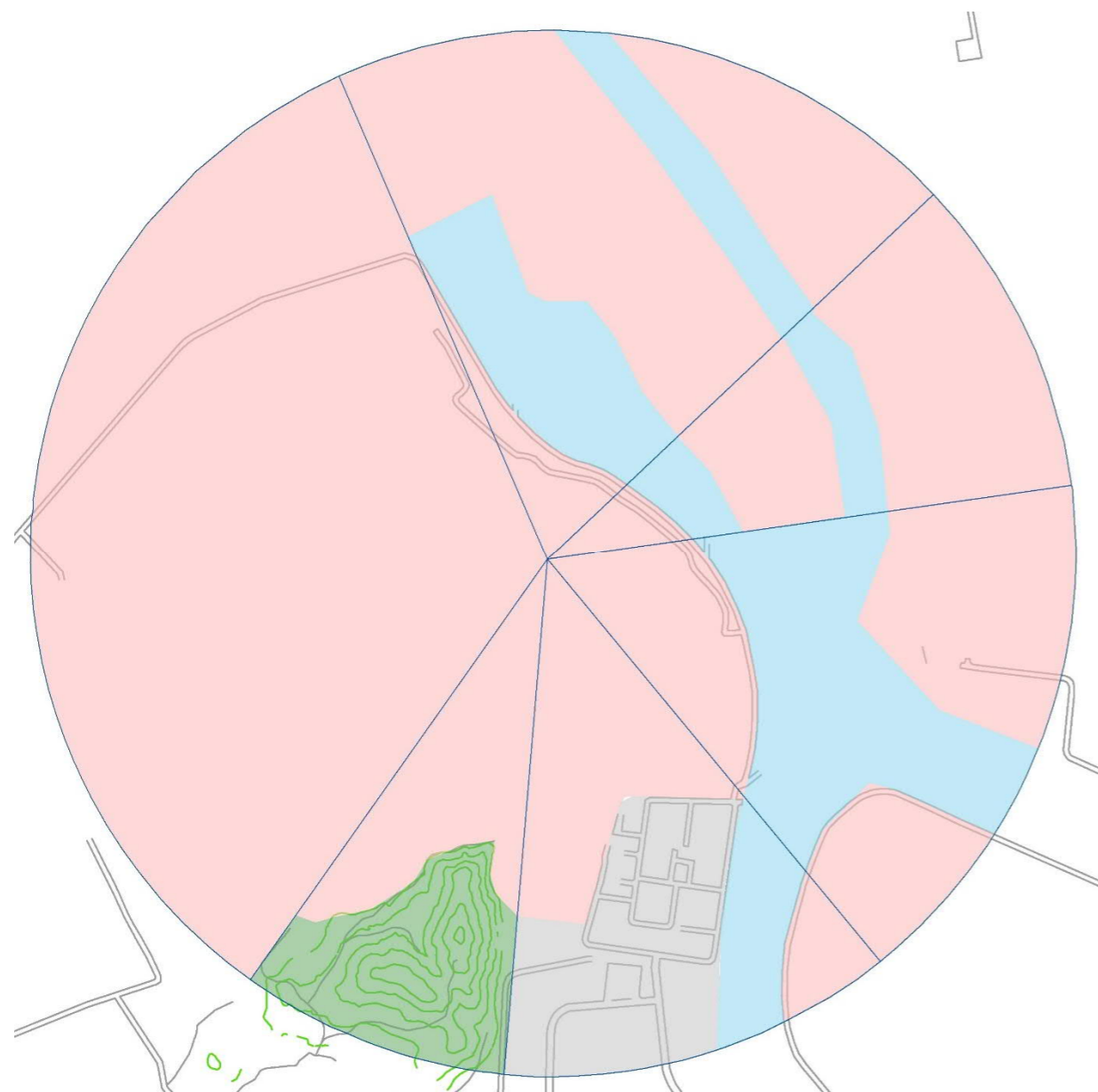
#### Legend

- Project Site
- 1km boundary from Grid 2549

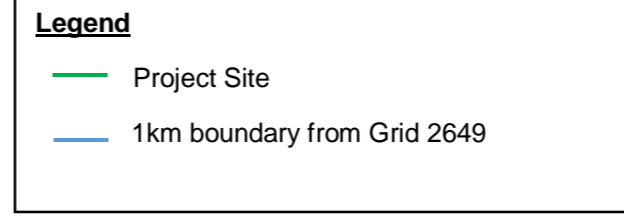
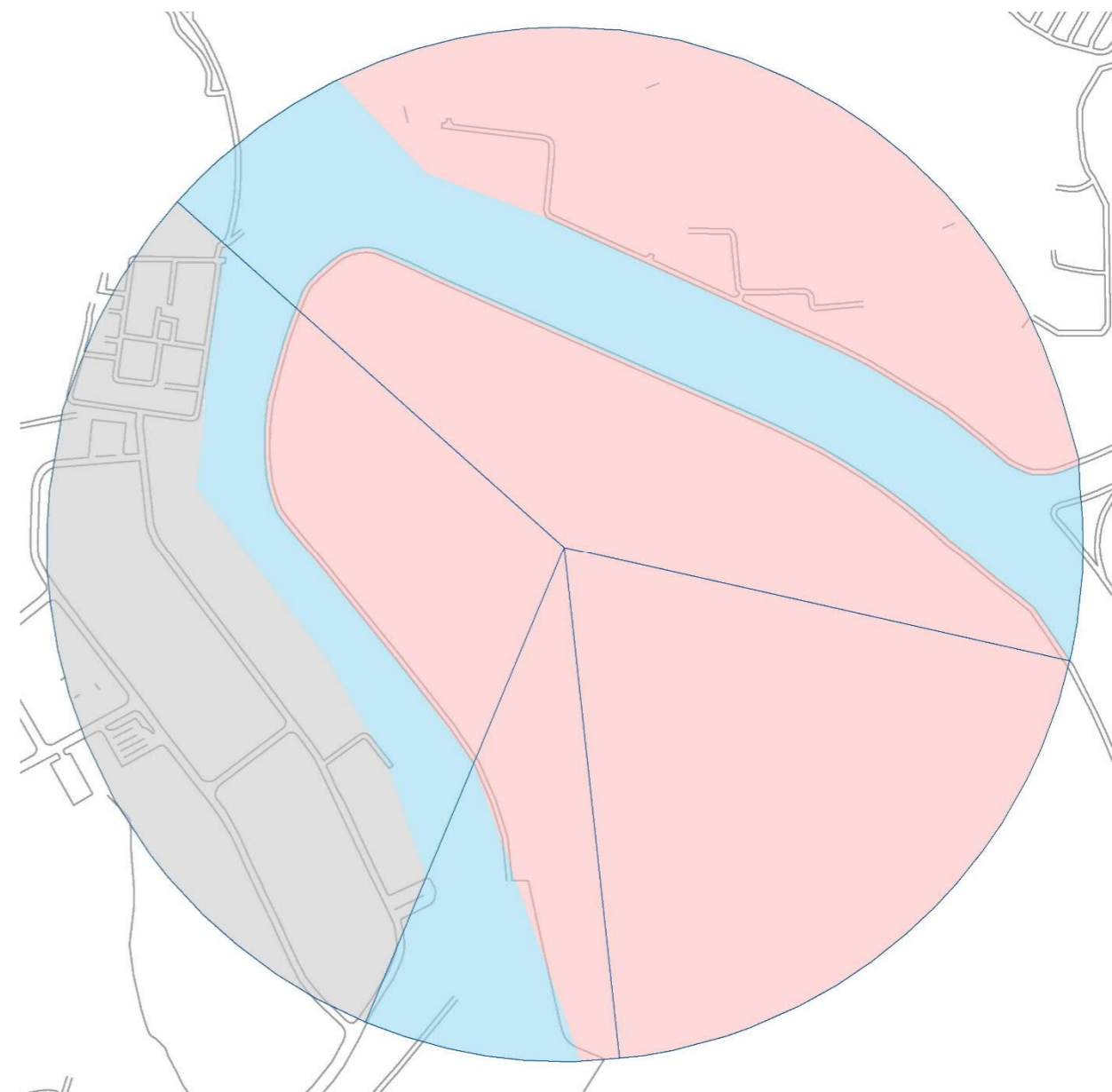
Note: Grey area is classified as urban area. Blue area is classified as water area. Green area is classified as grassland area. Pink area is classified as swamp area.

### Appendix 3.7 Determination of Surface Characteristics Parameters for AERMET

#### 1km Boundary from Grid 2550

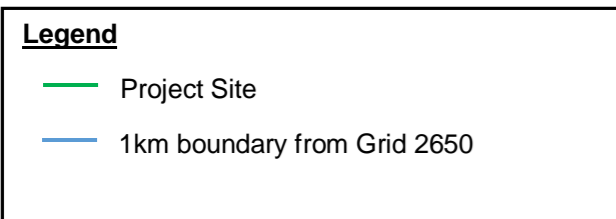
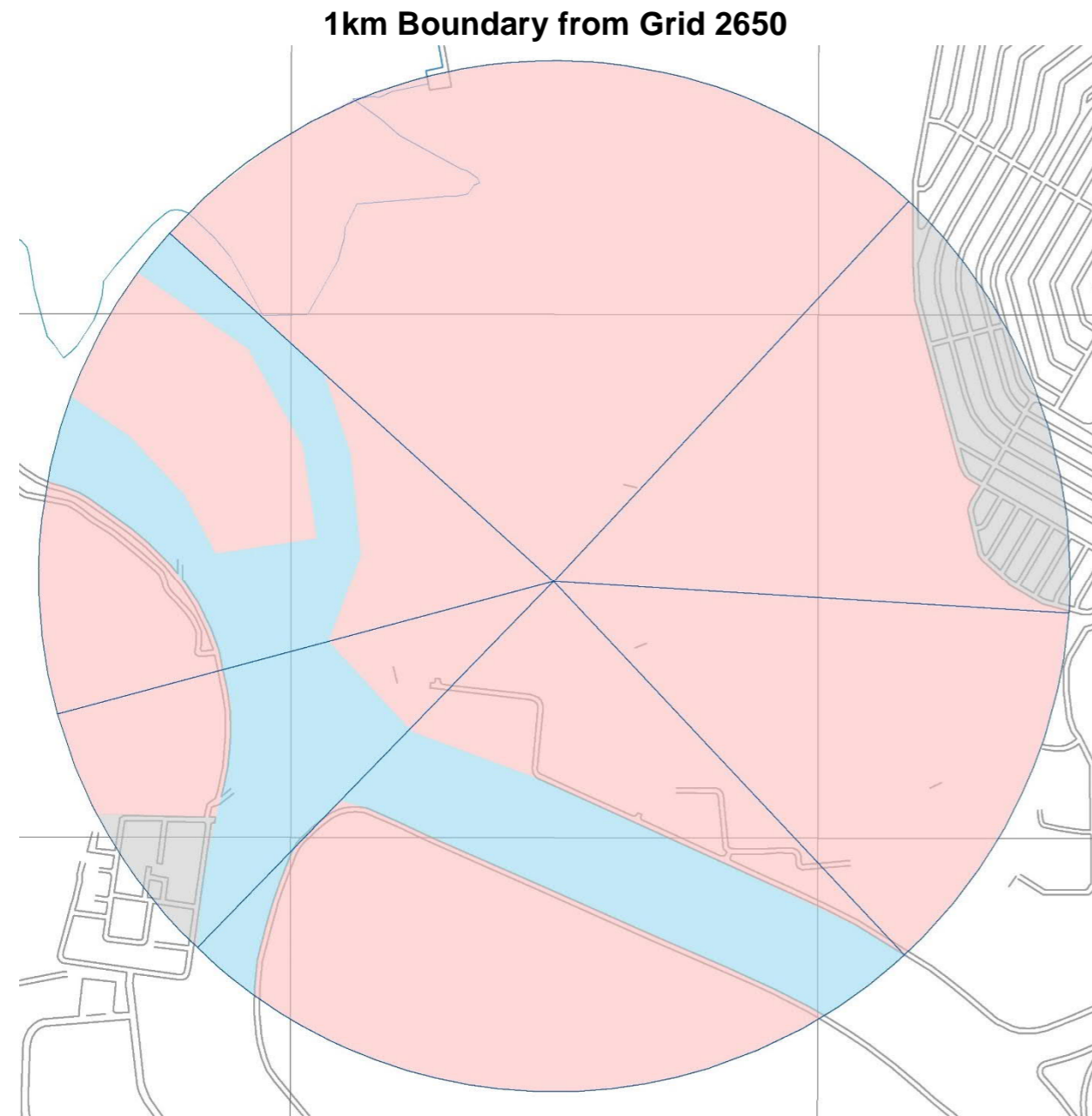


#### 1km Boundary from Grid 2649



Note: Grey area is classified as urban area. Blue area is classified as water area. Green area is classified as grassland area. Pink area is classified as swamp area.

Appendix 3.7 Determination of Surface Characteristics Parameters for AERMET



## Appendix 3.7 Determination of Surface Characteristics Parameters for AERMET

### Summary of Surface Characteristics for the Study Area

#### Grid 2549

Sector (degrees in clockwise)	Land Use	Area (m <sup>2</sup> )	Distance (m)	Weighting (Area Fraction/Distance)	Albedo <sup>2,4,5</sup>	Bowen Ratio <sup>1,4,5</sup>	Surface Roughness (m) <sup>3,5</sup>	Remark
350-20	Swamp	245883.84	730.15	0.001148	0.15	0.44	0.3357	Swamp and urban development in the north
	Urban	47488.51	297.12	0.000545				
20-120	Swamp 1	379440.37	753.46	0.000581			0.0524	Swamp, urban development and water from north to east
	Swamp 2	40378.93	773.69	0.000060				
	Urban	184229.27	278.29	0.000764				
	Water	261993.74	608.66	0.000497				
120-160	Urban	334176.18	-	-			1.0000	Urban development in southeast
160-190	Grassland	98142.45	794.76	0.000512			0.3843	Grassland and urban development in south
	Urban	143233.18	561.61	0.001057				
190-230	Urban	339138.04	-	-			1.0000	Urban development in southwest
230-265	Grassland	122362.87	839.99	0.000446			0.4423	Grassland and urban development from southwest to west
	Urban	204173.17	540.50	0.001157				
265-350	Grassland	136320.68	370.44	0.000498			0.1978	Grassland, swamp and urban development from northwest to north
	Swamp	483360.88	741.04	0.000882				
	Urban	119621.27	408.25	0.000396				

#### Grid 2550

Sector (degrees in clockwise)	Land Use	Area (m <sup>2</sup> )	Distance (m)	Weighting (Fraction/Distance)	Albedo <sup>2,4,5</sup>	Bowen Ratio <sup>1,4,5</sup>	Surface Roughness (m) <sup>3,5</sup>	Remark
340-50	Swamp 1	126198.74	886.55	0.000227	0.15	0.44	0.0180	Swamp and water from northwest to northeast
	Swamp 2	40549.71	198.91	0.000325				
	Swamp 3	288183.97	681.85	0.000674				
	Water 1	114069.61	403.31	0.000451				
	Water 2	57901.97	783.78	0.000118				
50-85	Swamp 1	172815.61	846.37	0.000644			0.0378	Swamp and water from northeast to south
	Swamp 2	70059.04	478.43	0.000462				
	Swamp 3	17279.62	157.25	0.000347				
	Water 1	21653.79	294.59	0.000232				
	Water 2	35197.59	631.10	0.000176				
85-145	Swamp 1	67846.99	879.97	0.000149			0.0126	Swamp and water from south to southeast
	Swamp 2	93148.71	293.79	0.000615				
	Swamp 3	150463.22	833.54	0.000350				
	Water	204448.65	622.46	0.000637				
145-185	Swamp 1	131686.61	388.17	0.000888	0.1650	Swamp, urban development and water for southeast to south		
	Swamp 2	28260.46	914.76	0.000081				
	Urban	170182.15	764.04	0.000583				
	Water	51759.87	811.82	0.000167				
185-215	Grassland	135550.46	820.77	0.000641	0.1206	Grassland and swamp from south to southwest		
	Swamp	122267.78	459.20	0.001033				
215-340	Swamp	1040193.31	-	-	0.2000	Swamp from southwest to northwest		

#### Grid 2649

### Appendix 3.7 Determination of Surface Characteristics Parameters for AERMET

Sector (degrees in clockwise)	Land Use	Area (m <sup>2</sup> )	Distance (m)	Weighting (Fraction/Distance)	Albedo <sup>2,4,5</sup>	Bowen Ratio <sup>1,4,5</sup>	Surface Roughness (m) <sup>3, 5</sup>	Remark
315-105	Swamp 1	519369.11	740.84	0.000529	0.15	0.44	0.0254	Swamp and water from northwest to east
	Swamp 2	408045.94	240.15	0.001283				
	Water	397162.11	443.96	0.000675				
105-175	Swamp	617611.54	-	-			0.2000	Swamp from east to south
175-205	Swamp	130862.75	525.30	0.001001			0.0120	Swamp and water from south to southwest
	Water	118125.79	806.73	0.000588				
205-315	Swamp	240461.98	308.66	0.000822			0.1143	Swamp, urban development and water from southwest to northwest
	Urban	559676.18	713.58	0.000828				
	Water	147418.86	485.63	0.000320				

### Grid 2650

Sector (degrees in clockwise)	Land Use	Area (m <sup>2</sup> )	Distance (m)	Weighting (Fraction/Distance)	Albedo <sup>2,4,5</sup>	Bowen Ratio <sup>1,4,5</sup>	Surface Roughness (m) <sup>3, 5</sup>	Remark
310-45	Swamp	806782.59	-	-	0.15	0.44	0.2000	Swamp from northwest to northeast
45-95	Swamp	329900.80	558.94	0.001328			0.2657	Swamp and urban from northeast to east
	Urban	114531.54	905.43	0.000285				
95-135	Swamp	374888.16	-	-			0.2000	Swamp from east to southeast
135-220	Swamp 1	355221.37	764.51	0.000622			0.0281	Swamp and water from southeast to southwest
	Swamp 2	184956.70	347.65	0.000712				
	Water 1	189704.16	577.48	0.000440				
	Water 2	16877.24	905.37	0.000025				
220-250	Swamp 1	71828.82	838.85	0.000323			0.0114	Swamp, urban development and water in southwest
	Swamp 2	46250.66	273.50	0.000637				
	Urban	31149.92	925.25	0.000127				
	Water	116209.43	625.86	0.000700				
250-310	Swamp 1	102673.33	857.10	0.000240			0.0227	Swamp and water for southwest to northwest
	Swamp 2	138103.94	753.77	0.000366				
	Swamp 3	93610.26	281.03	0.000666				
	Water	165702.16	649.29	0.000510				

Note:

- Reference to AERMOD Implementation Guide, the determination of the Bowen ratio should be based on a simple unweighted geometric mean (i.e., no direction or distance dependency) for a representative domain, with a default domain defined by a 10km by 10km region centered on the measurement site.
- Reference to AERMOD Implementation Guide, the determination of the albedo should be based on a simple unweighted arithmetic mean (i.e., no direction or distance dependency) for the same representative domain as defined for Bowen ratio, with a default domain defined by a 10km by 10km region centered on the measurement site.
- Surface roughness length is based on an inverse distance weighted geometric mean for a default upwind distance of 1 kilometer relative to the grid.
- Land use within 10km by 10km region centered on the measurement site included 40.99% urban (40991747.72 km<sup>2</sup>), 24.67% water (24666499.13 km<sup>2</sup>), 16.42% Grassland (16419399.08 km<sup>2</sup>), and 17.92% swamp (17922354.07 km<sup>2</sup>)
- For the parameters including albedo, Bowen Ratio and surface roughness, the default value for "Winter" is excluded from calculating the representative values.