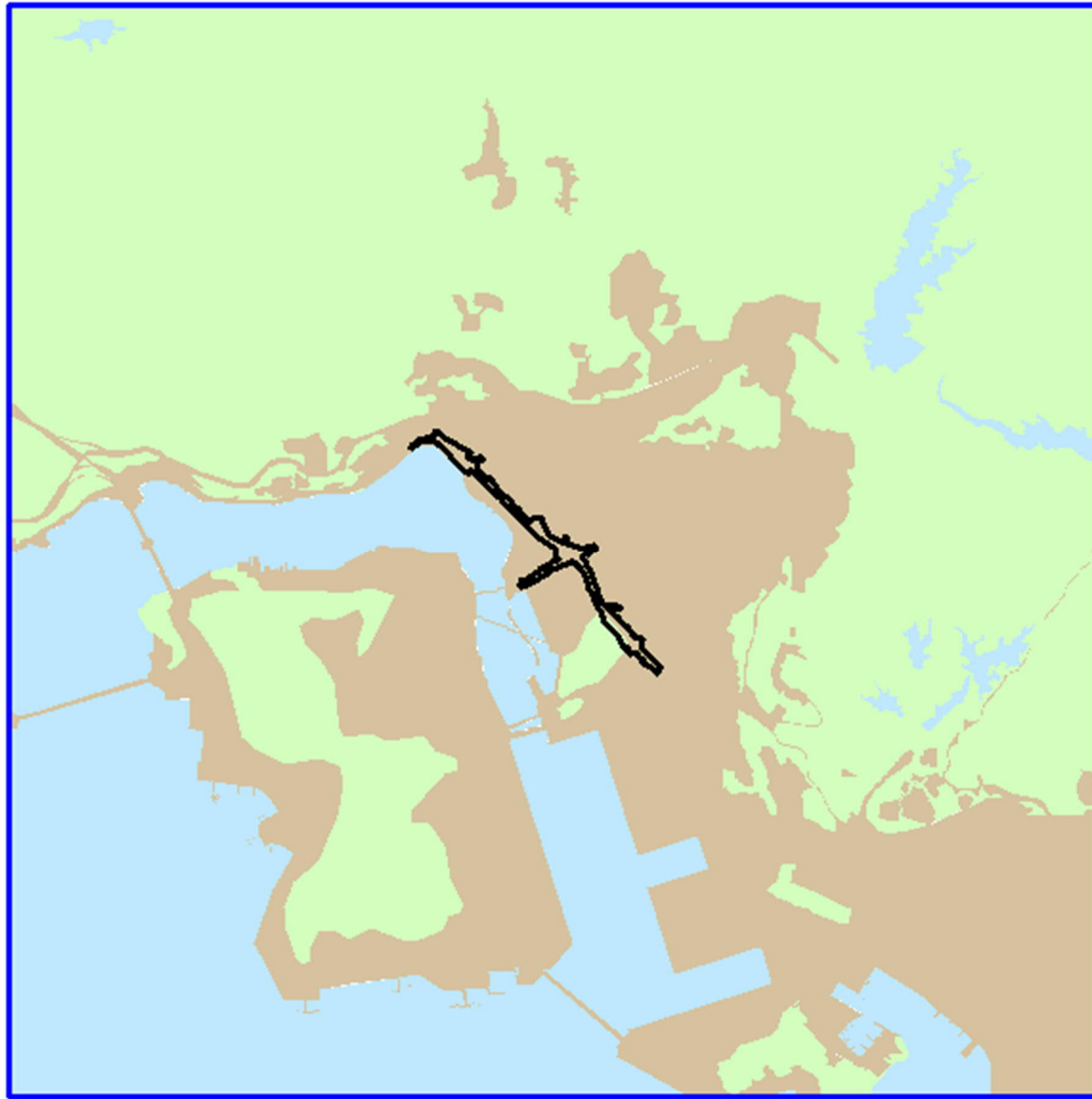


Appendix 3.10 Determination of Surface Characteristics Parameters

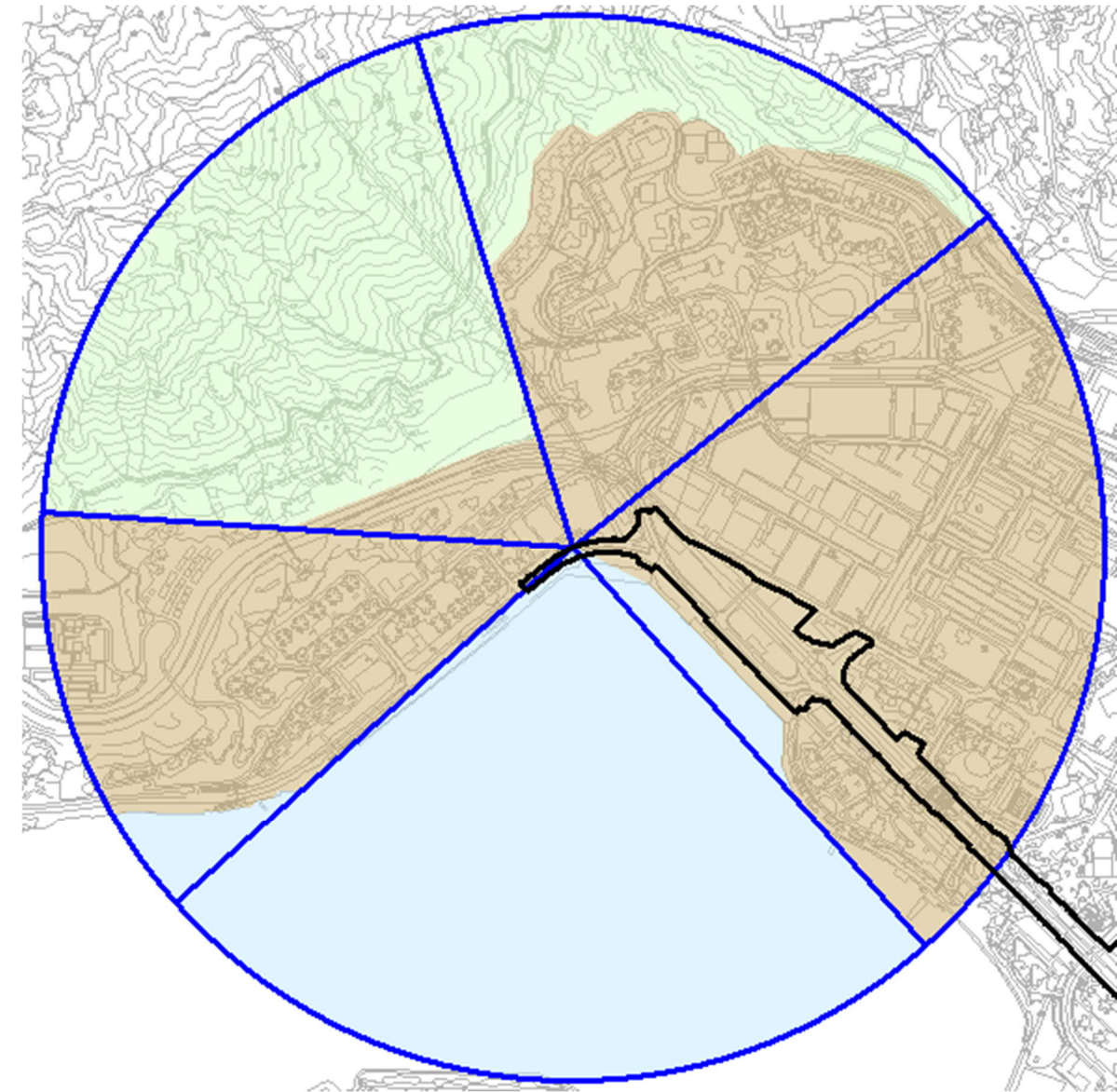
10km by 10km Region Centered at the Project Site



Legend

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

1km Boundary from Grid 3339



Legend

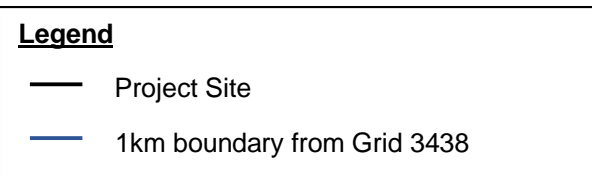
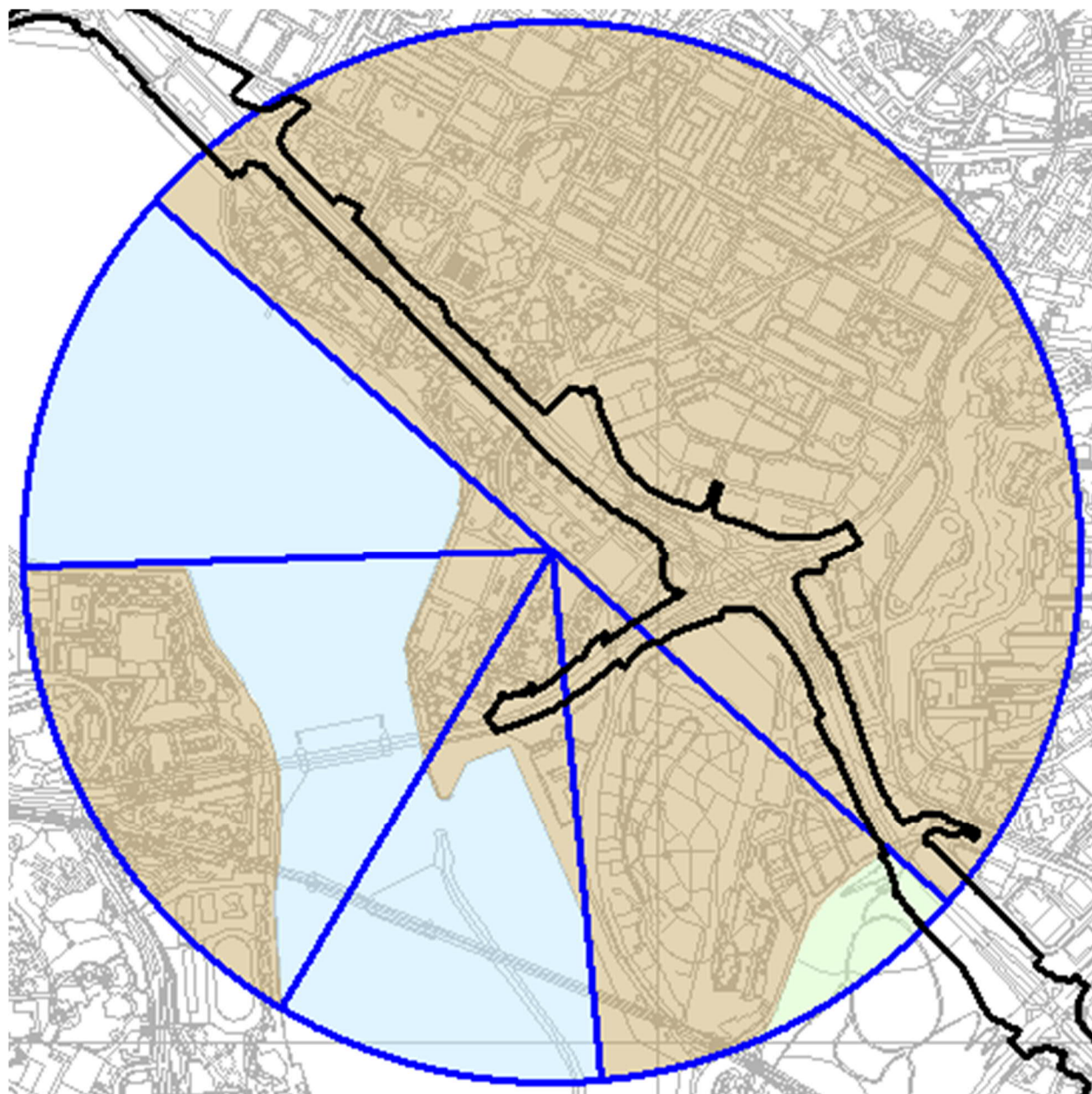
- Project Site
- 1km boundary from Grid 3339

Note:

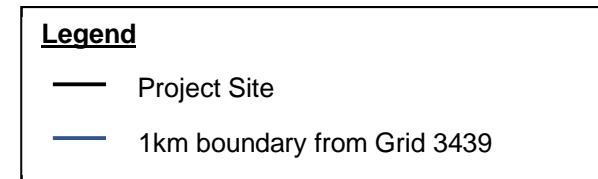
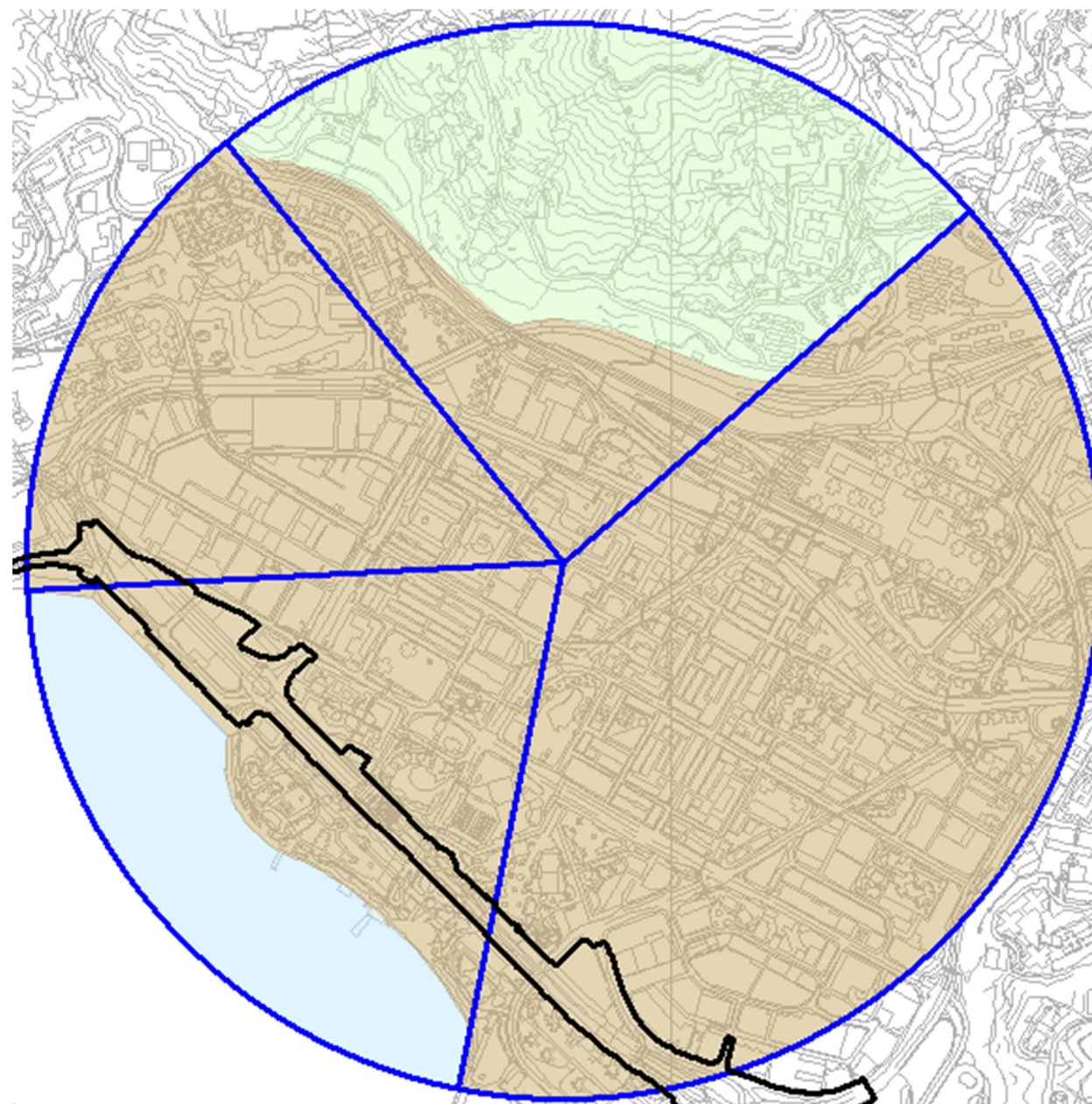
Brown area is classified as urban area. Blue area is classified as water area. Green area is classified as grassland area.

Appendix 3.10 Determination of Surface Characteristics Parameters

1km Boundary from Grid 3438



1km Boundary from Grid 3439

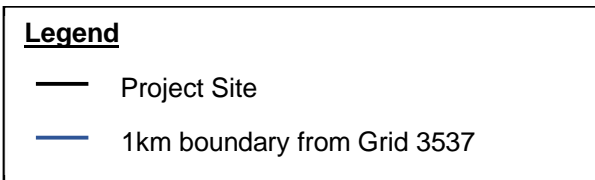
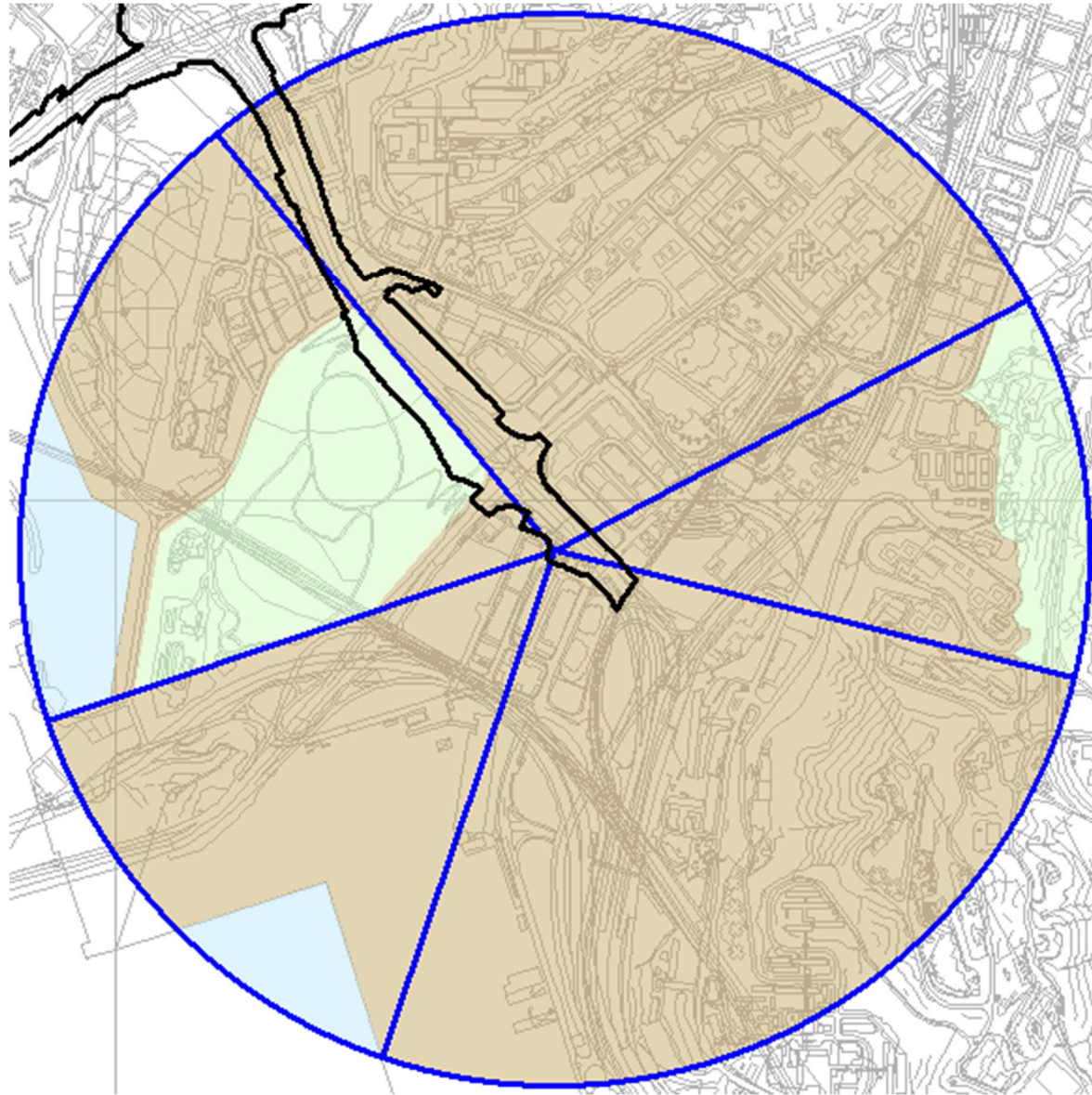


Note:

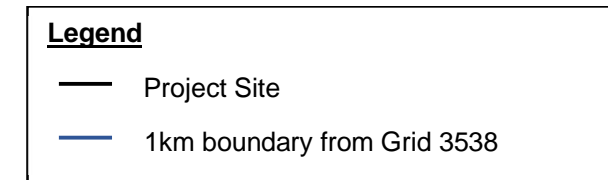
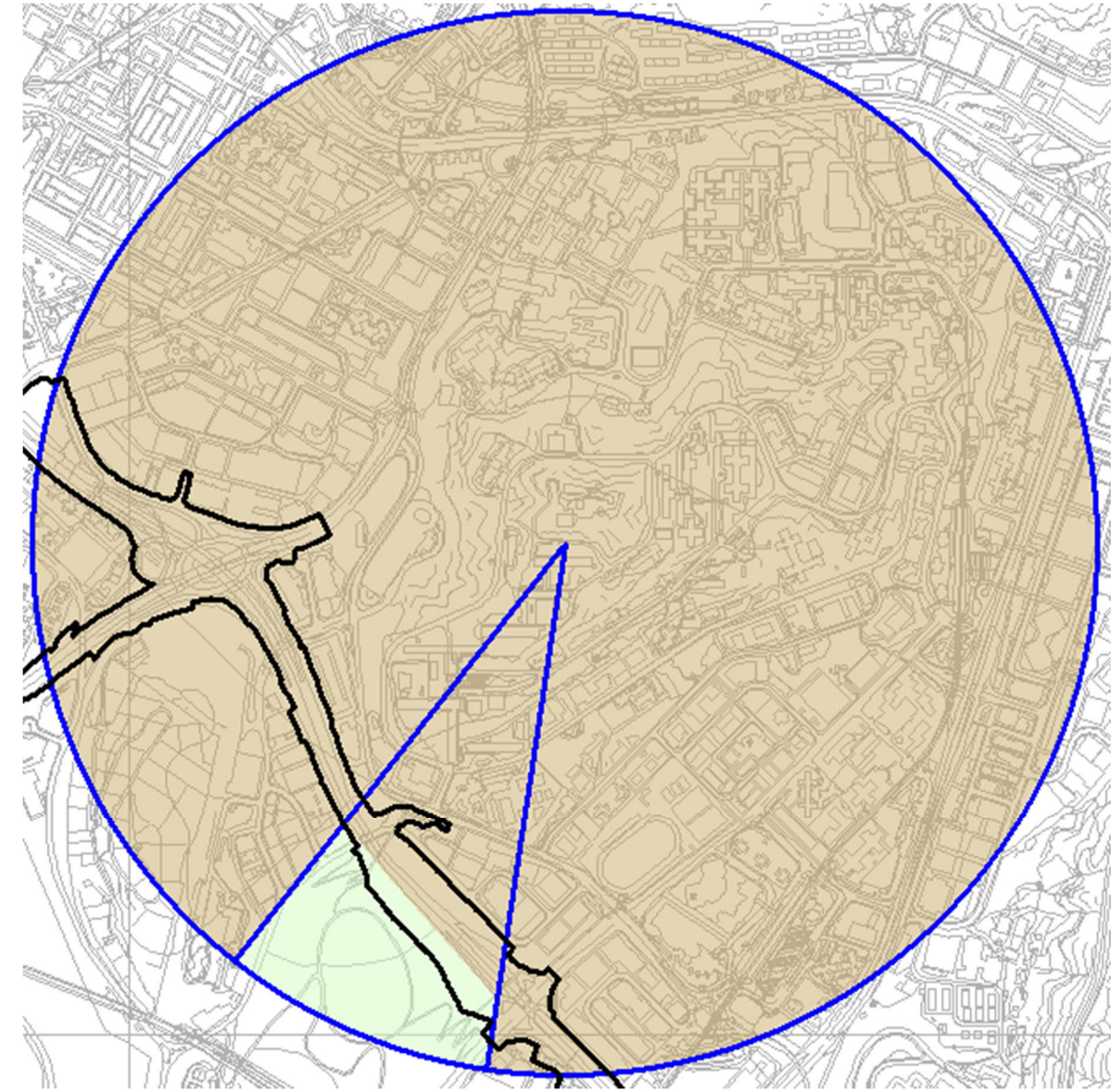
Brown area is classified as urban area. Blue area is classified as water area. Green area is classified as grassland area.

Appendix 3.10 Determination of Surface Characteristics Parameters

1km Boundary from Grid 3537



1km Boundary from Grid 3538



Note:

Brown area is classified as urban area. Blue area is classified as water area. Green area is classified as grassland area.

Appendix 3.10 Determination of Surface Characteristics Parameters

Summary of Surface Characteristics for the Study Area

Grid 3339

Sector (degrees in clockwise)	Land Use	Area (m ²)	Distance (m)	Weighting (Fraction/Distance)	Albedo ^{1,4,5}	Bowen Ratio ^{2,4,5}	Surface Roughness (m) ^{3,5}	Remark	
345 - 50	Urban	401664.08	535	0.001258	0.1650	0.6005	0.50023	Urban development and grassland from northwest and northeast	
	Grassland	195146.05	840	0.000389					
50 - 140	Water	34688.20	330	0.000138			0.001539	0.46852	Water and urban development from northeast and southeast
	Urban	726542.58	620						
140 - 230	Water	782855.05	-	-			0.00010	Water from southeast and southwest	
230 - 275	Urban	369632.78	635	0.001459			0.61449	Urban development and water from southwest to west	
	Water	29244.87	900	0.000081					
275 - 345	Urban	57781.95	220	0.000437			0.10919	Urban development and grassland from west to northwest	
	Grassland	543861.11	670	0.001349					

Grid 3438

Sector (degrees in clockwise)	Land Use	Area (m ²)	Distance (m)	Weighting (Fraction/Distance)	Albedo ^{1,4,5}	Bowen Ratio ^{2,4,5}	Surface Roughness (m) ^{3,5}	Remark
310 - 130	Urban	1570308.54	-	-	0.1650	0.6005	1.00000	Urban development from northwest to southeast
130 - 175	Urban	327189.42	615	0.001411			0.76414	Urban development and grassland from southeast to south
	Grassland	49726.69	925	0.000143				
175 - 210	Urban	71686.77	325	0.000704			0.00428	Urban development and water from south to southwest
	Water	241674.45	755	0.001022				
210 - 270	Urban	53184.07	225	0.000469			0.02209	Urban development and water from southwest to west
	Water	201970.73	530	0.000756				
	Urban	248610.15	820	0.000602				
270 - 310	Urban	15580.54	135	0.000306	0.00051	Urban development and water from west to northwest		
	Water	361185.12	675	0.001420				

Grid 3439

Sector (degrees in clockwise)	Land Use	Area (m ²)	Distance (m)	Weighting (Fraction/Distance)	Albedo ^{1,4,5}	Bowen Ratio ^{2,4,5}	Surface Roughness (m) ^{3,5}	Remark
320 - 50	Urban	227410.01	370	0.000801	0.1650	0.6005	0.19768	Urban development and grassland from northwest to northeast
	Grassland	539971.64	710	0.000991				
50 - 190	Urban	1240137.66	-	-			1.00000	Urban development from northeast to south
190 - 265	Urban	390759.66	475	0.001245			0.07355	Urban development and water from south to west
	Water	269977.82	830	0.000492				
265 - 320	Urban	473012.34	-	-			1.00000	Urban development from west to northwest

Appendix 3.10 Determination of Surface Characteristics Parameters

Grid 3537

Sector (degrees in clockwise)	Land Use	Area (m ²)	Distance (m)	Weighting (Fraction/Distance)	Albedo ^{1,4,5}	Bowen Ratio ^{2,4,5}	Surface Roughness (m) ^{3,5}	Remark
320 - 60	Urban	883444.97	-	-	0.1650	0.6005	1.00000	Urban development from northwest to northeast
60 - 105	Urban	267318.74	560	0.001316			0.58957	Urban development and grassland from northwest to northeast
	Grassland	95517.90	910	0.000286			1.00000	Urban development from northeast to southwest
105 - 200	Urban	829714.92	-	-			0.44966	Urban development and water from southwest to west
200 - 250	Urban	400442.12	610	0.001436			0.11975	Urban development, grassland, and water from west to northwest
	Water	56766.58	910	0.000136				
250 - 320	Urban	31789.72	155	0.000337				
	Grassland	242663.32	465	0.000858				
	Urban	246751.86	785	0.000517				
	Water	86861.36	905	0.000158				

Grid 3538

Sector (degrees in clockwise)	Land Use	Area (m ²)	Distance (m)	Weighting (Fraction/Distance)	Albedo ^{1,4,5}	Bowen Ratio ^{2,4,5}	Surface Roughness (m) ^{3,5}	Remark
220 - 190	Urban	2881125.26	-	-	0.1650	0.6005	1.00000	Urban development from southwest to south
190 - 220	Urban	145191.71	495	0.001126			0.40006	Urban development and grassland from south to southwest
	Grassland	115351.11	865	0.000512				

Notes:

- 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 at the measurement site.
- 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.
- Surface roughness length is based on an upwind distance of 1km relative to the grid.
- Land use within 10km by 10km region centered at the measurement site included 50.80% grassland (50,799,133.43 m²), 27.74% urban (27,742,715.69 m²), and 21.46 % water (21,458,151.87 m²).
- For the parameters including albedo, Bowen Ratio and surface roughness, the default value for "Winter" is excluded from calculating the representative values.