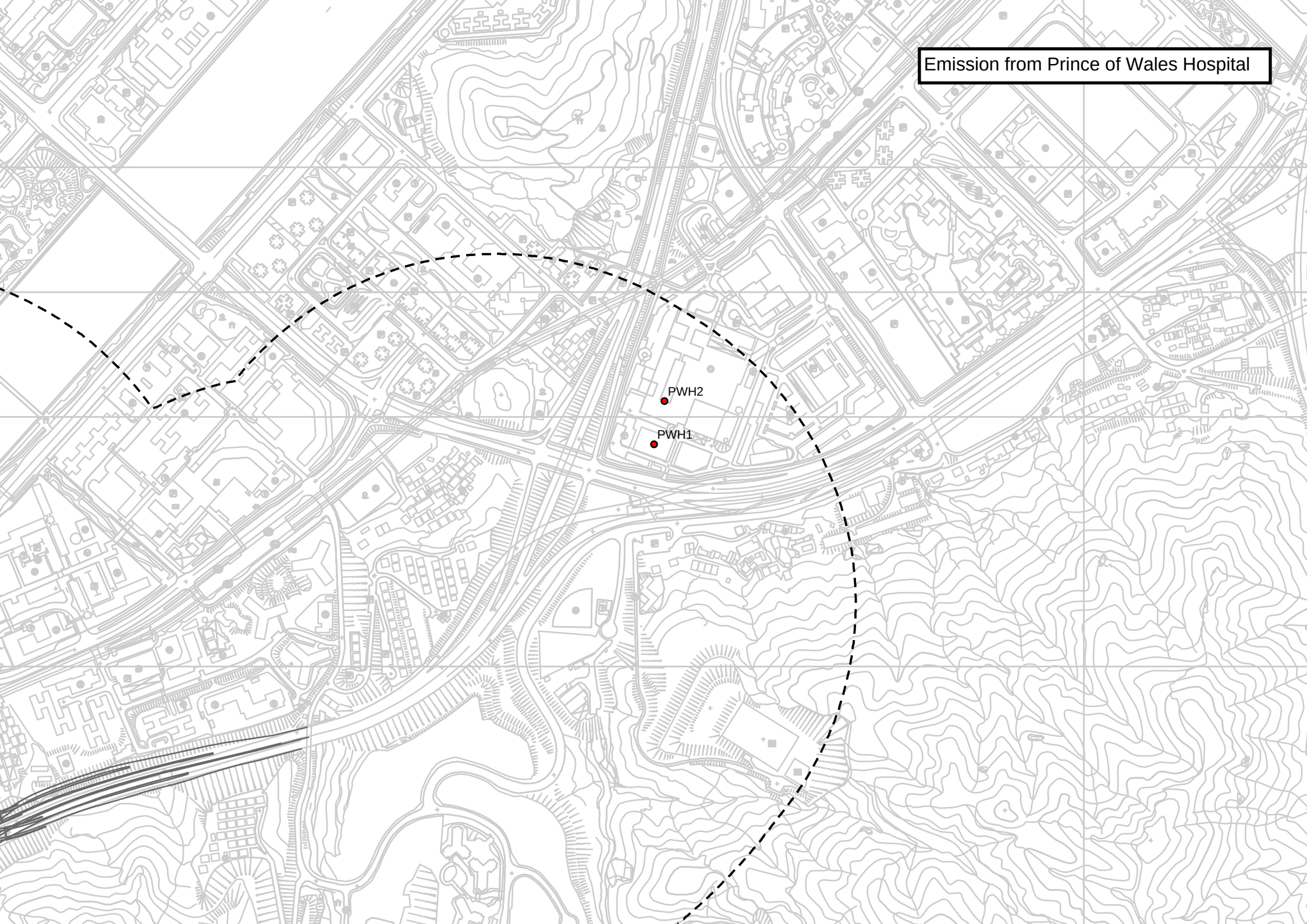
Emission Inventory for AERMOD Model (Industrial Emission)

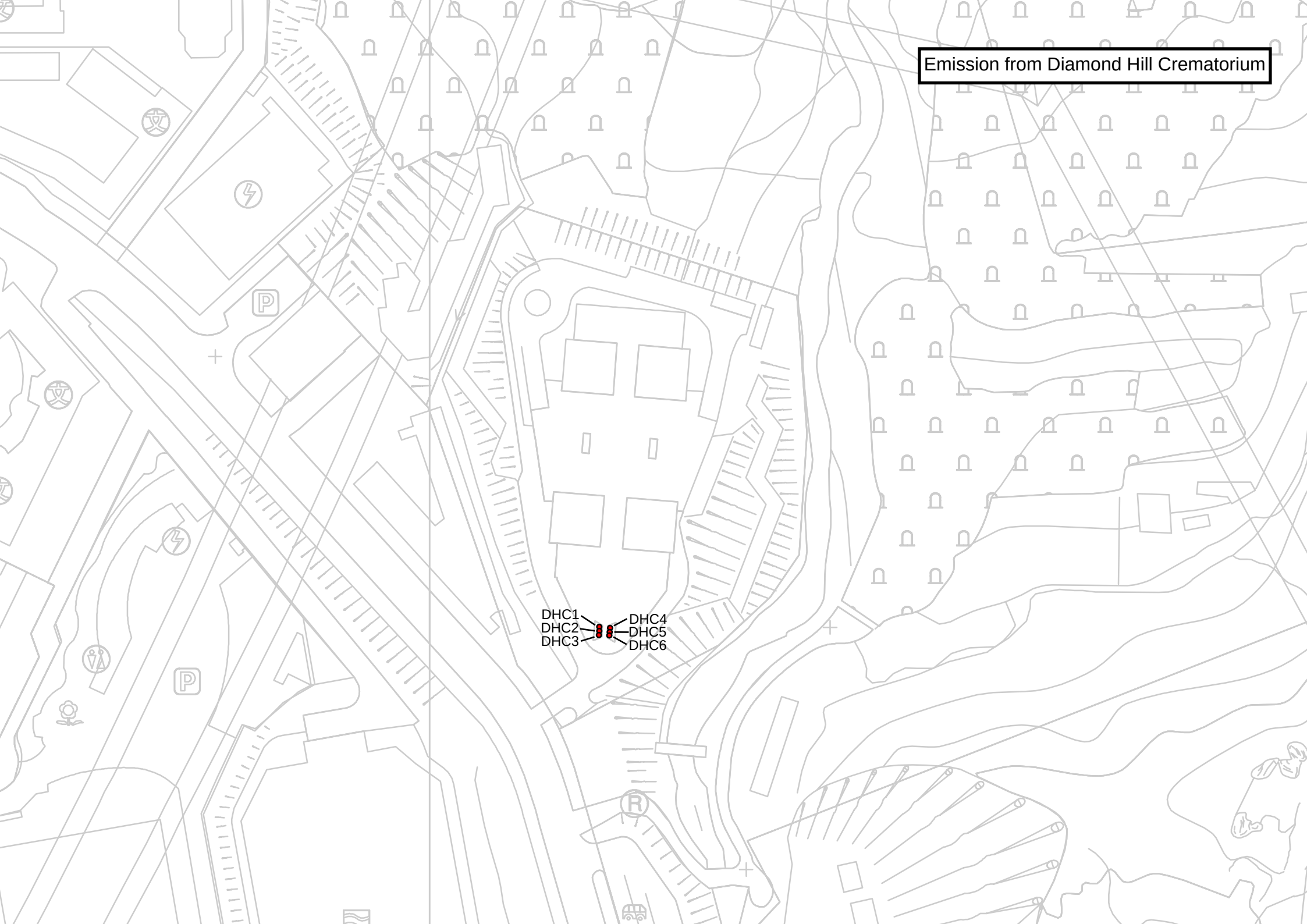
Emission Source	Source ID	Type	X (m)	Y (m)	Release Height (m)	Exit Temperature (K)	Exit Velocity (m/s)	Stack Diameter (m)	Period of Emission (hr)	Emission Rate (g/s) NOx	TSP	RSP	FSP	Remarks
Prince of Wales Hospital	PWH1	POINT	838729.4	826583.8	36	393	0.8	0.45	24 hr	2.686E-02	1.41E-03	1.41E-03	1.41E-03	Release height, exit temperature, exit velocity and operation period were provided by Prince of Wales Hospital (PWH). Due to the lack of information, stack diameter was referenced to the information provided by PWH for another chimney of the hospital. All TSP emissions were assumed for RSP and FSP as a conservative approach.
	PWH2	POINT	838745.5	826648.7	56	483	0.8	0.45		1.615E+00	8.46E-02	8.46E-02	8.46E-02	Exit temperature and operation period were provided by PWH. Due to the lack of information, emission rate, exit velocity and stack diameter were referenced to the information provided by PWH for the other chimneys of the hospital. Release height was identified by observation. All TSP emissions were assumed for RSP and FSP as a conservative approach.
Diamond Hill Crematorium	DHC1	POINT	839438.8	822851.4	30.2	373	10.02	0.24	14 hr (7:00 - 21:00)	5.272E-02	1.387E-02	1.387E-02	1.387E-02	Emission rates and exhaust parameters (including release height, exit temperature, exit velocity and stack diameter) were referenced to the information presented in the SP licenses. NO_2 emissions were assumed to be 20% of NOx with reference to Table 4.7 of the Reprovisioning of Diamond Hill Crematorium EIA Report, and TSP emissions were assumed for RSP and FSP as a conservative approach.
	DHC2	POINT	839438.8	822849.8	30.2	373	10.21	0.27		6.797E-02	1.789E-02	1.789E-02	1.789E-02	
	DHC3	POINT	839438.7	822848.3	30.2	373	10.02	0.24		5.272E-02	1.387E-02	1.387E-02	1.387E-02	
	DHC4	POINT	839442.8	822850.9	30.2	373	10.21	0.27		6.797E-02	1.789E-02	1.789E-02	1.789E-02	
	DHC5	POINT	839442.8	822849.5	30.2	373	10.02	0.24		5.272E-02	1.387E-02	1.387E-02	1.387E-02	
	DHC6	POINT	839442.6	822848.2	30.2	373	7.92	0.27		5.272E-02	1.387E-02	1.387E-02	1.387E-02	
Fu Shan Crematorium	FSC1	POINT	835288.6	826080.1	20.5	373	8.51	0.27	14 hr (7:00 - 21:00)	-	5.278E-02	5.278E-02	5.278E-02	
	FSC2	POINT	835290.9	826078.2	20.5	373	8.52	0.25		-	4.722E-02	4.722E-02	4.722E-02	
	FSC3	POINT	835289.3	826079.5	20.5	373	8.52	0.25		-	4.722E-02	4.722E-02	4.722E-02	
	FSC4	POINT	835290.1	826078.8	20.5	373	8.52	0.25		-	4.722E-02	4.722E-02	4.722E-02	

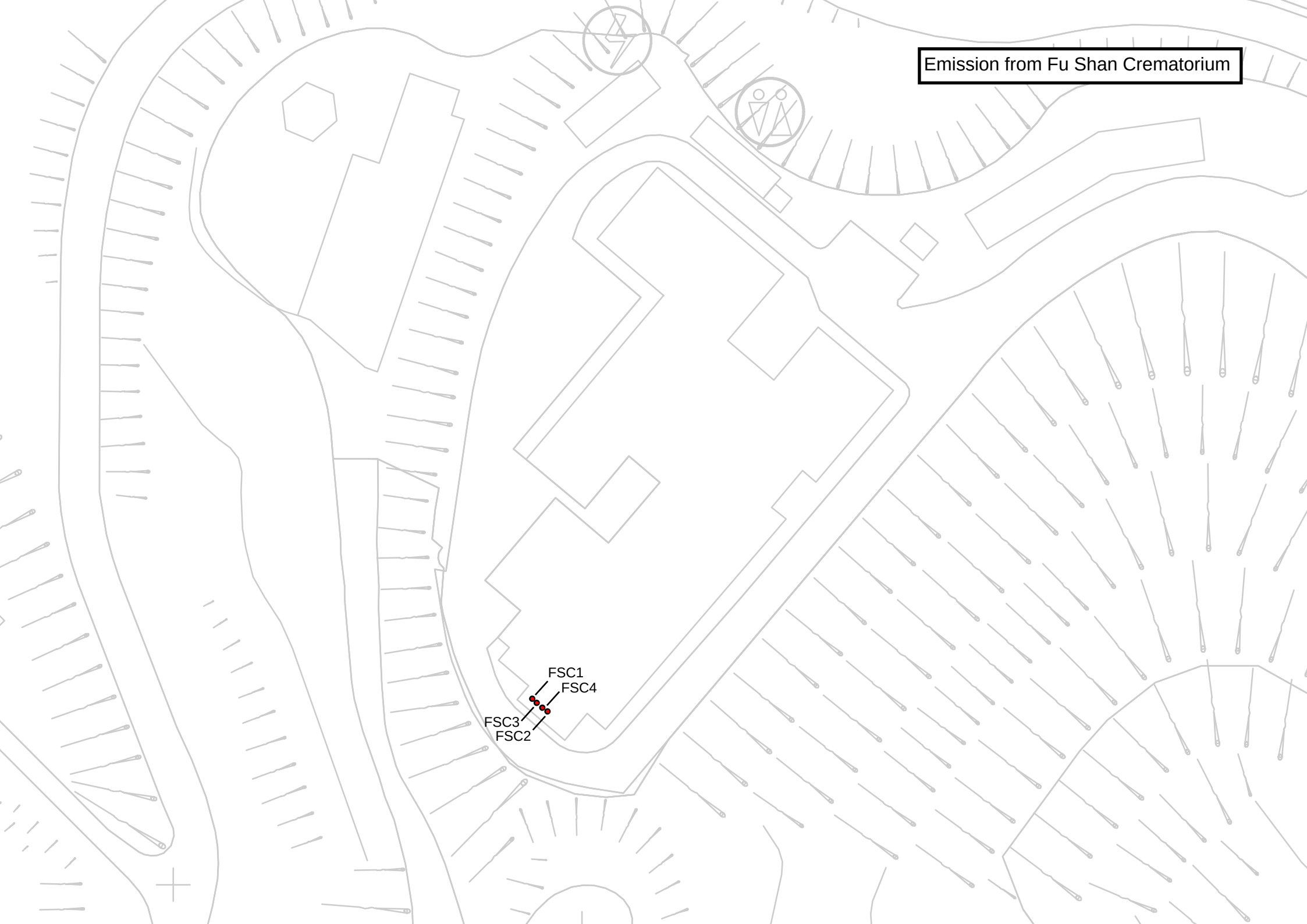
Detailed Calculation of Chimney Emission from Prince of Wales Hospital

According to Prince of Wales Hospital, there are 3 chimneys in the hospital. 2 chimneys fall within the 500m study area, while 1 chimney falls outside the 500m study area and therefore was not included in the assessment.
The 2 chimneys within the 500m study area serve the use of calorifier and steam boiler respectively. Both equipment operate 24-hr a day.

NOx Emission factor =	0.22	g/kWh	Reference made to the approved *Provision of a Poultry Slaughtering Centre in Sheung Shui* EIA Report
	6.448E-05	g/BTU	1kWh = 3412.14BTU
Particulate Matter Emission factor =	7.6	$lb/10^6$ scf	Reference made to AP-42 Chapter 1.4, as the Towngas involve high % of natural gas
	0.007451	lb/MMBTU	To convert from $lb/10^6$ scf to lb/MMBTU, divided by 1020
	3.380E-06	g/BTU	
	1.153E-02	g/kwh	1kWh = 3412.14BTU
For the chimney PWH1,			
Towngas consumption =	1500000	BTU/hr	Information from Prince of Wales Hospital
	416.667	BTU/s	
NOx Emission rate of the chimney =	2.686E-02	g/s	
Particulate Matter Emission rate of the chimney =	1.408E-03	g/s	
For the chimney PWH2,			
Towngas consumption =	26422	kWh/hr	Due to the lack of information from PWH, the Pok Oi Hospital (POH) towngas consumption extracted from the approved *Housing Sites in Yuen Long South* EIA Report was multiplied by the ratio of number of beds of PWH (i.e. 1749-870=879, excluding the Main Clinical Block as it has its own boiler and chimney which is outside of the 500m study area) to the number of beds of POH (i.e. 768) according to the Hospital Authority Statistical Report 2019-2020.
NOx Emission rate of the chimney =	1.615E+00	g/s	
Particulate Matter Emission rate of the chimney =	8.46E-02	g/s	


Emission from Prince of Wales Hospital
PWH2
PWH1


Emission from Diamond Hill Crematorium
DHC1
DHC2
DHC3
DHC4
DHC5
DHC6


Emission from Fu Shan Crematorium
FSC1
FSC4
FSC3
FSC2