

Appendix A Monitoring Result Requirements
Package 2
Air Quality (Emission Gas/Ambient Air Quality)

Frequency: every two months

Location KK4 (Xuan Dinh IS)			Pre-construction		Construction								Country's Standard	Referred International Standard	Remarks
			Jun-18		Jul-18		Sep-18		Nov-18		Jan-19				
Items	Units	Average Value	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)			
SO ²	µg/m ³	1h	57.7	175.4	38.7	117.3	60.3	169.3	44.6	154.3	57.3	178.3	350		
		24h	108.1	122.0	63.9	63.9	105.98	105.98	98.13	98.13	114.42	114.42	125		
NO ²	µg/m ³	1h	42.5	153.5	43.6	129.5	34.7	163.1	36.5	163.4	45.3	187.2	200		
		24h	92.8	109.0	72.4	72.4	93.37	93.37	82.31	82.31	95.46	95.5	100		
CO	µg/m ³	1h	1058.0	7583.0	354.0	1323.0	1025	8256	1034	7454	1547	7254	30000		
		24h	4575.5	4939.3	833.7	833.7	4323.75	4323.75	4007.75	4007.75	4502.08	4502.08	-		
SPM (TSP)	µg/m ³	1h	174.0	552.0	34.0	163.0	52	868	179	731	164	684	300		
		24h	339.8	352.8	84.8	84.8	367.58	367.58	462.5	462.5	357.96	357.96	200		
PM10	µg/m ³	1h	19.0	95.0	11.0	28.0	37	580	95	642	89	315	-	-	
		24h	45.5	71.4	18.3	18.3	286.67	286.67	286.79	286.79	186	186	150	125	
Temperat ure	°C	1h	20.5	36.8	25.1	30.8	25.6	30.6	24.5	28.9	17.4	21.7	-		
		24h	24.3	30.9	27.6	27.6	28.02	28.02	26.48	26.48	19.53	19.53	-		
Humidity	%	1h	48.0	89.0	56.0	88.0	64	88	63	89	68	91	-		
		24h	78.2	69.3	72.1	72.1	77.67	77.67	77.42	77.42	79	79	-		
Wind Velocity	m/s	1h	0.1	1.0	0.7	1.0	0	1	0	1.3	0.1	1.3	-		
		24h	0.6	0.6	0.3	0.3	0.35	0.35	0.48	0.48	0.6	0.6	-		
Wind Direction		1h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Northeast	Northeast	-		
		24h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Northeast	Northeast	-		
Pressure	hpa	1h	1001.1	1005.7	1002.4	1006.3	1002.9	1005	1002.9	1004.2	1002.9	1004.5	-		
		24h	1003.5	1004.5	1004.2	1004.2	1003.88	1003.88	1003.54	1003.54	1003.58	1003.58	-		

Location KK5
(Ending point)

Items	Units	Average Value	Pre-construction		Construction								Country's Standard	Referred International Standard	Remarks
			Jun-18		Jul-18		Sep-18		Nov-18		Jan-19				
			Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)			
SO ²	µg/m ³	1h	176.1	58.5	36.2	105.2	57.2	184.3	51.2	178.2	56.3	166.2	350		
		24h	115.1	104.8	59.7	59.7	111.85	111.85	108.04	108.04	106.28	106.28	125		
NO ²	µg/m ³	1h	185.5	31.7	41.2	113.6	42.7	145.3	40.4	175.1	49.2	175.1	200		
		24h	100.9	88.1	66.1	66.1	97.69	97.69	99.85	99.85	103.86	103.86	100		
CO	µg/m ³	1h	7824.0	1175.0	375.0	1282.0	1634	6738	1453	7354	1552	5894	30000		
		24h	5399.6	4300.1	767.3	767.3	3919.67	3919.67	3893.21	3893.21	3500.63	3500.63	-		
SPM (TSP)	µg/m ³	1h	567.0	132.0	31.0	137.0	74	461	174	1257	155	624	300		
		24h	343.9	261.4	72.2	72.2	276.08	276.08	501.33	501.33	339.29	339.29	200		
PM10	µg/m ³	1h	94.0	21.0	10.0	29.0	41	294	101	725	129	765	-	-	
		24h	67.0	47.6	17.3	17.3	183.67	183.67	322.54	322.54	354.71	354.71	150	125	
Temperature	°C	1h	36.9	21.5	25.3	30.7	25.9	30.7	24.6	28.6	17.3	21.7	-		
		24h	30.9	26.1	27.5	27.5	28.17	28.17	26.44	26.44	19.55	19.55	-		
Humidity	%	1h	88.0	47.0	53.0	89.0	64	84	62	87	73	96	-		
		24h	68.8	68.9	72.6	72.6	73.25	73.25	73.92	73.92	86.5	86.5	-		
Wind Velocity	m/s	1h	1.8	0.3	0.0	1.0	0	4.8	0	2	0.2	1.8	-		
		24h	0.9	0.6	0.3	0.3	0.78	0.78	0.53	0.53	0.7	0.7	-		
Wind Direction		1h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Northeast	Northeast	-		
		24h	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Southeast	Northeast	Northeast	-		
Pressure	hpa	1h	1005.8	1001.5	1002.4	1006.1	1002.4	1004.8	1003.3	1004.2	1003.1	1004.8	-		
		24h	1004.3	1003.5	1004.0	1004.0	1003.7	1003.7	1003.72	1003.72	1003.68	1003.68	-		

Appendix A Monitoring Result Requirements

Package 2

Water Quality (Underground)

Location: Xuan Dinh IS

Frequency: every three months

Item	Unit	Pre-construction			Construction									QCVN 09-MT:2015 BTNMT	Referred International Standards	Remarks
		Jun-18			Jul-18			Oct-18			Jan-19					
		Average value	Measured Value (Mean)	Measured Value (Max)	Average value	Measured Value (Min)	Measured Value (Max)	Measured Value (Max)	Measured Value (Min)	Measured Value (Max)	Average value	Measured Value (Min)	Measured Value (Max)			
t°	°C	25.3	25.3	25.3	28.3	28.3	28.3	26.8	26.8	26.8	18.5	18.5	18.5	-		
pH	-	5.8	5.8	5.8	6.5	6.5	6.5	6.3	6.3	6.3	6.1	6.1	6.1	5.5-5.8		
TS	mg/l	27	27	27	23	23	23	33	33	33	35	35	35	-		
NO ₃	mg/l	2.13	2.13	2.13	2.1	2.1	2.1	0.029	0.029	0.029	0.033	0.033	0.033	15		
NH ₄ ⁺	mg/l	0.43	0.43	0.43	0.36	0.36	0.36	0.155	0.155	0.155	0.173	0.173	0.173	1		
Conductivity	s/m	0.1	0.1	0.1	0.13	0.13	0.13	0.18	0.18	0.18	0.16	0.16	0.16	-		
DO	mg/l	4.65	4.65	4.65	4.34	4.34	4.34	4.6	4.6	4.6	4.2	4.2	4.2	-		
Hardness	mg/l	34	34	34	31	31	31	12.53	12.53	12.53	15.42	15.42	15.42	500		
COD	mg/l	<0.3	<0.3	<0.3	0.3	0.3	0.3	<0.3	<0.3	<0.3	<0.3	<0.3	<0.3	-		
As	mg/l	ND	ND	ND	ND	ND	ND	0.003	0.003	0.003	0.006	0.006	0.006	0.05		
Total Fe	mg/l	0.04	0.04	0.04	0.05	0.05	0.05	0.057	0.057	0.057	0.067	0.067	0.067	5		
Cr ⁶⁺	mg/l	ND	ND	ND	ND	ND	ND	<0,006	<0,006	<0,006	<0.006	<0.006	<0.006	0.05		
Turbidity	NTU	0	0	0	0	0	0	2	2	2	2	2	2	-		
Oil and Grease		-	-	-	0	0	0	<0,3	<0,3	<0,3	<0.3	<0.3	<0.3	-		
E.coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND		
Coliform	MPN/100ml	0	0	0	0	0	0	0	0	0	0	0	0	3		

Note: all the above indicators include the impacts by public traffic and other projects.

Appendix A Monitoring Result Requirements

Package 2

Noise

Frequency: every three months

Location	Average Level	Pre-construction			Construction									Country' Standards	Referred International Standards	Remarks
		Jun-18			Jul-18			Oct-18			Jan-19					
		Noise Level (dBA)			Noise Level (dBA)			Noise Level (dBA)			Noise Level (dBA)					
		L _{eg}	L ₁₀	L ₉₀	L _{eg}	L ₁₀	L ₉₀	L _{eg}	L ₁₀	L ₉₀	L _{eg}	L ₁₀	L ₉₀			
Tan xuan Interchange (O4)	6h-22h	80.05	84.84	76.61	77.18	81.13	74.50	85.19	88.29	80.60	84.62	88.35	81.94	70(6h-21h)	55	
	22h-6h	58.95	63.28	56.13	58.23	62.15	55.10	82.48	85.93	76.33	79.96	83.70	75.69	55(21h-6h)	45	
Ending point (O5)	6h-22h	78.84	83.83	74.98	75.99	78.49	73.58	80.86	83.61	75.89	80.58	83.53	78.25	70(6h-21h)	55	
	22h-6h	56.23	61.13	51.45	54.85	57.68	52.50	77.40	81.48	73.30	77.28	80.30	74.10	55(21h-6h)	45	

Note: all the above indicators include the impacts by public traffic and other projects.

Appendix A Monitoring Result Requirements

Package 2

Frequency: every three months

Vibration

Location	Average Value	Pre-construction				Construction				Country' Standards	Referred International Standards	Remarks
		Jun-18				Jul-18						
		Vibration (dB)		Vibration (dB)		Vibration (dB)		Vibration (dB)				
L_{aeg}	Frequency	L_{veg}	Frequency	L_{aeg}	Frequency	L_{veg}	Frequency					
Tan xuan Interchange (R4)	6h-22h	71.19	1-20	1.71	1-3	65.70	1-20	1.43	1-3	75 (6h-21h)		
	6h-22h	64.30	1-20	1.74	1-3	62.95	1-20	1.60	1-3	Baseline (21h-6h)		
Ending point (R5)	6h-22h	71.83	1-20	1.67	1-3	63.75	1-20	1.49	1-3	75 (6h-21h)		
	6h-22h	65.23	1-20	1.67	1-3	62.50	1-20	1.36	1-3	Baseline (21h-6h)		

Location	Average Value	Construction								Country' Standards	Referred International Standards	Remarks
		Oct-18				Jan-19						
		Vibration (dB)		Vibration (dB)		Vibration (dB)		Vibration (dB)				
L_{aeg}	Frequency	L_{veg}	Frequency	L_{aeg}	Frequency	L_{veg}	Frequency					
Tan xuan Interchange (R4)	6h-22h	78.31	1-20	1.68	1-3	74.69	1-20	1.67	1-3	75 (6h-21h)		
	6h-22h	67.55	1-20	1.62	1-3	66.99	1-20	1.46	1-3	Baseline (21h-6h)		
Ending point (R5)	6h-22h	73.69	1-20	1.65	1-3	76.15	1-20	1.64	1-3	75 (6h-21h)		
	6h-22h	68.85	1-20	1.57	1-3	67.79	1-20	1.58	1-3	Baseline (21h-6h)		

Note: all the above indicators include the impacts by public traffic and other projects.