

MONITORING FORM

If environmental reviews indicate the need of monitoring by JICA, JICA undertakes monitoring for necessary items that are decided by environmental reviews. JICA undertakes monitoring based on regular reports including measured data submitted by the project proponent. When necessary, the project proponent should refer to the following monitoring form for submitting reports.

When monitoring plans including monitoring items, frequencies and methods are decided, project phase or project life cycle (such as construction phase and operation phase) should be considered.

1. Responses/Actions to Comments and Guidance from Government Authorities and the Public

Monitoring Item	Monitoring Results during Report Period
ex.) Responses/Actions to Comments and Guidance from Government Authorities	July-September 2022

2. Mitigation Measures

The summary of the Environmental Monitoring is shown below.

[Construction Phase]

Item	Parameter	Frequency and Duration	Locations(At least)
Air	PM ₁₀	2×24hours Twice/month For five years	15 locations
	PM _{2.5}	2×24hours Twice/month For five years	15 locations
	SO _x	2×24hours Twice/month For five years	15 locations
	NO _x	2×24hours Twice/month For five years	15 locations
Water	Groundwaterquality	Once/6months For five years	10 locations
Noise	Noise Level (Leq and Lmax)	2×24hours Twice/month Once/week For five years	15 locations
Vibration	Vibration (ppV)	24hours Once/week For five years	8 locations
Soil	Heavy Metal	Once/6moths For five years	10 Locations
Ecology	Felled and planted trees	Once a year till all trees that were to be planted by Delhi Government on behalf of DMRC, are planted	All the trees felled and newly planted trees

[Operation Phase]

Item	Parameter	Frequency and Duration	Locations
Air	PM ₁₀	2×24hours Once/month For 5 years	8 locations
	PM _{2.5}	24 hours Once/month For 5 years	8 locations
	SOX	24 hours Once/month For 5 years	8 locations
	NOX	24 hours Once/month For 5 years	8 locations
Water		Once/4months For 5 years	5locations(Depot)
Noise	Noise Level (Leq)	24hours Once/year For 5 years	8 locations (Sensitive Receptors along the elevated section)
Vibration	Vibration level Vrms	24hours Once/year For 5 years	18 locations (Sensitive Receptors along the elevated and underground section)

2.1 During Construction

When a measured value exceeds the standards, the value is written in bold letters.

Air Quality (Ambient Air Quality)

Date:July 2022 Location:DC-02 (Yamuna Vihar to Bhajanpura)(Elevated)

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country 's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	RMC Plant-91.25	103	100 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Jagatpur Village-102	112			
		Jharoda-97.75	104			
		Burari-98.50	114			
		Yamuna Vihar-101.75	109			
		Bhajanpura -91	95			
		Khajuri Khas- 93	96			

		Soniya Vihar- 98.75	114			
		Yamuna Bed – 93	104			
		Soorghat – 85.50	88			

Date: July 2022 Location: DC-01 (Keshopur to Pitampura) (Elevated)

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	PC Yard Mundka-129.73	136.93	100 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		West Enclave- 242.45	263.48			
		Pushpanjali-164.6	178.37			
		Madhuban Chowk- 149.9	155			
		North Pitampura-261.165	270.26			
		Deepali Chowk- 176.39	190.51			

Date: August 2022 Location: DC-04 (Sangam Vihar to Saket G Block (Elevated)

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	Khanpur-154.05	180.65	100 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Sangam Vihar-174.37	197.73			
		Casting Yard-105.19	126.58			
		Ambedkar Nagar-168.535	188.04			
			145.32			

		Saket G Block-122.93				
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Date: September 2022
Tughlakabad)(UG)

Location:DC-07 (Sangam Vihar to

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM _{2.5}	µg/ m ³	Tughlakabad-80.425	104.7	60 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Tughlakabad Railway Colony-81.35	106			
		AnandmayeeMarg-83.475	126.58			
		Air Force Station-69.3	98.5			
		Batching Plant Sarita Vihar-101.85	81.4			
		Casting Yard Mundka-61.625	107			
			67.8			

Date:September 2022
Tughlakabad)(UG)

Location:DC-07 (Sangam Vihar to

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
SO ₂	µg/ m ³	Tughlakabad-26.525	29.7	80 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Tughlakabad Railway Colony-25.675	28.2			
		Anandmayee Marg-28.325	29.4			
		Air Force Station-	26.6			

		23.875				
		Batching Plant Sarita Vihar-28.875	31.6			
		Casting Yard Mundka-28.2	31.4			

Date: September 2022
Tughlakabad)(UG)

Location:DC-07 (Sangam Vihar to

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
NO _x	µg/ m ³	Tughlakabad-42.75	45.2	80 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Tughlakabad Railway Colony-40.45	42			
		Anandmayee Marg-42.225	43.1			
		Air Force Station-41.7	44.1			
		Batching Plant Sarita Vihar-41.35	42.7			
		Casting Yard Mundka-41.3	44			

Date: July 2022
Tughlakabad)(UG)

Location:DC-07 (Sangam Vihar to

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM _{2.5}	µg/ m ³	Tughlakabad-59.3	86.2	60 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by
		Tughlakabad Railway Colony-49.95	68.4			
		Anandmayee	59.6			

		Marg-42.15	80.2			DMRC
		Air Force Station-52.7				

Date: July 2022
Tughlakabad)(UG)

Location: DC-07 (Sangam Vihar to

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
SO ₂	µg/m ³	Tughlakabad-11.6	12.6	80 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Tughlakabad Railway Colony-12.125	12.7			
		Anandmayee Marg-11.875	13.5			
		Air force station-11.4	12.8			

Date: July 2022
Tughlakabad)(UG)

Location: DC-07 (Sangam Vihar to

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
NO _x	µg/m ³	Tughlakabad-34.325	49.7	80 (24hours) (CPCB)	-	2×24hours Twice/month During entire civil construction stage or even later, if directed by DMRC
		Tughlakabad Railway Colony-29.4	38.7			
		Anandmayee Marg-41.075	48.7			
		Air Force Station-33.1	41.6			

Ground Water Quality (Drinking Water Quality: IS 10500:1991)

Date: August 2022

Location: DC-06 (Krishna Park station)

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Color,Hazen units,Max		<1	-	5(25)	-	20 locations Once/6 months
Odour	-	Agreeable	-	Unobjectionable	-	
Taste	-		-	Agreeable	-	During entire civil construction stage or even later, if directed by DMRC
Turbidity,NTU,Max	-		-	5(10)	-	
pH Value	-	7.12	-	6.5-8.5	-	
Total Hardness (as CaCO ₃), Max	mg/l	212.3	-	300(600)	-	
Iron(as Fe),max	mg/l	0.24	-	0.3(1.0)	-	
Chloride(as Cl), Max	mg/l	78.5	-	250(1000)	-	
Residual free Chlorine, Min	mg/l		-	0.2	-	
Fluoride(as F), Max	mg/l	-	-	1.0(1.5)	-	
Dissolved solids, Max	mg/l	614	-	500(2000)	-	
Calcium(as Ca), Max	mg/l	48.4	-	75(200)	-	
Magnesium(as Mg), Max	mg/l	22.2	-	30(100)	-	
Copper(as Cu), Max	mg/l		-	0.05(1.5)	-	
Manganese(as Mn), Max	mg/l	-	-	0.1(0.3)	-	
Sulphate(as SO ₄), Max	mg/l	56.12	-	200(400)	-	
Nitrate(as NO ₂), Max	mg/l	-	-	45(100)	-	
Phenolic compounds (as C ₆ H ₅ OH),Max	mg/l	-	-	0.001(0.002)	-	
Mercury(as Hg), Max	mg/l	-	-	0.001	-	
Cadmium(as	mg/l	-	-	0.01	-	

Cd), Max					
Selenium(as Se), Max	mg/l	-	-	0.01	-
Arsenic(as As), Max	mg/l	-	-	0.05	-
Cyanide(as CN), Max	mg/l	-	-	0.05	-
Lead(as Pb), Max	mg/l	-	-	0.05	-
Zinc(as Zn), Max	mg/l	-	-	5(15)	-
Anionic Detergents (as MBAS),Max	mg/l	-	-	0.2(1.0)	-
Chromium (as Cr ⁶⁺),Max	mg/l	-	-	0.05	-
Polynuclear aromatic hydrocarbons(as PAH),Max	mg/l	-	-	-	-
Mineral Oil	mg/l	-	-	0.01	-
Pesticides, Max	mg/l	-	-	Absent	-
Radioactive Materials, Max a) Alpha emitters	Bq/l	-	-	-(0.1)	-
Radioactive Materials, Max b) Beta emitters	Pci/l	-	-	-(1)	-
Alkalinity, Max	mg/l	11.4	-	200(600)	-
Aluminum(as Al), Max	mg/l	-	-	0.03(0.2)	-
Boron,Max	mg/l	-	-	1(5)	-

Date:

Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Color, Hazen units, Max		-	-	5(25)	-	20 locations Once/6 months
Odour	-	-	-	Unobjectionable	-	
Taste	-	-	-	Agreeable	-	During entire civil construction stage or even later, if directed by DMRC
Turbidity, NTU, Max	-	-	-	5(10)	-	
pH Value	-	-	-	6.5-8.5	-	
Total Hardness (as CaCO ₃), Max	mg/l	-	-	300(600)	-	
Iron (as Fe), max	mg/l	-	-	0.3(1.0)	-	
Chloride (as Cl), Max	mg/l	-	-	250(1000)	-	
Residual free Chlorine, Min	mg/l	-	-	0.2	-	
Fluoride (as F), Max	mg/l	-	-	1.0(1.5)	-	
Dissolved solids, Max	mg/l	-	-	500(2000)	-	
Calcium (as Ca), Max	mg/l	-	-	75(200)	-	
Magnesium (as Mg), Max	mg/l	-	-	30(100)	-	
Copper (as Cu), Max	mg/l	-	-	0.05(1.5)	-	
Manganese (as Mn), Max	mg/l	-	-	0.1(0.3)	-	
Sulphate (as SO ₄), Max	mg/l	-	-	200(400)	-	
Nitrate (as NO ₂), Max	mg/l	-	-	45(100)	-	
Phenolic compounds (as C ₆ H ₅ OH), Max	mg/l	-	-	0.001(0.002)	-	
Mercury (as	mg/l	-	-	0.001	-	

Hg), Max					
Cadmium(as Cd), Max	mg/l	-	-	0.01	-
Selenium(as Se), Max	mg/l	-	-	0.01	-
Arsenic(as As), Max	mg/l	-	-	0.05	-
Cyanide(as CN), Max	mg/l	-	-	0.05	-
Lead(as Pb), Max	mg/l	-	-	0.05	-
Zinc(as Zn), Max	mg/l	-	-	5(15)	-
Anionic Detergents (as MBAS),Max	mg/l	-	-	0.2(1.0)	-
Chromium (as Cr6+),Max	mg/l	-	-	0.05	-
Polynuclear aromatic hydrocarbons(as PAH),Max	mg/l	-	-	-	-
Mineral Oil	mg/l	-	-	0.01	-
Pesticides, Max	mg/l	-	-	Absent	-
Radioactive Materials, Max c) Alpha emitters	Bq/l	-	-	-(0.1)	-
Radioactive Materials, Max d) Beta emitters	Pci/l	-	-	-(1)	-
Alkalinity, Max	mg/l	-	-	200(600)	-
Aluminum(as Al), Max	mg/l	-	-	0.03(0.2)	-
Boron,Max	mg/l	-	-	1(5)	-

Date:Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Color,Hazen units,Max		-	-	5(25)	-	20 locations Once/6 months
Odour	-	-	-	Unobjectionable	-	
Taste	-	-	-	Agreeable	-	During entire civil construction stage or even later, if directed by DMRC
Turbidity,NTU,Max	-	-	-	5(10)	-	
pH Value	-	-	-	6.5-8.5	-	
Total Hardness (as CaCO ₃), Max	mg/l	-	-	300(600)	-	
Iron(as Fe),max	mg/l	-	-	0.3(1.0)	-	
Chloride(as Cl), Max	mg/l	-	-	250(1000)	-	
Residual free Chlorine, Min	mg/l	-	-	0.2	-	
Fluoride(as F), Max	mg/l	-	-	1.0(1.5)	-	
Dissolved solids, Max	mg/l	-	-	500(2000)	-	
Calcium(as Ca), Max	mg/l	-	-	75(200)	-	
Magnesium(as Mg), Max	mg/l	-	-	30(100)	-	
Copper(as Cu), Max	mg/l	-	-	0.05(1.5)	-	
Manganese(as Mn), Max	mg/l	-	-	0.1(0.3)	-	
Sulphate(as SO ₄), Max	mg/l	-	-	200(400)	-	
Nitrate(as NO ₂), Max	mg/l	-	-	45(100)	-	
Phenolic compounds (as C ₆ H ₅ OH),Max	mg/l	-	-	0.001(0.002)	-	
Mercury(as	mg/l	-	-	0.001	-	

Hg), Max						
Cadmium(as Cd), Max	mg/l	-	-	0.01	-	
Selenium(as Se), Max	mg/l	-	-	0.01	-	
Arsenic (as As), Max	mg/l	-	-	0.05	-	
Cyanide(as CN), Max	mg/l	-	-	0.05	-	
Lead(as Pb), Max	mg/l	-	-	0.05	-	
Zinc(as Zn), Max	mg/l	-	-	5(15)	-	
Anionic Detergents (as MBAS),Max	mg/l	-	-	0.2(1.0)	-	
Chromium (as Cr6+),Max	mg/l	-	-	0.05	-	
Polynuclear aromatic hydrocarbons(as PAH),Max	mg/l	-	-	-	-	
Mineral Oil	mg/l	-	-	0.01	-	
Pesticides, Max	mg/l	-	-	Absent	-	
Radioactive Materials, Max e) Alpha emitters	Bq/l	-	-	-(0.1)	-	
Radioactive Materials, Max f) Beta emitters	Pci/l	-	-	-(1)	-	
Alkalinity, Max	mg/l	-	-	200(600)	-	
Aluminum(as Al), Max	mg/l	-	-	0.03(0.2)	-	
Boron,Max	mg/l	-	-	1(5)	-	

Date:

Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Color, Hazen units, Max		-	-	5(25)	-	20 locations Once/6 months
Odour	-	-	-	Unobjectionable	-	
Taste	-	-	-	Agreeable	-	During entire civil construction stage or even later, if directed by DMRC
Turbidity, NTU, Max	-	-	-	5(10)	-	
pH Value	-	-	-	6.5-8.5	-	
Total Hardness (as CaCO ₃), Max	mg/l	-	-	300(600)	-	
Iron (as Fe), max	mg/l	-	-	0.3(1.0)	-	
Chloride (as Cl), Max	mg/l	-	-	250(1000)	-	
Residual free Chlorine, Min	mg/l	-	-	0.2	-	
Fluoride (as F), Max	mg/l	-	-	1.0(1.5)	-	
Dissolved solids, Max	mg/l	-	-	500(2000)	-	
Calcium (as Ca), Max	mg/l	-	-	75(200)	-	
Magnesium (as Mg), Max	mg/l	-	-	30(100)	-	
Copper (as Cu), Max	mg/l	-	-	0.05(1.5)	-	
Manganese (as Mn), Max	mg/l	-	-	0.1(0.3)	-	
Sulphate (as SO ₄), Max	mg/l	-	-	200(400)	-	
Nitrate (as NO ₂), Max	mg/l	-	-	45(100)	-	
Phenolic compounds (as C ₆ H ₅ OH), Max	mg/l	-	-	0.001(0.002)	-	
Mercury (as	mg/l	-	-	0.001	-	

Hg), Max					
Cadmium(as Cd), Max	mg/l	-	-	0.01	-
Selenium(as Se), Max	mg/l	-	-	0.01	-
Arsenic (as As), Max	mg/l	-	-	0.05	-
Cyanide(as CN), Max	mg/l	-	-	0.05	-
Lead(as Pb), Max	mg/l	-	-	0.05	-
Zinc(as Zn), Max	mg/l	-	-	5(15)	-
Anionic Detergents (as MBAS),Max	mg/l	-	-	0.2(1.0)	-
Chromium (as Cr6+),Max	mg/l	-	-	0.05	-
Polynuclear aromatic hydrocarbons(as PAH),Max	mg/l	-	-	-	-
Mineral Oil	mg/l	-	-	0.01	-
Pesticides, Max	mg/l	-	-	Absent	-
Radioactive Materials, Max g) Alpha emitters	Bq/l	-	-	-(0.1)	-
Radioactive Materials, Max h) Beta emitters	Pci/l	-	-	-(1)	-
Alkalinity, Max	mg/l	-	-	200(600)	-
Aluminum(as Al), Max	mg/l	-	-	0.03(0.2)	-
Boron,Max	mg/l	-	-	1(5)	-

Noise / Vibration

Date: April 2022
Bhajanpura)(Elevated)

Location: DC-02 (Yamuna Vihar to

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards (Environmental Management Manual by DMRC)	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Khajuri Khas Leq (d)-73.9 Leq (n)-57.3 Lmin-46.8	78.4	<u>National Standards</u> <u>Area</u> Leq(d)Leq(n) Resi 55 45 Comm 65 55	Commercial /residence	30locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC
		Bhajanpura: Leq (d)-77.4 Leq (n)-64.8 Lmin-50.7	82.1	Indstl 75 70 Silence 50 40		
		Yamuna Vihar : Leq (d)-71.5 Leq (n)-63.9 Lmin-51.6	77.9	<u>DMRC Env Manual</u> (when pre construction levels are not known)		
		Yamuna Bed: Leq (d)-71.3 Leq (n)-66.4 Lmin-53.6	79.5	Resi Lmax Daytime: 75 Nighttime: 65		
		Sonia Vihar : Leq (d)-75.7 Leq (n)-62.5 Lmin-50.9	80.3	Comm & and Indstl At all time: 85		
		Casting Yard : Leq (d)-76.9 Leq (n)-60.7 Lmin-48.1	82.6			
		Jagatpur : Leq (d)-76.1 Leq (n)-59.7 Lmin-52.2	80.7			
		Soorghat : Leq (d)-68.2 Leq (n)-60.6 Lmin-49.7	72.3			
		Jharoda : Leq (d)-71.3 Leq (n)-63.2 Lmin-50.6	75.6			
Burari :	81.3					

		Leq (d)- 76.7 Leq (n)-64.7 Lmin-52.3				
Vibration level	RMS (mm/s)	-	--	Structures in good condition:25 in fair condition:12 in poor condition:5 Water supply Structures:5 Heritage structure/ Bridge structures:5	-	10locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

Date: May 2022 Location:DC-01 (Keshopur to Pitampura) (Elevated)

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards (Environmental Management Manual by DMRC)	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Mundka Casting Yard- Leq (d)-66.45 Leq (n)-60.78 Lmin-39 MadhubanChowk- Leq (d)-74.34 Leq (n)-64.32 Lmin-54.7 North Pitampura- Leq (d)-72.41 Leq (n)-68.98 Lmin-57.6 West Enclave- Leq (d)-68.99 Leq (n)-64.37 Lmin-50 Puspanjali-	89 94.6 96.9 93.7 108.9	<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40 <u>DMRC Env Manual</u> (when pre construction levels are not known) Resi Lmax Daytime: 75 Nighttime: 65 Comm & and Indstl At all time: 85	Commercial / residence	30locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

		Leq (d)-74.05 Leq (n)-74.69 Lmin-46.1 Deepali Chowk- Leq (d)-66.84 Leq (n)-67.69 Lmin-53.4	89.8			
Vibration level	RMS (mm/s)	-	-	Structures in good condition:25 in fair condition:12 in poor condition:5 Water supply Structures:5 Heritage structure/ Bridge structures:5	-	10locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

Date:August 2022Location:DC-04 (Sangam Vihar to Saket G block)(Elevated)

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards (Environmental Management Manual by DMRC)	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Khanpur- Leq (d)-71.12 Leq (n)-69.99 Lmin-57 Sangam Vihar- Leq (d)-75.51 Leq (n)-64.82 Lmin-38.4 Casting Yard- Leq (d)-67.57 Leq (n)-57.4 Lmin-39 Ambedkar Nagar- Leq (d)-73.32 Leq (n)-67.50 Lmin-61.3	96.4 97.3 95.4 96.8	<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40 <u>DMRC Env Manual</u> (when pre construction levels are not known) Resi Lmax Daytime: 75	Commercial / residence	30locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

		Saket G Block- Leq (d)-67.13 Leq (n)-64.87 Lmin-46.0	94.2	Nighttime: 65 Comm & and Indstl At all time: 85		
Vibration level	RMS (mm/s)	-	-	Structures in good condition:25 in fair condition:12 in poor condition:5 Water supply Structures:5 Heritage structure/ Bridge structures:5		10locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

Date:July 2022Location:DC-01 (Keshopur to Pitampura) (Elevated)

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards (Environmental Management Manual by DMRC)	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Mundka Casting Yard- Leq (d)-63.58 Leq (n)-57.71 Lmin-46.9 Madhuban Chowk- Leq (d)-71.76 Leq (n)-61.9 Lmin-45.6 North Pitampura- Leq (d)-73.01 Leq (n)-69.88 Lmin-64.8 Paschim Vihar- Leq (d)-66.94 Leq (n)-61.72 Lmin-48.4 West Enclave-	92.5 94.2 93.2 87.6 95.9	<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40 <u>DMRC Env Manual</u> (when pre construction levels are not known) Resi Lmax Daytime: 75 Nighttime: 65 Comm & and Indstl At all time: 85	Commercial / residence	30locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

		Leq (d)-69.56 Leq (n)-64.85 Lmin-49.2				
		Deepali Chowk- Leq (d)-73.80 Leq (n)-65.84 Lmin-52.5	93.9			
Vibration level	RMS (mm/s)			Structures in good condition:25 in fair condition:12 in poor condition:5 Water supply Structures:5 Heritage structure/ Bridge structures:5	-	10locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC

Date:July2022

Location: DC-02 (Maujpur to Majlis Park) (Elevated)

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards (Environmental Management Manual by DMRC)	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Jharoda Leq (d)-64.8 Leq (n)-56.1 Lmin-45.6	77.5	<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40	Commercial / residence	30locations 24hours/time Once/week During entire civil construction stage or even later, if directed by DMRC
		Burari- Leq (d)-68.3 Leq (n)-65.4 Lmin-55.2	81.4	70 Silence 50 40		
		Jagatpur- Leq (d)-70.5 Leq (n)-62.5 Lmin-50.9	80.2	<u>DMRC Env Manual</u> (when pre construction levels are not known)		
		Soorghat- Leq (d)-69.7 Leq (n)-61.6 Lmin-53.7	80.9	Resi Lmax Daytime: 75 Nighttime:		

		<p>Yamuna Bed- Leq (d)-67.2 Leq (n)-63.2 Lmin-54.4</p> <p>Khajuri Khas- Leq (d)-72.2 Leq (n)-64.7 Lmin-53.2</p> <p>Bhajanpura- Leq (d)-71.5 Leq (n)-61.4 Lmin-49.3</p> <p>Yamuna Vihar- Leq (d)-70.9 Leq (n)-59.2 Lmin-51.9</p> <p>Sonia Vihar- Leq (d)-68.6 Leq (n)-60.3 Lmin-53.4</p> <p>Casting Yard- Leq (d)-71.3 Leq (n)-65.6 Lmin-54.6</p>	<p>82.6</p> <p>81.6</p> <p>78.9</p> <p>82.3</p> <p>82.7</p> <p>83.1</p>	<p>65 Comm & and Indstl At all time: 85</p>		
Vibration level	RMS (mm/s)			<p>Structures in good condition:25 in fair condition:12 in poor condition:5 Water supply Structures:5 Heritage structure/ Bridge structures:5</p>	-	<p>10locations 24hours/time Once/week</p> <p>During entire civil construction stage or even later, if directed by DMRC</p>

Excavated soil (Leaching test)

Date: August 2022

Location:DC-06 (Krishna Park Station)

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Mercury(as Hg)	mg/l	0.005	-	-	0.0005	In each Underground Construction Contract Once/6months During entire civil construction stage Samples should be taken from the underground lowest point. -Report submitted in last quarter report of July to September 2020
Cadmium(as Cd)	mg/l	0.02	-	-	0.01	
Arsenic(as As)	mg/l	0.1	-	-	0.01	
Cyanide(as CN)	mg/l	0.01	-	-	Not detected	
Lead(as Pb)	mg/l	0.05	-	-	0.01	
Chromium(as Cr6+)	mg/l	0.02	-	-	0.05	

Date:

Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Mercury(as Hg)	mg/l	--	-	-	0.0005	In each Underground Construction Contract Once/6months During entire civil construction stage Samples should be taken from the underground lowest point.
Cadmium(as Cd)	mg/l	-	-	-	0.01	
Arsenic(as As)	mg/l	-	-	-	0.01	
Cyanide(as CN)	mg/l	-	-	-	Not detected	
Lead(as Pb)	mg/l	-	-	-	0.01	
Chromium(as Cr6+)	mg/l	-	-	-	0.05	

Excavated soil (Amount)

Line	<u>Excavated Amount till date</u> <u>Approx.(m³)</u>	Name of Disposed Site	Disposed Amount till date Approx.(m ³)
Line-7	2	-	Used at site
Line-8	23650	DC-01	Used at Site
Line-8	12858	DC-06	12858
Line-10	16689	DC-04	15659
Line-10	15832	DC-26	15832

Ecological Monitoring (Flora Monitoring)

CPM	Permission to fell trees	No. of trees actually felled	No of trees planted	No of trees transplanted	Location of plantation
CPM-2	2940	268	Compensatory Plantation in the ratio of 1: 10 i.e. 10 * no. of trees felled to be planted by Delhi Development Authority on behalf of DMRC	502	-
CPM-3	1339	0		0	-
CPM-4	1468	461		775	-
CPM-5	2395	573		593	-
CPM-6	1668	503		97	-

2.2 During Operation

When a measured value exceeds the standards, the value is written in bold letters.

Air Quality (Ambient Air Quality)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date:Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date:Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date:Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours) (CPCB)	IS 5182 (Part 23)	48hours/time Once/month For 3 years

Air Quality (Ambient Air Quality)

Date:Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
PM ₁₀	µg/m ³	-	-	100 (24hours)	IS 5182 (Part 23)	48hours/time Once/month

				(CPCB)		For 3 years
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Effluent at Depot

Date: Location: Vinod Nagar

Item	Unit	Measured Value (Mean)		Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
		Inlet	Outlet				
pH	-			-	5.5-9.0	IS 3025(part-11) 1983-RA:2017	(Depot) Once/4 months For 3 years
TSS	mg/l			-	100	IS 3025(part-17) 1984-RA:2017	
BOD	mg/l			-	30	IS 3025(part-44) 1993-RA:2017	
COD	mg/l			-	250	IS 3025(part-58) 2006-RA:2017	
Oil/Grease	mg/l			-	10	IS 3025(part-11) 1991-RA:2019	

Effluent at Depot

Date: July 2022 Location: Kalindi Kunj Depot

Item	Unit	Measured Value (Mean)		Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
		Inlet	Outlet				
pH	-			-	5.5-9.0	IS 3025(part-11) 1983-RA:2017	(Depot) Once/4 months For 3 years
TSS	mg/l			-	100	IS 3025(part-17) 1984-RA:2017	
BOD	mg/l			-	30	IS 3025(part-44) 1993-RA:2017	
COD	mg/l			-	250	IS	

						3025(part-58) 2006-RA:2017	
Oil/Grease	mg/l			-	10	IS 3025(part-11) 1991-RA:2019	

Effluent at Depot

Date: July 2022 Location: Ajronda Depot

Item	Unit	Measured Value (Mean)		Measured Value (Max.)	Country's Standards	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
		Inlet	Outlet				
pH	-		-	-	5.5-9.0	IS 3025(part-11) 1983-RA:2017	(Depot) Once/4months For 3 years
TSS	mg/l		-	-	100	IS 3025(part-17) 1984-RA:2017	
BOD	mg/l		-	-	30	IS 3025(part-44) 1993-RA:2017	
COD	mg/l		-	-	250	IS 3025(part-58) 2006-RA:2017	
Oil/Grease	mg/l		-	-	10	IS 3025(part-11) 1991-RA:2019	

Ground Water Quality(Drinking Water Quality:IS 10500:1991)

Date: Location:

Item	Unit	Measured Value (Mean)	Measured Value (Max.)	Country's Standards (IS 10500:1991)	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)
Turbidity, NTU, Max	-	-	-	5(10)	IS:3025(part-10)	
pH Value	-	-	-	6.5-8.5	IS:3025(part-11)	
Total Hardness (as CaCO ₃), Max	mg/l	-	-	300(600)	IS:3025(part-21)	
Iron(as Fe), max	mg/l	-	-	0.3(1.0)	IS:3025(part-53)	

Dissolved solids, Max	mg/l	-	-	500(2000)	IS:3025(part-16)
Calcium(as Ca), Max	mg/l	-	-	75(200)	IS:3025(part-40)
Magnesium(as Mg), Max	mg/l	-	-	30(100)	IS:3025(part-46)
Sulphate(as SO ₄), Max	mg/l	-	-	200(400)	IS:3025(part-24)
Nitrate(as NO ₂), Max	mg/l	-	-	45(100)	IS:3025(part-34)
Lead(as Pb), Max	mg/l	-	-	0.05	IS:3025(part-47)
Zinc(as Zn), Max	mg/l	-	-	5(15)	IS:3025(part-49)
Alkalinity, Max	mg/l	-	-	200(600)	IS:3025(part-23)
Aluminum(as Al), Max	mg/l	-	-	0.03(0.2)	IS:3025(part-)
TSS	mg/l	-	-	600	IS:3025(part-)

Noise / Vibration

Date:

Location:

Item	Unit	Measured Value (L _{eq})	Measured Value (L _{Max})	Country's Standards	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Leq (d)- Leq (n)- Lmin-		<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40	Commercial /residence	15locations 24hours/time Once/month

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Date: Location:

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Leq (d)- Leq (n)- Lmin-		<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40	Commercial/residence	15locations 24hours/time Once/month

Date: Location:

Item	Unit	Measured Value (Leq)	Measured Value (LMax)	Country's Standards	Occupancy	Remarks (Measurement Point, Frequency, Method, etc.)
Noise level (Leq) and Lmax	dB(A)	Leq (d)- Leq (n)- Lmin-		<u>National Standards</u> <u>AreaLeq(d)Leq(n)</u> Resi 55 45 Comm 65 55 Indstl 75 70 Silence 50 40	Commercial/residence	15locations 24hours/time Once/month

Date: Location:

Item	Unit	Measured RMS Value (Mean)	Measured RMS Value (Max.)	Country's Standards Max. PPV mm/s	Referred International Standards	Remarks (Measurement Point, Frequency, Method, etc.)

Vibration level	mm/s			Structures in:- Good condition = 25 Fair condition = 12 Poor condition = 5 Water supply structures = 5 Heritage structures = 5	Federal Transit Administration (FTA), US	As and when complaint arises at the ground floor of building above the tunnel.
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