Annexures

ANNEXURE-1 Biological Environment Assessment

Biological Environment Assessment

This summary of the biological environment for the proposed 132 kV grid station and transmission line project based on the baseline established through field surveys and literature reviews.

1. Project Site Characteristics

- **Location Context**: The subproject is situated adjacent to a populated, built-up urban area of Hyderabad city.
- **Current Land Use**: The proposed site for the grid station is an abandoned agricultural field. The Right of Way (RoW) for the transmission line is along a tarred road and a flood protection bund holding some species of shrubs.
- **Habitat Status**: The area proposed for the establishment of a grid station and associated transmission line is considered a modified habitat without any significant flora, fauna, or sensitive species of concern.

2. Floral Baseline

- **Grid Station Site**: The area is devoid of shrubs, and herbs, with the exception of *Cynodondactylon* (a very common perennial grass).
- **Transmission Line ROW**: 3 shrub species are present within the 30m Right of Way, all of which are categorized as "Least Concern" as per IUCN Red List of Threatened Species. These include:
    - **Shrubs**: *Calotropis procera* (Ak), *Prosopis*glandulosa (Devi) and *Tamarix dioica* (Pilchi).

3. Faunal Baseline

- **Terrestrial Fauna**: Common species reported in the area include the field Rat (*Millardiameltada*), Cat (*Felis catus*), and the Indian Sand Snake (*Psammophiscondanarus*).
- **Aquatic Fauna**: The adjacent Indus River supports various species, including the vulnerable Indian narrow-headed softshell turtle (*Chitra indica*) and fish such as Thaila (*Catlacatla*) and Rahu (*Labeorohita*). No Indus Blind Dolphin is reported from the Indus River reach adjacent to the proposed subproject area
- **Avifauna**: There are 42 threatened or near-threatened bird species have been reported in Sindh. The proposed subproject area is adjacent to the Indus River, which is an important international route for migratory birds (Indus Flyway). While the Indus River flows near the built-up area, no migratory or sedentary bird is reported from the river reach near the subproject area.
- **4. Protected Areas & Sensitive Habitats**
- **Proximity**: No wildlife protected areas (National Parks, Wildlife Sanctuaries, or Game Reserves) exist within 16 km of the subproject.
- **Nearest Sites**: The closest protected areas are the Hala Game Reserve (16.65 km), Miani Dhand (27.72 km), and Khandi (34.33 km).

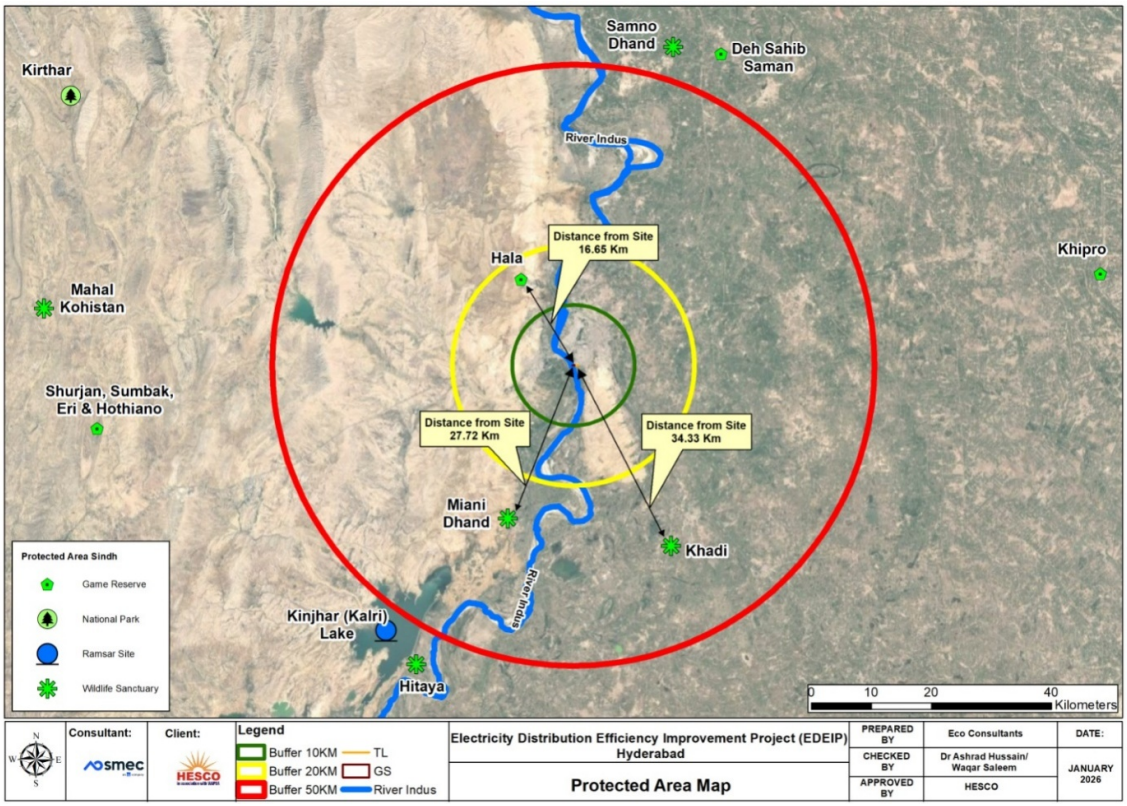


Figure- Protected areas in Sindh

5. Impact Summary

- **Terrestrial Flora and Fauna**: The terrestrial vegetation is very sparse, and no tree cutting would be involved, so no significant impact on wild flora is anticipated. The faunal species are mobile and would shift during project execution to the nearby similar habitat along the Indus River, so no significant impact on terrestrial faunal species is anticipated.
- **Aquatic Life**: Potential impacts on aquatic life are considered unlikely as all the subproject activities will be land based and there will be no effluent or solid waste dumping into the Indus River.
- **Construction Noise**: Noise-generating activities will be brief and geographically limited, posing no threat to aquatic species' breeding or movement patterns.
- **Conclusion**: It is concluded that the construction and operation of the grid station and the associated 0.77 km transmission line will not have any significant impact on the local biological environment or the Indus River. Therefore, a detailed study of the biological environment for this component has not been conducted and has been scoped out of the assessment.

ANNEXURE-2 Baseline Environmental Monitoring Report

BASELINE ENVIRONMENTAL MONITORING R

132 KV GRID STATION (RIVER BUND)

ELECTRICITY DISTRIBUTION EFFICIENCY IMPROVEMENT PROJEC

HYDERABAD ELECTRIC SUPPLY COMPANY (HESCO)

Submitted to:

Snowy Mountain Engineering Corporation (SMEC)



Submitted by:

IMPERIAL ENVIRONMENT RESEARCH LABORAT

Suit # 712, 7th Floor, Anum Bleesing, Block 7/8, K.C.H.S.U, Shahrah-e-F
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IERL-SEPA CERTIFICATE NO.	EPA/LAB/CERTIFICATE 01/31/2022	**Reference No.**	IERL/SMEC/E HESCO/RB/0
Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	**Sub-project Name**	132 kV Grid S (River Bund)
Sample Collection Date	03/01/2026	**Sample Description**	Surface Wate (Grab Samplir
Reporting Date	08/01/2026	**Source:**	River Indus
Sample Collected/Submitted by:	IERL Representative	**Coordinates:**	25.3500831°N
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Surface Water Quality Monitoring

S.No.	Parameter	Method	Unit	SEQS Limit*	WHO Limit*
1.	Temperature	APHA 2550	°C	NGVS	NGVS
2.	pH @ 25°C	APHA 4500 H+B	-	6.5-8.5	6.5-8.5
3.	Odour	APHA 2150 B	-	Acceptable	Acceptable
4.	Color	APHA 2120 B	TCU	15	15
5.	Taste	APHA 2150 B	-	Acceptable	Acceptable
6.	Total Hardness	APHA 2340 C	mg/l	500	500
7.	Total Dissolved Solids	APHA 2540 C	mg/l	1000	1000
8.	Turbidity	APHA 2130 B	NTU	<5	<5
9.	Chloride	APHA 4500-Cl B	mg/l	<250	<250
10.	Chlorine, Residual	APHA 4500-Cl G	mg/l	0.2 - 0.5	0.2 - 0.5
11.	Aluminum	APHA 3111 B	mg/l	0.2	0.2
12.	Antimony	APHA 3111 B	mg/l	0.005	0.02
13.	Barium (Ba)	APHA 3111 B	mg/l	0.7	0.7
14.	Boron	APHA 3111 B	mg/l	0.3	0.3
15.	Fluoride	APHA 4500-F C	mg/l	1.5	1.5
16.	Nitrate	APHA 4500-NO3- F	mg/l	0.5	50
17.	Nitrite	APHA 4500-NO2- E	mg/l	3	3
18.	Arsenic	APHA 3111 B	mg/l	<0.05	0.01
19.	Cadmium	APHA 3111 B	mg/l	0.01	0.003
20.	Chromium	APHA 3111 B	mg/l	<0.05	0.05
21.	Copper	APHA 3111 B	mg/l	2	2
22.	Cyanide	APHA 4500-CN- G	mg/l	0.05	0.07
23.	Lead	APHA 3111 B	mg/l	<0.05	0.01
24.	Manganese	APHA 3111 B	mg/l	0.5	0.5
25.	Mercury	APHA 3111 B	mg/l	0.001	0.001
26.	Nickel	APHA 3111 B	mg/l	<0.02	0.02
27.	Phenols	APHA 4500-P	mg/l	NoGL	<0.002
28.	Selenium	APHA 3111 B	mg/l	0.01	0.01
29.	Zinc	APHA 3111 B	mg/l	5	3
30.	Total Coliform	APHA 9222 B	cfu	0/100ml	0/100ml
31.	Fecal Coliform	APHA 9222 D	cfu	0/100ml	0/100ml
32.	E-Coli	APHA 9222 D	cfu	0/100ml	0/100ml

SEQS = Sindh Environmental Quality Standards *NoGL = No Given Limit*
WHO = World Health Organization *APHA = American Public Health Organization*

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IERL-SEPA CERTIFICATE NO.	EPA/LAB/CERTIFICATE 01/31/2022	**Reference No.**	IERL/SMEC/E HESCO/RB/0
Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	**Sub-project Name**	132 kV Grid S (River Bund)
Sample Collection Date	03/01/2026	**Sample Description**	Groundwater (Grab Sampli
Reporting Date	08/01/2026	**Source:**	Hand Pump -
Sample Collected/Submitted by:	IERL Representative	**Coordinates:**	25.3553493*I
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Groundwater Quality Monitoring

S.No.	Parameter	Method	Unit	SEQS Limit*	WHO Limit*
1.	Temperature	APHA 2550	°C	NGVS	NGVS
2.	pH @ 25°C	APHA 4500 H+B	-	6.5-8.5	6.5-8.5
3.	Odour	APHA 2150 B	-	Acceptable	Acceptable
4.	Color	APHA 2120 B	TCU	15	15
5.	Taste	APHA 2150 B	-	Acceptable	Acceptable
6.	Total Hardness	APHA 2340 C	mg/l	500	500
7.	Total Dissolved Solids	APHA 2540 C	mg/l	1000	1000
8.	Turbidity	APHA 2130 B	NTU	<5	<5
9.	Chloride	APHA 4500-Cl B	mg/l	<250	<250
10.	Chlorine, Residual	APHA 4500-Cl G	mg/l	0.2 - 0.5	0.2 - 0.5
11.	Aluminum	APHA 3111 B	mg/l	0.2	0.2
12.	Antimony	APHA 3111 B	mg/l	0.005	0.02
13.	Barium (Ba)	APHA 3111 B	mg/l	0.7	0.7
14.	Boron	APHA 3111 B	mg/l	0.3	0.3
15.	Fluoride	APHA 4500-F C	mg/l	1.5	1.5
16.	Nitrate	APHA 4500-NO3- F	mg/l	0.5	50
17.	Nitrite	APHA 4500-NO2- E	mg/l	3	3
18.	Arsenic	APHA 3111 B	mg/l	<0.05	0.01
19.	Cadmium	APHA 3111 B	mg/l	0.01	0.003
20.	Chromium	APHA 3111 B	mg/l	<0.05	0.05
21.	Copper	APHA 3111 B	mg/l	2	2
22.	Cyanide	APHA 4500-CN- G	mg/l	0.05	0.07
23.	Lead	APHA 3111 B	mg/l	<0.05	0.01
24.	Manganese	APHA 3111 B	mg/l	0.5	0.5
25.	Mercury	APHA 3111 B	mg/l	0.001	0.001
26.	Nickel	APHA 3111 B	mg/l	<0.02	0.02
27.	Phenols	APHA 4500-P	mg/l	NoGL	<0.002
28.	Selenium	APHA 3111 B	mg/l	0.01	0.01
29.	Zinc	APHA 3111 B	mg/l	5	3
30.	Total Coliform	APHA 9222 B	cfu	0/100ml	0/100ml
31.	Fecal Coliform	APHA 9222 D	cfu	0/100ml	0/100ml
32.	E-Coli	APHA 9222 D	cfu	0/100ml	0/100ml

SEQS = Sindh Environmental Quality Standards
WHO = World Health Organization
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IERL-SEPA CERTIFICATE NO.	EPA/LAB/CERTIFICATE 01/31/2022	Reference No.	IERL/SMEC/ED HESCO/RB/01/
Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	Sub-project Name	132 kV Grid Sta (River Bund)
Monitoring Date	03 – 04/01/2026	Sample Description	Ambient Air Qu
Reporting Date	08/01/2026	Location	Grid Station Sit
Sample Collected/Submitted by:	IERL Representative	Coordinates	25.351118°N, (
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Ambient Air Quality Monitoring

Date	Time	SO2	NO	NO2	CO	O3	PM2.5	PM1
03-01-2026	10:00	24.41	41.47	62.6	8.3	63.4	78.1	151
	11:00	25.76	39.84	52.4	10.6	71.4	72.3	154
	12:00	29.55	38.69	51.2	10.2	71.3	76.2	148
	13:00	21.54	40.33	52.2	04.4	88	75.3	143
	14:00	23.39	41.65	51.3	12.5	73.8	79.4	144
	15:00	19.83	38.73	65.8	10.5	81.2	82.7	134
	16:00	32.62	34.66	68.6	12.3	81.6	83.8	137
	17:00	28.67	30.41	60.2	9.1	80.4	72.7	147
	18:00	20.16	29.68	56.6	8.9	76.7	72.9	139
	19:00	18.57	27.71	53.6	3.3	63.9	68.1	142
	20:00	11.68	30.19	43.4	5.5	63	65.6	153
	21:00	10.48	32.62	43.8	4.6	37.1	67.4	154
	22:00	17.33	29.74	46.4	8.8	30.4	69.7	137
	23:00	12.67	19.85	43.6	8.9	32.1	63.3	136
04-01-2026	24:00	13.27	27.28	41.2	9.6	33.4	62.7	139
	01:00	11.27	27.38	40.2	3.5	36.7	56.6	128
	02:00	16.73	28.62	39.4	3.8	37.7	58.4	122
	03:00	14.61	18.65	39.2	5.9	36.4	53.1	126
	04:00	13.87	17.33	46.3	6.7	35.2	49.9	125
	05:00	18.35	34.35	49.8	5.8	38.1	44.2	122
	06:00	21.38	35.21	48.1	7.6	34.9	46.8	125
	07:00	25.65	39.39	45.5	10.9	33.7	49.0	133
	08:00	27.81	40.16	49.2	6.3	38.8	51.4	14
	09:00	28.64	41.65	42.7	10.1	37.4	58.4	131
SEQS		120	40	80	5	130	75	150
Unit		*µg/m3*	*µg/m3*	*µg/m3*	*mg/m3*	*µg/m3*	*µg/m3*	*µg/m*
Maximum		32.62	41.65	68.6	12.5	88	83.8	154
Minimum		10.48	17.33	39.2	3.3	30.4	44.2	122
Average		20.44	32.48	50.04	7.84	53.65	64.85	138.

SEQS = Sindh Environmental Quality Standards
µg/m3 = microgram per cubic meter

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IERL-SEPA CERTIFICATE NO.	EPA/LAB/CERTIFICATE 01/31/2022	**Reference No.**	IERL/SMEC/E HESCO/RB/01
Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	**Sub-project Name**	132 kV Grid St (River Bund)
Monitoring Date	03 – 04/01/2026	**Sample Description**	Ambient Air Qu
Reporting Date	08/01/2026	**Location**	TL End Point (
Sample Collected/Submitted by:	IERL Representative	**Coordinates**	25.351312°N,
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Ambient Air Quality Monitoring

Date	Time	SO2	NO	NO2	CO	O3	PM2.5	PM
03-01-2026	11:30	26.65	42.41	64.4	4.4	60.7	79.5	16
	12:30	28.54	42.93	58.3	9.2	62.4	73.1	15
	13:30	30.54	39.19	57.9	11.3	64.4	79.2	15
	14:30	29.41	41.76	59.3	10.6	61.9	82.5	15
	15:30	27.82	43.45	58.3	11.2	63.7	82.4	15
	16:30	23.71	43.92	59.8	13.2	71.2	84.1	14
	17:30	33.86	37.76	69.2	11.3	74.6	80.8	14
	18:30	29.89	40.32	63.3	8.4	71.4	83.9	15
	19:30	29.16	38.98	59.9	9.9	69.7	79.9	15
	20:30	30.86	29.90	55.1	7.3	67.2	78.3	15
	21:30	26.21	36.19	48.2	9.3	66.2	76.6	15
	22:30	21.41	39.42	46.8	5.6	53.3	78.2	15
	23:30	19.33	40.14	44.1	8.8	49.1	72.5	14
	00:30	18.37	28.71	42.6	7.9	46.3	68.3	14
04-01-2026	01:30	15.72	29.83	40.2	5.6	39.3	69.4	15
	02:30	14.17	30.72	43.4	4.6	38.2	66.6	15
	03:30	14.90	29.20	40.4	4.1	39.9	63.3	13
	04:30	13.61	32.81	40.2	4.2	39.3	64.1	13
	05:30	15.81	38.23	43.3	5.9	36.6	61.2	12
	06:30	23.98	39.35	49.8	8.6	38.4	59.2	12
	07:30	25.87	36.09	43.1	8.9	35.3	58.2	12
	08:30	24.63	38.19	49.6	12.3	35.1	56.5	13
	09:30	29.81	39.16	42.2	10.8	37.2	54.3	13
	10:30	32.12	43.10	40.4	11.2	39.3	52.3	13
SEQS		**120**	**40**	**80**	**5**	**130**	**75**	**15**
Unit		*µg/m3*	*µg/m3*	*µg/m3*	*mg/m3*	*µg/m3*	*µg/m3*	*µg/*
Maximum		**33.86**	**43.92**	**69.2**	**13.2**	**74.6**	**84.1**	**16**
Minimum		**13.61**	**28.71**	**40.2**	**4.1**	**35.1**	**52.3**	**12**
Average		**24.38**	**37.48**	**51.12**	**8.53**	**52.71**	**70.80**	**145**

SEQS = Sindh Environmental Quality Standards
µg/m3 = microgram per cubic meter
mg/m3 = milligram per cubic meter

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IERL-SEPA CERTIFICATE NO.	EPA/LAB/CERTIFICATE 01/31/2022	Reference No.	IERL/SMEC/ED HESCO/RB/01/
Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	Sub-project Name	132 kV Grid Sta (River Bund)
Monitoring Date	03 – 04/01/2026	Sample Description	Ambient Noise
Reporting Date	08/01/2026	Location	Grid Station Sit
Sample Collected/Submitted by:	IERL Representative	Coordinates	25.351118°N,
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Ambient Noise Level Monitoring

S.No.	Sampling Location		Unit	SEQS Limits
1.	10:00	Day Time	dB(A)	55
2.	11:00		dB(A)	55
3.	12:00		dB(A)	55
4.	13:00		dB(A)	55
5.	14:00		dB(A)	55
6.	15:00		dB(A)	55
7.	16:00		dB(A)	55
8.	17:00		dB(A)	55
9.	18:00		dB(A)	55
10.	19:00		dB(A)	55
11.	20:00		dB(A)	55
12.	21:00		dB(A)	55
13.	22:00		dB(A)	55
14.	23:00	Night Time	dB(A)	45
15.	24:00		dB(A)	45
16.	01:00		dB(A)	45
17.	02:00		dB(A)	45
18.	03:00		dB(A)	45
19.	04:00		dB(A)	45
20.	05:00		dB(A)	45
21.	06:00		dB(A)	45
22.	07:00	Day Time	dB(A)	55
23.	08:00		dB(A)	55
24.	09:00		dB(A)	55

SEQS = Sindh Environmental Quality Standards

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Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	Sub-project Name	132 kV Grid Sta (River Bund)
Monitoring Date	03 – 04/01/2026	Sample Description	Ambient Noise
Reporting Date	08/01/2026	Location	TL End Point (S
Sample Collected/Submitted by:	IERL Representative	Coordinates	25.351312°N,
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Ambient Noise Level Monitoring

S.No.	Sampling Location		Unit	SEQS Limits
1.	11:30	Day Time	dB(A)	55
2.	12:30		dB(A)	55
3.	13:30		dB(A)	55
4.	14:30		dB(A)	55
5.	15:30		dB(A)	55
6.	16:30		dB(A)	55
7.	17:30		dB(A)	55
8.	18:30		dB(A)	55
9.	19:30		dB(A)	55
10.	20:30		dB(A)	55
11.	21:30		dB(A)	55
12.	22:30	Night Time	dB(A)	45
13.	23:30		dB(A)	45
14.	00:30		dB(A)	45
15.	01:30		dB(A)	45
16.	02:30		dB(A)	45
17.	03:30		dB(A)	45
18.	04:30		dB(A)	45
19.	05:30		dB(A)	45
20.	06:30	Day Time	dB(A)	55
21.	07:30		dB(A)	55
22.	08:30		dB(A)	55
23.	09:30		dB(A)	55
24.	10:30		dB(A)	55

SEQS = Sindh Environmental Quality Standards
dB(A) = Decibel – A weighting

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Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	**Sub-project Name**	132 kV Grid St (River Bund)
Monitoring Date	03 – 04/01/2026	**Sample Description**	Soil Sampling
Reporting Date	08/01/2026	**Location**	Grid Station Si
Sample Collected/Submitted by:	IERL Representative	**Coordinates**	25.3511196°N
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Soil Sample

S.No.	Parameters	Unit	Test Results	Test
1.	Electrical Conductivity (EC)	µS/cm	710	AST
2.	pH	-	7.2	AST
3.	Organic Matter	%	0.95	AST
4.	Texture	-	Silt Loam	AST
	Sand	%	29	
	Silt	%	47	
	Clay	%	24	
5.	Sodium Adsorption Ratio (SAR)	-	0.85	AST
6.	Lead (Pb)	mg/kg	BDL	AST
7.	Arsenic (As)	mg/kg	BDL	AST
8.	Mercury (Hg)	mg/kg	BDL	AST
9.	Cadmium (Cd)	mg/kg	BDL	AST
10.	Nickel (Ni)	mg/kg	BDL	AST
11.	Chromium (Cr)	mg/kg	BDL	AST

***ASTM** = American Society for Testing and Materials*
***mg/kg** = Milligram per kilogram*
***µS/cm** = microsiemens per centimeter*

Sample Analyzed by	**Head of Imperial Environment Res**

Terms & Condition:

- *Report is valid for current batch (sample).*
- *This Report is not valid for any other certification, or court matters.*

Imperial Environment Research Laboratory

Imperial Environment Research Laborator

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IERL-SEPA CERTIFICATE NO.	EPA/LAB/CERTIFICATE 01/31/2022	**Reference No.**	IERL/SMEC/E HESCO/RB/01
Project Name:	Electricity Distribution Efficiency Improvement Project (EDEIP)	**Sub-project Name**	132 kV Grid St (River Bund)
Monitoring Date	03 – 04/01/2026	**Sample Description**	Soil Sampling
Reporting Date	08/01/2026	**Location**	TL End Point (S
Sample Collected/Submitted by:	IERL Representative	**Coordinates**	25.3509666°N,
Report To:	M/S Snowy Mountain Engineering Company (SMEC)		

Analytical Test Report of Soil Sample

S.No.	Parameters	Unit	Test Results	Test
12.	Electrical Conductivity (EC)	µS/cm	510	AST
13.	pH	-	7.11	AST
14.	Organic Matter	%	1.25	AST
15.	Texture	-	Clay	AST
	Sand	%	31	
	Silt	%	27	
	Clay	%	42	
16.	Sodium Adsorption Ratio (SAR)	-	0.78	AST
17.	Lead (Pb)	mg/kg	BDL	AST
18.	Arsenic (As)	mg/kg	BDL	AST
19.	Mercury (Hg)	mg/kg	BDL	AST
20.	Cadmium (Cd)	mg/kg	BDL	AST
21.	Nickel (Ni)	mg/kg	BDL	AST
22.	Chromium (Cr)	mg/kg	BDL	AST

***ASTM** = American Society for Testing and Materials*
***mg/kg** = Milligram per kilogram*
***µS/cm** = microsiemens per centimeter*

Sample Analyzed by	Head of Imperial Environment Rese

Terms & Condition:

- *Report is valid for current batch (sample).*
- *This Report is not valid for any other certification, or court matters.*

PICTURE GALLERY



Ambient Air Quality and Noise Monitoring



Ambient Air Quality and Noise Mo



Ambient Air Quality and Noise Monitoring



Ambient Air Quality and Noise Mo


Imperial Environment Research Lab (IERL).
Jan 03, 2026 AM
25.351198°N, 68.341972°E
Location: Transmission line End Point
District:Hyderabad
Environmental Testing
River Bund
Timemark
Ambient Air Quality and Noise Monitoring
IMPERIAL ENVIRONMENT RESEARCH LAB
03/01/2026 05:33 PM
25.351433°N, 68.342105°E
Location:Transmission line End Point
District:Hyderabad
Environmental Testing
River Bund
Ambient Air Quality and Noise Mo
IMPERIAL ENVIRONMENT RESEARCH LAB
Location:Transmission line End Point
District:Hyderabad
Environmental Testing
River Bund
Ambient Air Quality and Noise Monitoring
IMPERIAL ENVIRONMENT RESEARCH LAB (IERL)
Sat, Jan 03, 2026 GMT+5
No data
Location:Transmission line End Point
District:Hyderabad
Environmental Testing
River Bund
Ambient Air Quality and Noise Mo



Groundwater Sampling



Surface Water Sampling (River



Soil Sampling at Grid Station Site



Soil Sampling at TL End Poi

Annexure – 3 Environmental Code of Practice

Environmental Code of Practice

The objective of the Environmental Code of Practices (ECoPs) is to address all potential and general construction-related impacts during the implementation of the subproject. The ECoPs will provide guidelines for best-operating practices and environmental management guidelines to be followed by the contractors for sustainable management of all environmental issues. These ECoPs will be annexed to the general conditions of all the contracts, including subcontracts carried out under the subproject. The list of ECoPs prepared for the subprojectis given below.

ECoP 1: Waste Management
ECoP 2: Fuels and Hazardous Goods Management
ECoP 3: Water Resources Management
ECoP 4: Soil Quality Management
ECoP 5: Erosion and Sediment Control
ECoP 6: Air Quality Management
ECoP 7: Noise and Vibration Management
ECoP 8: Road Transport and Road Traffic Management
ECoP 9: Labor Influx Management and Construction Camp Management
ECoP 10: Cultural and Religious Issues
ECoP 11: Workers' Health and Safety.

ECoP 1: Waste Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
General Waste	Soil and water pollution from the improper management of waste and excess materials from the construction site.	The Contractor will • Develop a waste management plan for various specific waste streams (e.g., reusable waste, flammable waste, construction debris, food waste etc.) prior to commencing of construction and submitting to PIMSC for approval. • Organize disposal of all waste generated during construction in an environmentally acceptable manner. This will include consideration of the nature and location of the disposal site, to cause less environmental impact. • Minimize the production of waste materials by 3R (Reduce, Recycle and Reuse) approach. • Segregate and reuse or recycle all the waste, wherever practical. • Prohibit burning of solid waste • Collect and transport non-hazardous waste to all the approved disposal sites. Vehicles transporting solid waste will be covered with tarps or nets to prevent spilling waste along the route • Train and instruct all personnel in waste management practices and procedures as a component of the environmental induction process. • Provide refuse containers at each worksite. • Request suppliers to minimize packaging where practicable.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Place a high emphasis on good housekeeping practices. • Maintain all construction sites in a cleaner, tidy and safe condition and provide and maintain appropriate facilities as temporary storage of all waste before transportation and final disposal.
Hazardous Waste	Health hazards and environmental impacts due to improper waste management practices	The Contractor will • Collect chemical waste in 200-liter drums (or similar sealed containers), appropriately labeled for safe transport to an approved chemical waste depot. • Store, transport and handle all chemicals avoiding potential environmental pollution. • Store all hazardous waste appropriately in bunded areas away from watercourses. • Make available Material Safety Data Sheets (MSDS) for hazardous materials on-site during construction. • Collect hydrocarbon wastes, including lube oils, for safe transport off-site for reuse, recycling, treatment or disposal at approved locations. • Construct concrete or other impermeable flooring to prevent seepage in case of spills

ECoP 2: Fuels and Hazardous Goods Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Fuels and hazardous goods.	Materials used in construction have the potential to be a source of contamination. Improper storage and handling of fuels, lubricants, chemicals and hazardous goods/materials on-site, and potential spills from these goods may harm the environment or health of construction workers.	The Contractor will • Prepare spill control procedures and submit the plan for PIMSC approval. • Train the relevant construction personnel in the handling of fuels and spill control procedures. • Store dangerous goods in bunded areas on a top of a sealed plastic sheet away from watercourses; and also, under rainwater shed (to prevent contact with rainwater). • Refueling will occur only within bunded areas. • Make MSDS available for chemicals and dangerous goods on-site. • Transport waste of dangerous goods, which cannot be recycled, to a designated disposal site approved by EPA or sold to EPA registered vendors. • Provide absorbent and containment material (e.g., absorbent matting) where hazardous materials are used and stored and personnel trained in the correct use. • Provide protective clothing, safety boots, helmets, masks, gloves, goggles, to the construction personnel, appropriate to materials in use.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		• Make sure all containers, drums, and tanks that are used for storage are in good condition and are labeled with expiry date. Any container, drum, or tank that is dented, cracked, or rusted might eventually leak. Check for leakage regularly to identify potential problems before they occur. • Put containers and drums in temporary storage in clearly marked areas, where they will not be run over by vehicles or heavy machinery. The area will preferably slope or drain to a safe collection area in the event of a spill. • Put containers and drums in permanent storage areas on an impermeable floor that slopes to a safe collection area in the event of a spill or leak. • Take all precautionary measures when handling and storing fuels and lubricants, avoiding environmental pollution. • Avoid the use of material with greater potential for contamination by substituting them with more environmentally friendly materials. • Return the gas cylinders to the supplier. However, if they are not empty prior to their return, they must be labeled with the name of the material they contained or contain, information on the supplier, cylinder serial number, pressure, their last hydrostatic test date, and any additional identification marking that may be considered necessary.

ECoP 3: Water Resources Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Hazardous Material and Waste	Water pollution from the storage, handling and disposal of hazardous materials and general construction waste, and accidental spillage	The Contractor will • Follow the management guidelines proposed in ECPs 1 and 2. • Minimize the generation of sediment, oil and grease, excess nutrients, organic matter, litter, debris and any form of waste (particularly petroleum and chemical waste). These substances must not enter waterways, stormwater systems or underground water tables
Discharge from construction site	Wastewater from construction sites and work camps. The construction works will modify groundcover and topography changing the surface water drainage patterns of the area	The Contractor will Minimize the amount of exposed soil at any one time (only clear vegetation immediately before construction is about to begin) Install temporary drainage works (channels and bunds) in areas required for sediment and erosion control and around storage areas for construction materials

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	including infiltration and storage of stormwater.	• Install temporary sediment basins, where appropriate, to capture sediment-laden run-off from site • Divert runoff from undisturbed areas around the construction site • Stockpile materials away from drainage lines • Prevent all solid entering waterways by collecting solid waste, oils, chemicals, bitumen spray waste and wastewater from brick, concrete and asphalt cutting and transport to an approved waste disposal site or recycling depot • Collect, transport and discharge the septic tank waste from the construction camps in the nearby municipal wastewater treatment plants • Ensure that tyres of construction vehicles are cleaned in the washing bay (constructed at the entrance of the construction site) to remove the mud from the wheels. This will be done at every exit of each construction vehicle to ensure the local roads are kept clean.
Soil Erosion and Siltation	Soil erosion and dust from the material stockpiles will increase the sediment and contaminant loading of surface water bodies.	The Contractor will Ensure that sealed roads used by construction vehicles are swept regularly to remove sediment. Water the material stockpiles, access roads and bare soils on as required basis to minimize dust. Increase the watering frequency during periods of high risk (e.g. high winds)

ECoP 4: Soil Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Storage of hazardous and toxic chemicals	Spillage of hazardous and toxic chemicals will contaminate the soils	The Contractor will Strictly manage the waste management plans proposed in ECP1 and the storage of materials in ECP2 Construct appropriate spill contaminant facilities for all fuel storage areas Establish and maintain a hazardous materials register detailing the location and quantities of hazardous substances, including the storage, use of disposals Train personnel and implement safe work practices to minimize the risk of spillage Identify the cause of contamination, if it is reported, and contain the area of contamination. The impact may be contained by isolating the source or implementing controls around the affected site Remediate the contaminated land using the most appropriate available method to achieve the required commercial/industrial guideline validation results
Construction material	Erosion from construction material	The Contractor will Protect the toe of all stockpiles, where erosion is likely

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
stockpiles	stockpiles may contaminate the soil	to occur, with silt fences, straw bales or bunds

ECoP 5: Erosion and Sediment Control

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities and material stockpiles	The impact of soil erosion is (i) Increased runoff and sedimentation causing a greater flood hazard to the downstream, (ii) destruction of aquatic environment in nearby lakes, streams, and reservoirs caused by erosion and/or deposition of sediment, damaging the spawning grounds of fish, and (iii) destruction of vegetation by burying or gullying.	The Contractor will Locate stockpiles away from drainage lines Protect the toe of all stockpiles, where erosion is likely to occur, with silt fences, straw bales or bunds Remove debris from drainage paths and sediment control structures Cover the loose sediments and water them if required Divert natural runoff around construction areas prior to any site disturbance Install protective measures on-site prior to construction, for example, sediment traps Observe the performance of drainage structures and erosion controls during rain and modify as required.

ECoP 6: Air Quality Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Air quality can be adversely affected by vehicle exhaust emissions and the combustion of fuels.	The Contractor will Fit vehicles with appropriate exhaust systems and emission control devices. Maintain these devices in good working condition. Operate the vehicles in a fuel-efficient manner Cover haul vehicles carrying dusty materials moving outside the construction site Impose speed limits on all vehicle movements at the worksite to reduce dust emissions Control the movement of construction traffic Water construction materials prior to loading and transport Service all vehicles regularly to minimize emissions Limit the idling time of vehicles to not more than 2 minutes
Construction machinery	Air quality can be adversely affected by emissions from machinery and the combustion of fuels.	The Contractor will Fit machinery with appropriate exhaust systems and emission control devices. Maintain these devices in good working conditions in accordance with the specifications defined by their manufacturers to maximize combustion efficiency and minimize the contaminant emissions. Proof of maintenance register will be required by the equipment suppliers and contractors/subcontractors Focus special attention on the emissions from generators

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Machinery causing excess pollution (e.g. visible smoke) will be banned from the construction site Service all equipment regularly to minimize emissions Provide filtering systems, duct collectors or humidification or other techniques (as applicable) to the concrete batching and mixing plant to control the particle emissions in all its stages, including unloading, collection, aggregate handling, cement dumping, circulation of trucks and machinery inside the installations
Construction activities	Dust generation from construction sites, material stockpiles and access roads is a nuisance in the environment and can be a health hazard.	Water the material stockpiles, access roads and bare soils on an as-required basis to minimize the potential for environmental nuisance due to dust. Increase watering frequency during periods of high risk (e.g. high winds). Store materials such as gravel and sand will be covered and confined to avoid being wind-drifted Minimize the extent and period of exposure of the bare surfaces Reschedule earthwork activities or vegetation clearing activities, where practical, if necessary, to avoid during periods of high wind and if visible dust is blowing off-site Store the cement in silos and minimize the emissions from silos by equipping them with filters. Establish adequate locations for storage, mixing and loading of construction materials, in a way that dust dispersion is prevented because of such operations Crushing of rocky and aggregate materials will be wet-crushed or performed with particle emission control systems

ECoP 7: Noise and Vibration Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Noise quality will deteriorate due to vehicular traffic	The Contractor will Maintain all vehicles to keep them in good working order in accordance with manufactures maintenance procedures Make sure all drivers comply with the traffic codes concerning maximum speed limit, driving hours, etc. Organize the loading and unloading of trucks and handling operations for the purpose of minimizing construction noise on the work site
Construction machinery	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor will Appropriately site all noise-generating activities to avoid noise pollution to local residents Use the quietest available plant and equipment Modify equipment to reduce noise (for example, noise control kits, lining of truck trays or pipelines) Maintain all equipment to keep it in good working order in accordance with the manufacturer's maintenance procedures. Equipment suppliers and contractors will present proof of the maintenance register of their equipment. Install acoustic enclosures around generators to reduce noise levels. Fit high-efficiency mufflers to appropriate construction equipment Avoid the unnecessary use of alarms, horns and

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		sirens
Construction activity	Noise and vibration may have an impact on people, property, fauna, livestock and the natural environment.	The Contractor will Notify adjacent landholders prior to any typical noise events outside of daylight hours (6 pm to 7 am) if the construction works are carried out near residential areas Educate the operators of construction equipment on potential noise problems and techniques to minimize noise emissions Employ best available work practices on-site to minimize occupational noise levels Install temporary noise control barriers where appropriate Notify affected people if major noisy activities are undertaken, e.g. pile driving Plan activities on site and deliveries to and from the site to minimize impact Monitor and analyze noise and vibration results and adjust construction practices as required. Avoid undertaking the noisiest activities, where possible, when working at night (at 6pm to 7 am) near residential areas

ECoP 8: Road Transport and Road Traffic Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction vehicular traffic	Increased traffic use of roads by construction vehicles will affect the movement of normal road traffic and the safety of the road-users.	The Contractor will Prepare and submit a traffic management plan to the PIMSC for their approval before commencement of construction. Include in the traffic management plan to ensure uninterrupted traffic movement during construction: detailed drawings of traffic arrangements showing all detours, temporary road, temporary bridges, temporary diversions, necessary barricades, warning signs / lights, and road signs. Obtain necessary NOC from NHA (if required) Provide signs at strategic locations onthe roads complying with the schedules of signs contained in the Pakistan Traffic Regulations. Install and maintain a display board at each important road intersection on the roads to be used during construction, which will clearly show the following information in local language: o Location: chainage and village name o Duration of construction period o Period of proposed detour / alternative route o Suggested detour route map o Name and contact address/telephone number of the personnel concerned o Name and contact address/telephone number of the Contractor o Inconvenience is sincerely regretted.
uq	Accidents and spillage of fuels and chemicals	Restrict truck deliveries, where practicable, to daytime working hours (7 am to 6 pm). Restrict the transport of oversize loads. Operate road traffic/transport vehicles, if possible, to non-peak periods to minimize traffic disruptions.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Enforce on-site speed limit

ECoP 9: Labor Influx Management and Construction Camp Management

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Siting and Location of Construction Camps	Campsite for construction workers are important locations that have significant impacts suc,h as health and safety hazards, on local resources and infrastructure of nearby communities.	The Contractor will Prepare a management plan for the construction of a workers camp in accordance with IFC Guidance on Workers Accommodation and submit the plan for the supervision consultant's approval. Locate the construction camps within the designed site or at areas which are acceptable from environmental, cultural or social point of view, and approved by the supervision consultant. Consider the location of construction camps away from communities to avoid social conflict in using natural resources, such as water, or to avoid the possible adverse impacts of the construction camps on the surrounding communities. Submit to the supervision consultant for approval a detailed layout plan for the development of the construction camp showing the relative locations of all temporary buildings and facilities that are to be constructed together with the location of site roads, fuel storage areas (for use in power supply generators), solid waste management and dumping locations, and drainage facilities, before the development of the construction camps. Local authorities responsible for health, religion and security will be duly informed on the setting up of camp facilities to maintain effective surveillance over public health, social and security matters.
Construction Camp Facilities	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities, will increase pressure on the local services and generate substandard living standards and health hazards.	The contractor will provide the following facilities in the campsite Adequate accommodation, transportation, and basic services, including water, sanitation, and medical care, for the workers working on that project. Safe and reliable water supply, which will meet NEQS. Drinking water to be chlorinated at source and ensure the presence of residual chlorine 0.1 ~ 0.25 ppm as a minimum after 30 minutes of chlorine contact time (WHO guideline). Hygienic sanitary facilities and sewerage system. The toilets and domestic wastewater will be collected through a common sewerage. Provide separate latrines and bathing places for males and females with total isolation by location. The minimum number of toilet facilities required is one toilet for every ten persons. Treatment facilities for the sewerage of toilets and domestic wastes. Stormwater drainage facilities. Paved internal roads. Provide child crèches for women working construction site. The crèche will have facilities for dormitory, a kitchen, indoor and outdoor play area. Schools will be attached to these crèches so that children are not deprived of education whose mothers are construction workers.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Provide in-house community/common entertainment facilities. Dependence of local entertainment outlets by the construction camps to be discouraged/prohibited to the extent possible.
Workers Accommodation	All workers in the camp will have adequate accommodation facilities	The Contractor will provide the following: The labors will be provided with accommodation on twin sharing basis made of insulated material and locally available building material, etc. The migrant workers with families will be provided with individual accommodation comprising bedroom, sanitary and cooking facilities. The units will be supported by common latrines and bathing facilities duly segregated for male and female labor. Adequate number of toilets will be provided in the accommodation facilities. A minimum of 1 unit to 15 males and 1 unit for 10 females will be provided. The contractor will provide a kitchen facility for the construction workers, and the food will be of appropriate nutritional value and will consider religious/cultural backgrounds. All doors and windows will be lockable and mobile partitions/curtains will be provided for privacy. Facilities for the storage of personal belongings for workers will be provided within the campsite only. Dustbins will be provided for collection of garbage and will be removed on a daily basis. It is also required to provide first aid boxes in adequate numbers; and Ventilation will be appropriate for the climatic conditions and provide workers with a comfortable and healthy environment to rest and spend their spare time.
Disposal of waste	Management of waste is crucial to minimize impacts on the environment	The Contractor will Ensure proper collection and disposal of solid waste within the construction camps Insist on waste separation by source; organic waste in one pot and inorganic waste in another pot at the household level. Store inorganic waste in a safe place within the household and clear organic waste on daily basis to waste collectors. Establish waste collection, transportation and disposal systems with the manpower and equipment/vehicles needed. Dispose of organic waste in a designated safe place on a daily basis. At the end of the day, cover the organic waste with a thin layer of sand so that flies, mosquitoes, dogs, cats, rats,, are not attracted. One may dig a large hole to put organic waste in it; take care to protect groundwater from contamination by leachate formed due to decomposition of wastes. Cover the bed of the pit with an impervious layer of materials (clayey or thin concrete) to protect groundwater from contamination. Locate the garbage pit/waste disposal site min 500 m away from the residence so that people are not disturbed by the odor likely to be produced from

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		anaerobic decomposition of wastes at the waste dumping places. Encompass the waste dumping place by fencing and tree plantation to prevent children from entering and playing withit. Do not establish site specific landfill sites. All solid waste will be collected and removed from work camps and disposed of in approved waste disposal sites.
Fuel supplies for cooking purposes	The Illegal sourcing of fuel wood by construction workers will impact the natural flora and fauna	The Contractor will Provide fuel to the construction camps for their domestic purposes, in order to discourage them from using fuel wood or other biomass. Made available alternative fuels like natural gas or kerosene on a ration to the workforce to prevent them from using biomass for cooking. Conduct awareness campaigns to educate workers on preserving and protecting the biodiversity and wildlife of the project area, and relevant government regulations and punishments on wildlife protection.
Health and Hygiene	There will be potential for diseases to be transmitted, Including malaria, exacerbated by inadequate health and safety practices. There will be an increased risk of work crews spreading sexually transmitted infections and HIV/AIDS.	The Contractor will Provide adequate health care facilities within the construction site. Provide first aid facilities round the clock. Maintain stock of medicines in the facility and appoint full-time designated first aider or nurse. Provide ambulance facility for the laborers during emergencies to be transported to nearest hospitals. Initial health screening of the laborers coming from outside areas Inspect all camp facilities regularly to ensure o Daily sweeping of rooms and houses will be undertaken. o Regular cleaning of sanitary facilities will be undertaken. o The kitchen and canteen premises will be established under good hygiene conditions. o Daily mealtimes will be fixed for the labor. o Smoking and alcohol consumption will be prohibited in the workplace. o Water logging will be prevented at areas near the accommodation facilities and adequate drainage is to be provided; and o Checklists pertaining to the daily housekeeping schedule will be maintained and displayed at houses, toilets and kitchen. o Train all construction workers in basic sanitation and health care issues and safety matters, and on the specific hazards of their work o Provide HIV awareness programming, including STI (sexually transmitted infections) and HIV information, education and communication for all workers on regular basis o Complement educational interventions with easy access to condoms at campsite as well as voluntary counseling and testing o Provide adequate drainage facilities throughout the camps to ensure that disease vectors such as stagnant water bodies and puddles do not form. Regular mosquito repellant sprays during monsoon. o Carry out short training sessions on best hygiene

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		practices to be mandatorily participated by all workers. Place display boards at strategic locations within the camps containing messages on best hygienic practices
Safety	Inadequate safety facilities to the construction camps may create security problems and fire hazards	The Contractor will Provide appropriate security personnel (police/ home guard or private security guards) and enclosures to prevent unauthorized entry into the camp area. Maintain a register to keep track of the headcount of persons present in the camp at any given time. Encourage the use of flameproof material for the construction of labor housing /site office. Also, ensure that these houses/rooms are of sound construction and capable of withstanding windstorms/cyclones. Provide appropriate types of firefighting equipment suitable for the construction camps Display emergency contact numbers clearly and prominently at strategic places in camps. Communicate the roles and responsibilities of laborers in case of emergency in the monthly meetings with contractors.
Site Restoration	Restoration of the construction camps to their original condition requires demolition of the construction camps.	The Contractor will Dismantle and remove from the site all facilities established within the construction camp, including the perimeter fence and lockable gates at the completion of the construction work. Dismantle camps in phases, and as the work gets decreased, and do not wait for the entire work to be completed Give prior notice to the laborers before demolishing their camps/units Reuse the demolition debris to the maximum extent. Dispose of remaining debris at the designated waste disposal site. Handover the construction camps with all built facilities as if an agreement between both parties (contractor and landowner) has been made so. Restore the site to its condition prior to commencement of the works or to an agreed condition with the landowner. Not making false promises to the laborers for future employment in O&M of the project.

ECoP 10: Socio-cultural and Religious Issues

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Construction activities near residential areas	Disturbance from construction activities (dust, noise, traffic, conflicts with the contractor's workforce etc.)	The Contractor will Establish a system for receiving complaints from the community and address them (the community can also make complaints to the GRM established under the project) Will ensure all the construction workers follow the following code of conduct: All workers are strictly forbidden to establish any kind of relationship with local women or bring any unrelated women to the project site. All workers will avoid sexual harassment and child abuse.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		All workers must not leave the camps or work sites unless a written authorization is issued by the respective supervisor The contractors will advise and prohibit the local population and its authorities or representatives from entering the project operation areas (campsite, colonies, etc.) in order to minimize the potential risk of incidents related to the operations.
Construction activities near religious and cultural sites	Disturbance from construction works to the cultural and religious sites, and contractors' lack of knowledge on cultural issues cause social disturbances.	The Contractor will Communicate to the public through community consultation and newspaper announcements regarding the scope and schedule of construction, as well as certain construction activities causing disruptions or access restrictions. Do not block access to cultural and religious sites, wherever possible Restrict all construction activities within the footprint of the construction site. Stop construction works that produce noise (particularly during prayer time) Will there be any mosque/religious/educational institutions close to the construction site, and will users make objections. Take special care and use appropriate equipment when working next to a cultural/religious institution. Stop work immediately and notify the site manager if, during construction, an archaeological or burial site is discovered. It is an offence to recommence work in the vicinity of the site until approval to continue is given by the PIMSC/PMU. Provide separate prayer facilities for the construction workers. Show appropriate behavior with all construction workers, especially women and elderly people Allow the workers to participate in prayer during construction time Resolve cultural issues in consultation with local leaders and supervision consultants Establish a mechanism that allows local people to raise grievances arising from the construction process. Inform the local authorities responsible for health, religious and security, duly informed before commencement of civil works to maintain effective surveillance over public health, social and security matters

ECoP 11: Worker Health and Safety

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
Best practices	Construction works may pose health and safety risks to the construction workers and site visitors, leading to severe injuries and deaths. The	The Contractor will Implement suitable safety standards for all workers and site visitors which will not be less than those laid down on the international standards (e.g. International Labor Office guideline on 'Safety and Health in Construction; World Bank Group's 'Environmental

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
	population in the proximity of the construction site and the construction workers will be exposed to several (i) biophysical health risk factors, (e.g. noise, dust, chemicals, construction material, solid waste, waste water, vector transmitted diseases etc.), (ii) risk factors resulting from human behavior (e.g. STD, HIV etc.) and (iii) road accidents from construction traffic.	Health and Safety Guidelines') and contractor's own national standards or statutory regulations, in addition to complying with the national standards of the Government of Pakistan (Provide the workers with a safe and healthy work environment, taking into account inherent risks in its particular construction activity and specific classes of hazards in the work areas, Provide personal protection equipment (PPE) for workers, such as safety boots, helmets, masks, gloves, protective clothing, goggles, full-face eye shields, and ear protection. Maintain the PPE properly by cleaning dirty ones and replacing them with damaged ones. Safety procedures include provision of information, training and protective clothing to workers involved in hazardous operations and proper performance of their job Appoint an environment, health and safety manager to look after the health and safety of the workers Inform the local authorities responsible for health, religious and security, duly informed before commencement of civil works and establishment of construction camps so as to maintain effective surveillance over public health, social and security matters
	Child and pregnant labor	The Contractor will not hire children of less than 16 years of age and pregnant women, or women who delivered a child within 8 preceding weeks, in accordance with the national Labor Laws
Accidents	Lack of first aid facilities and health care facilities in the immediate vicinity will aggravate the health conditions of the victims	Provide that health care facilities and first aid facilities are readily available. Appropriately equipped first-aid stations will be easily accessible throughout the place of work Document and report occupational accidents, diseases, and incidents. Prevent accidents, injury, and disease arising from, associated with, or occurring in the course of work by minimizing, so far as reasonably practicable, the causes of hazards. In a manner consistent with good international industry practice. Identify potential hazards to workers, particularly those that may be life-threatening and provide necessary preventive and protective measures. Provide awareness to the construction drivers to strictly follow the driving rules Provide adequate lighting in the construction area and along the roads
Construction Camps	Lack of proper infrastructure facilities, such as housing, water supply and sanitation facilities, will increase pressure on the local services and generate substandard living standards and health hazards.	The Contractor will provide the following facilities in the campsite to improve health and hygienic conditions as mentioned in ECP 15 Adequate ventilation facilities Safe and reliable water supply. Hygienic sanitary facilities and sewerage system. The toilets and domestic wastewater will be collected through a common sewerage. Treatment facilities for the sewage of toilets and domestic wastes Stormwater drainage facilities.

Project Activity/ Impact Source	Environmental Impacts	Mitigation Measures/ Management Guidelines
		Recreational and social facilities Safe storage facilities for petroleum and other chemicals in accordance with ECP 2 Solid waste collection and disposal system in accordance with ECP1. Arrangement for trainings Paved internal roads. Security fence at least 2 m high. Sickbay and first aid facilities
Water and sanitation facilities at the construction sites	Lack of water and sanitation facilities at construction sites causes inconvenience to the construction workers and affects their personal hygiene.	The contractor will provide portable toilets at the construction site if about 25 people are working the whole day for a month. Location of portable facilities will be at least 6 m away from the storm drain system and surface waters. These portable toilets will be cleaned once a day, and all the sewerage will be pumped from the collection tank once a day and will be brought to the common septic tank for further treatment. The contractor will provide bottled drinking water facilities to the construction workers at all the construction site.
Other ECPs	Potential risks on health and hygiene of construction workers and the general public	The Contractor will follow the following ECPs to reduce health risks to the construction workers and the nearby community ECP 2: Fuels and Hazardous Goods Management ECP 4: Drainage Management ECP 10: Air Quality Management ECP 11: Noise and Vibration Management ECP 14: Road Transport and Road Traffic Management
Trainings	Lack of awareness and basic knowledge in health care among the construction workforce makes them susceptible to potential diseases.	The Contractor will Train all construction workers in basic sanitation and health care issues (e.g., how to avoid malaria and transmission of sexually transmitted infections (STIs), HIV/AIDS. Train all construction workers in general health and safety matters, and on the specific hazards of their work. Training will consist of basic hazard awareness, site-specific hazards, safe work practices, and emergency procedures for fire, evacuation, and natural disasters, as appropriate. Commence the malaria, HIV/AIDS and STI education campaign before the start of the construction phase and complement it with a strong condom marketing, increased access to condoms in the area as well as to voluntary counselling and testing. Implement malaria, HIV/AIDS and STI education campaign targeting all workers hired, international and national, female and male, skilled, semi- and unskilled occupations, at the time of recruitment and thereafter pursued throughout the construction phase on ongoing and regular basis. This will be complemented by easy access to condoms at the workplace as well as to voluntary counselling and testing.

Annexure – 4 Attendance Sheet of Male & Female-Consultation

Data in Annexure- 4 can not be disclosed due to confidentiality.

Annexure –5 Photo Gallery of River Bund

Data in Annexure-5 can not be disclosed due to confidentiality