

Uttarakhand Metro Rail, Urban Infrastructure &  
Building Construction Corporation Limited

## **Annexures to the Report**

**JULY 2020**

## ANNEXURES TO THE REPORT

Annexures	Topic	Reference to the page No. in Report	Page No.
Annexure 1	Survey form	Page 09	216
Annexure 2	Topographical & Contour Survey details	Page 28	221
Annexure 3	Ropeway Longitudinal Profile Haridwar - Alignment 1 (Final)		224
Annexure 4	Land Longitudinal Profile - Alignment -1		225
Annexure 5	Land Longitudinal Profile - Alignment- 6		226
Annexure 6	Typical Ropeway Lower Terminal Layout		227
Annexure 7	Typical Ropeway Upper Terminal Layout		228
Annexure 8	Uttarakhand Ropeway Act, 2014		229
Annexure 9	EIA Notification 2006	Page 170	252
Annexure 10	EIA Notification 2009		295
Annexure 11	EIA Ropeway Manual		309
Annexure 12	Tower Location Co-ordinate		415

ANNEXURE-1

(5) ✓

**Survey for Preferred Alignment for Haridwar (Har Ki Pauri to Chandi Devi Temple)  
and Willingness to Pay**

Date: 25.01.2020		Location: Har Ki Pauri		Surveyor: Uttam Nath				
SN	Tourist (T) or Local Resi. (L)	Choice of Alignment out of 1 to 6 or any other(PI specify)	Willingness to Pay (INR)					Remarks
			< 50	50 - 100	100 - 200	200 - 300	300 - 500	
1	T	CCR					✓	
2	T	CCR					✓	
3	T	CCR					✓	
4	T	CCR					✓	
5	T	CCR					✓	
6	T	CCR					✓	
7	T	CCR	✓					
8	T	CCR	✓					
9	T	CCR	✓					
10	T	Railway Station	✓					
11	T	Busstand			✓			
12	T	Busstand			✓			
13	T	Railway Station			✓			
14	T	Railway Station			✓			
15	T	CCR			✓			
16	T	CCR			✓			
17	T	CCR			✓			
18	T	CCR			✓			
19	L	CCR			✓			
20	L	CCR			✓			
21	L	CCR			✓			
22	L	RB			✓			
23	L	RB			✓			
24	L	RB			✓			
25	L	RB			✓			
26	L	RB				✓		
27	L	RB				✓		
28	L	RB				✓		
29	L	RB				✓		
30	L	RB				✓		



60

## Survey For Har Ki Pauri to Chandi Devi Ropeway Ridership

Survey Conducted By Usha Breco Ltd For UKMRC, Dehradun

Date: 30/01/2020		Day: Thursday					
Surveyor: Shubham Jindal		Place: Har Ki Pauri					
SN	How Many Peoples are with you (Group Size)	Have You Visited Chandi Devi?		If Yes, How you Visited?		IF No Would you Visit If Ropeway is Constructed from Har Ki Pauri	
		Yes	No	Ropeway	By Foot	Yes	No
1	2	✓		✓		✓	
2	4	✓		✓		✓	
3	6	✓		✓		✓	
4	5	✓		✓		✓	
5	4	✓		✓		✓	
6	3	✓			✓	✓	
7	2		x	-	-		
8	6		x	-	-		✓
9	5	✓		✓		✓	
10	4	✓		✓		✓	
11	3	✓		✓		✓	
12	7		x	-	-		✓
13	6	✓			✓	✓	
14	5	✓			✓	✓	
15	8		x	-	-	✓	✓
16	3	✓		✓		✓	
17	2	✓		✓		✓	
18	4	✓		✓		✓	
19	5	✓		✓		✓	
20	6	✓		✓		✓	
21	7	✓		✓		✓	
22	4	✓		✓		✓	
23	10	✓		✓		✓	
24	9	✓			✓	✓	
25	15		x	-	-	✓	✓
26	6		x	-	-	✓	
27	5	✓			✓	✓	
28	4	✓		✓		✓	✓
29	2	✓		✓		✓	
30	12	✓		✓		✓	



3 ✓

**Survey for Preferred Alignment for Haridwar (Har Ki Pauri to Chandni Devi Temple)  
and Willingness to Pay**

Date: 26.09.2020		Location: Har ki Pauri		Surveyor: D. S. Pandey					
SN	Tourist (T) or Local Resi. (L)	Choice of Alignment out of 1 to 6 or any other (PI specify)	Willingness to Pay (INR)						Remarks
			< 50	50 - 100	100 - 200	200 - 300	300 - 500	> 500	
1	T	CCR	✓						
2	T	CCR	✓						
3	T	CCR	✓						
4	L	CCR	✓						
5	L	RB	✓						
6	T	RB	✓						
7	T	DDU(NE)		✓					
8	T	DDU(NE)		✓					
9	L	DDU(NE)		✓					
10	T	DDU(NE)		✓					
11	T	DDU(NE)		✓					
12	T	CCR		✓					
13	T	CCR		✓					
14	T	CCR		✓					
15	T	CCR		✓					
16	T	CCR		✓					
17	T	CCR		✓					
18	T	Har ki Pauri		✓					
19	T	Har ki Pauri		✓					
20	T	Har ki Pauri		✓					
21	T	CCR		✓					
22	T	CCR			✓				
23	T	CCR			✓				
24	T	CCR			✓				
25	T	CCR			✓				
26	T	CCR			✓				
27	L	CCR			✓				
28	T	CCR			✓				
29	T	CCR			✓				
30	T	CCR			✓				

(1) ✓

**Survey for Preferred Alignment for Haridwar (Har Ki Pauri to Chandi Devi Temple)  
and Willingness to Pay**

Date: 26.01.2020		Location: Har Ki Pauri		Surveyor: Uttam Nath				
SN	Tourist (T) or Local Resi. (L)	Choice of Alignment out of 1 to 6 or any other(Pl specify)	Willingness to Pay (INR)					Remarks
			< 50	50 - 100	100 - 200	200 - 300	300 - 500	
1	T	DDU-N-E	✓					
2	T	DDU-N-E	✓					
3	T	DDU-N-E			✓			
4	T	Shamu V.N.			✓			
5	T	CCR			✓			
6	T	CCR		✓				
7	T	CCR		✓				
8	T	CCR	✓					
9	T	CCR	✓					
10	T	Rodi Bahwali	✓					
11	T	CCR	✓					
12	T	CCR	✓					
13	T	CCR	✓					
14	T	CCR	✓					
15	T	DDU-N-E	✓					
16	T	DDU-NE	✓					
17	T	CCR	✓					
18	T	CCR	✓					
19	T	CCR	✓					
20	T	CCR	✓					
21	T	CCR		✓				
22	T	CCR		✓				
23	T	DDU-S-E		✓				
24	T	DDU-S-E		✓				
25	T	CCR		✓				
26	T	CCR		✓				
27	T	CCR		✓				
28	T	CCR		✓				
29	T	CCR			✓	X		
30	T	CCR			✓	X		



(1) ✓

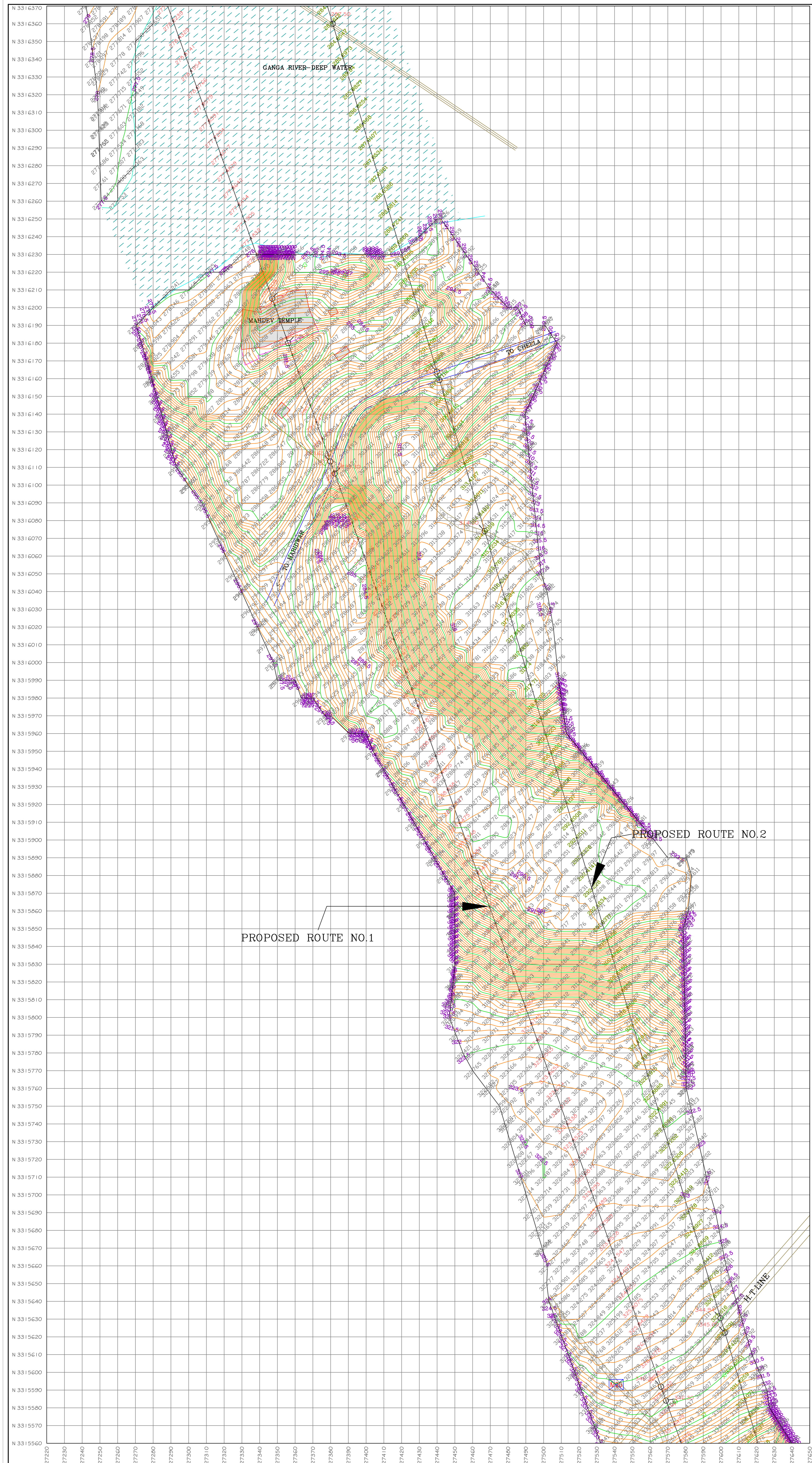
**Survey for Preferred Alignment for Haridwar (Har Ki Pauri to Chandi Devi Temple)  
and Willingness to Pay**

Date: 26.01.2020		Location: Har Ki Pauri		Surveyor: Uttam Nath					
SN	Tourist (T) or Local Resi. (L)	Choice of Alignment out of 1 to 6 or any other (PI specify)	Willingness to Pay (INR)						Remarks
			< 50	50 - 100	100 - 200	200 - 300	300 - 500	> 500	
1	T	DDU-N-E	✓						
2	T	DDU-N-E	✓						
3	T	DDU-N-E			✓				
4	T	Shwami V.N.			✓				
5	T	CCR			✓				
6	T	CCR		✓					
7	T	CCR		✓					
8	T	CCR	✓						
9	T	CCR	✓						
10	T	Rodi Bahwal	✓						
11	T	CCR	✓						
12	T	CCR	✓						
13	T	CCR	✓						
14	T	CCR	✓						
15	T	DDU-N-E	✓						
16	T	DDU-NE	✓						
17	T	CCR	✓						
18	T	CCR	✓						
19	T	CCR	✓						
20	T	CCR	✓						
21	T	CCR		✓					
22	T	CCR		✓					
23	T	DDU-S-E		✓					
24	T	DDU-S-E		✓					
25	T	CCR		✓					
26	T	CCR		✓					
27	T	CCR		✓					
28	T	CCR		✓					
29	T	CCR			✓	X			
30	T	CCR			✓	X			

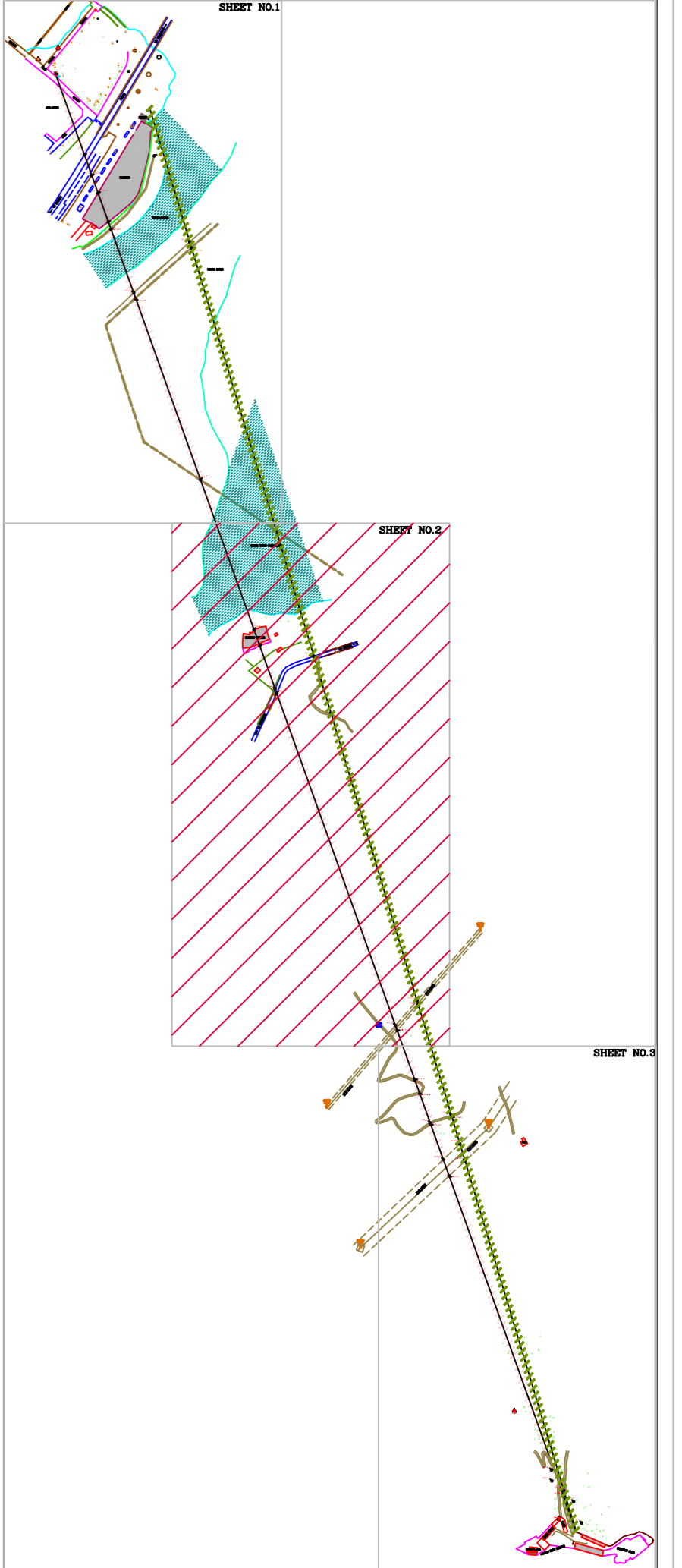








KEY PLAN



LEGEND

1.	PROPOSED ROUTE	
2.	ROAD	
3.	BUILDING	
4.	PLINTH/OTTA	
5.	WATER TANK (WT)	
6.	TREE	
7.	ELECTRIC POLE	
8.	COMPOUND WALL	
9.	PERMANENT BENCHMARK	
10.	BRIDGE	
11.	PARKING	
12.	STEP	
13.	HT-LINE	
14.	FENCING	
15.	RIVER	

PBM LIST

PBM NO.	EASTING	NORTHING	ELEVATION
1.	227819.673	3314827.911	504.285
4.	227706.668	3315033.462	489.140
6.	227043.546	3317106.332	287.199
7.	227012.920	3317088.814	287.051

PROPOSED ROUTE NO.1—LENGHT:—2397.83MTR  
 PROPOSED ROUTE NO.2—LENGHT:—2299.42MTR

CLIENT:— **USHA BRECO LIMITED**  
**HARIDWAR—UTTARAKHAND**  
**TOPOGRAPHICAL & CONTOUR SURVEY PLAN**

SURVEY BY:— **MAHESH** MONTH:— **DECE—2019**  
 DRAWN BY:— **HITESH** SCALE:— **1CM = 30MTR.**

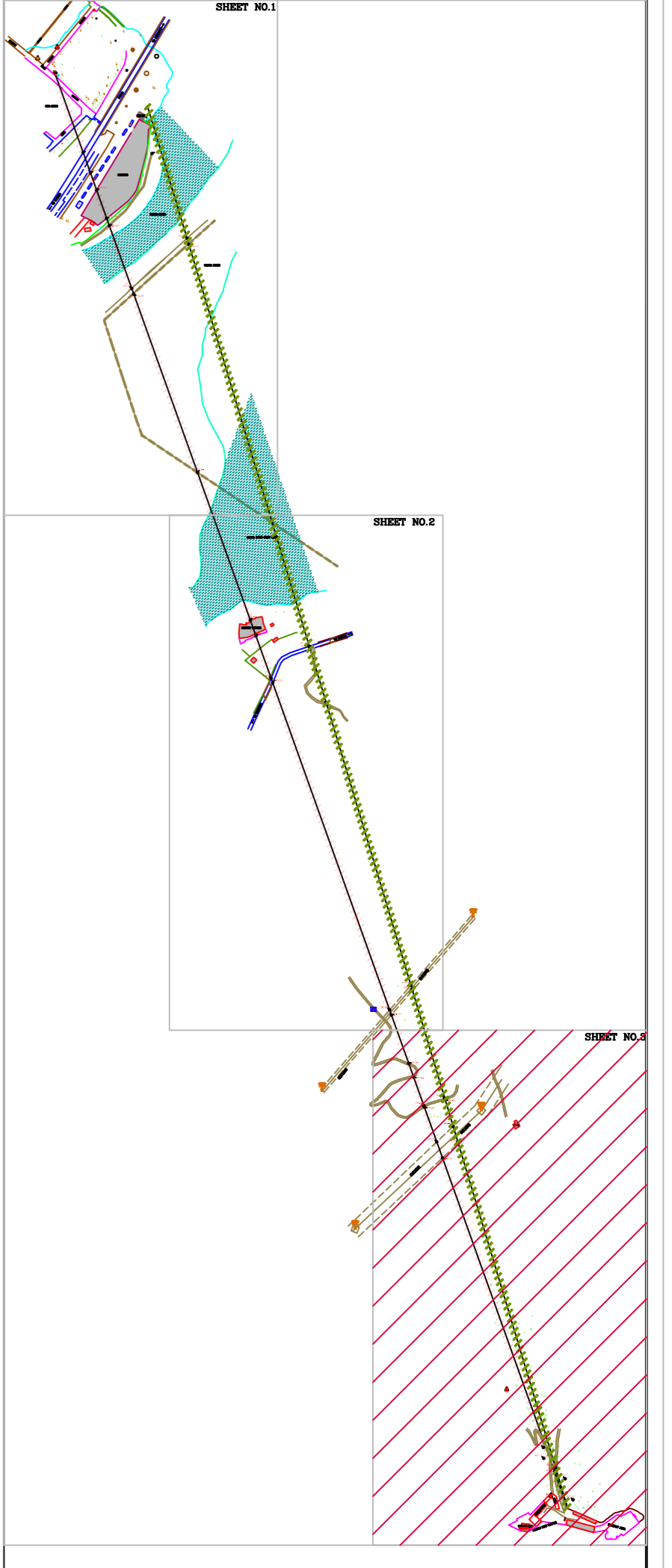
BY:— **MARVEL SURVEYORS**  
 BLOCK NO.111, VRUNDAVAN PARK-1  
 OPP. S.T. DIVISION, LATHI ROAD,  
 AMRELI - 365601.  
 Contact No: 9925005155  
 Email: marvelsurveyors@gmail.com.

REV. NO. :—00 JOB. NO. :—00





**KEY PLAN**



**LEGEND**

1.	PROPOSED ROUTE	
2.	ROAD	
3.	BUILDING	
4.	PLINTH/OTTA	
5.	WATER TANK (WT)	
6.	TREE	
7.	ELECTRIC POLE	
8.	COMPOUND WALL	
9.	PERMANENT BENCHMARK	
10.	BRIDGE	
11.	PARKING	
12.	STEP	
13.	HT-LINE	
14.	FENCING	
15.	RIVER	

**PBM LIST**

PBM NO.	EASTING	NORTHING	ELEVATION
1.	227819.673	3314827.911	504.285
4.	227706.668	3315033.462	489.140
6.	227043.546	3317106.332	287.199
7.	227012.920	3317088.814	287.051

PROPOSED ROUTE NO.1—LENGHT:—2397.83MTR  
 PROPOSED ROUTE NO.2—LENGHT:—2299.42MTR

CLIENT:— **USHA BRECO LIMITED**  
**HARIDWAR—UTTARAKHAND**  
**TOPOGRAPHICAL & CONTOUR SURVEY PLAN**

SURVEY BY:— **MAHESH**      MONTH:— **DECE—2019**  
 DRAWN BY:— **HITESH**      SCALE:— **1CM = 30MTR.**

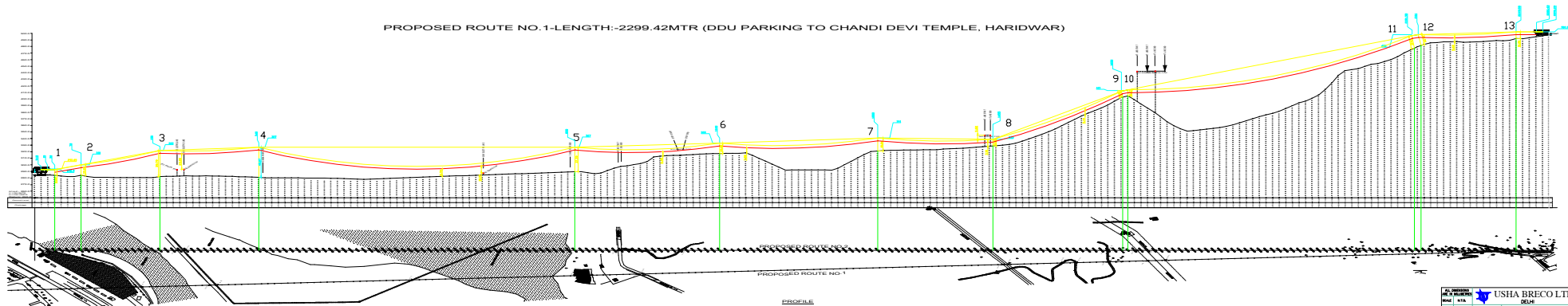
BY:—

**MARVEL SURVEYORS**  
 BLOCK NO.111, VRUNDAVAN PARK-1  
 OPP. S.T. DIVISION, LATHI ROAD,  
 AMRELI - 365601.  
 Contact No: 9925005155  
 Email: marvelsurveyors@gmail.com.

REV. NO. :—00      JOB. NO. :—00

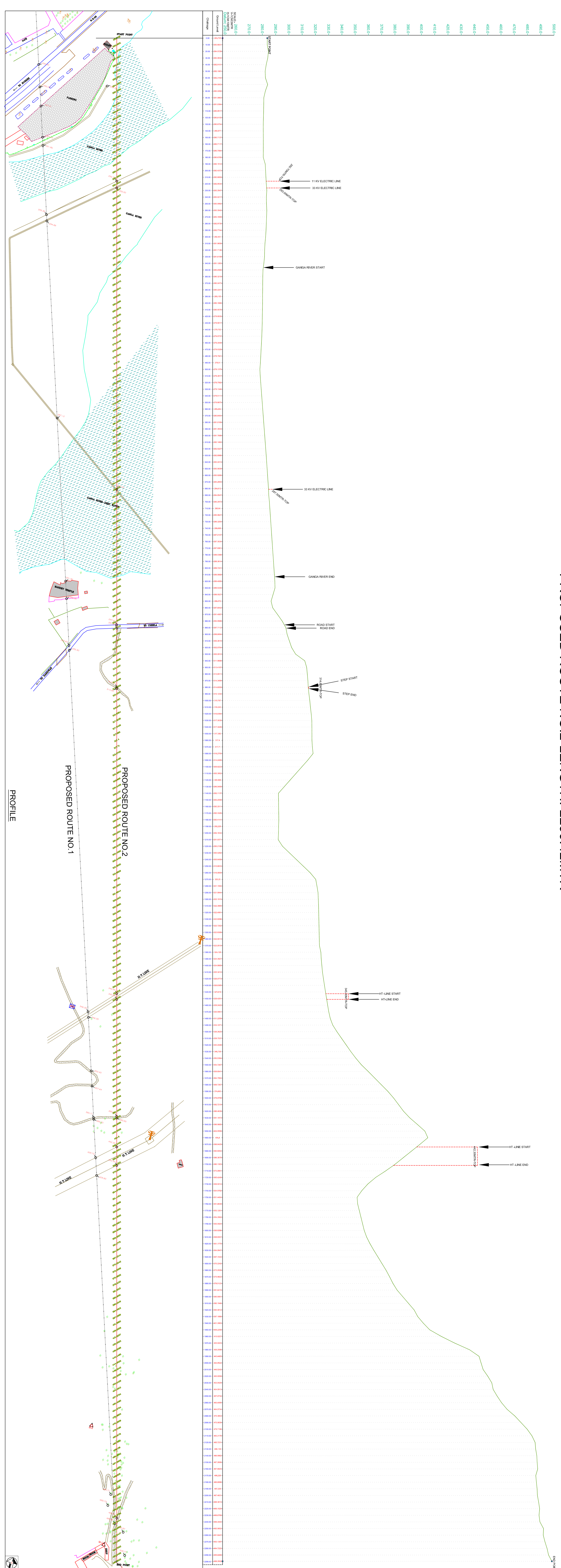


PROPOSED ROUTE NO.1-LENGTH:-2299.42MTR (DDU PARKING TO CHANDI DEVI TEMPLE, HARIDWAR)

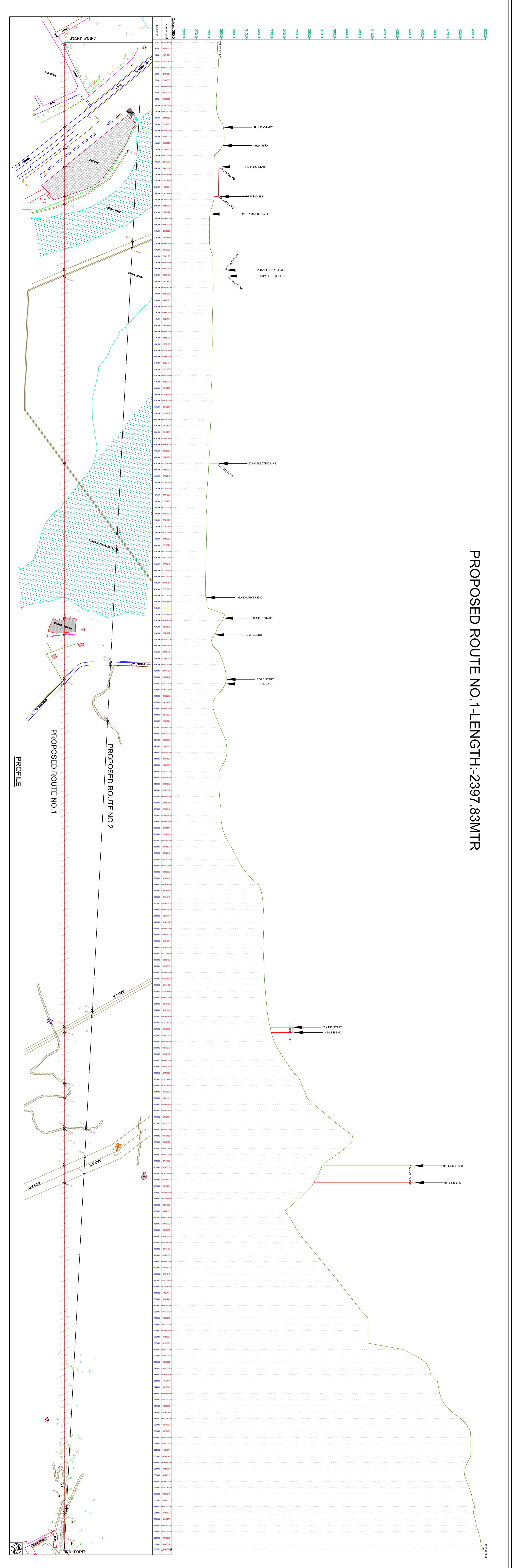


PREPARED BY	USHA BRECO LTD.
CHECKED BY	DELHI
DATE	20-02-2024
SCALE	1:1
PROJECT	TENTATIVE PROFILE HARIDWAR
DATE	20-02-2024
SCALE	1:1
PROJECT	UPL - UKMBC - 001

PROPOSED ROUTE NO.2-LENGTH:-2299.42MTR



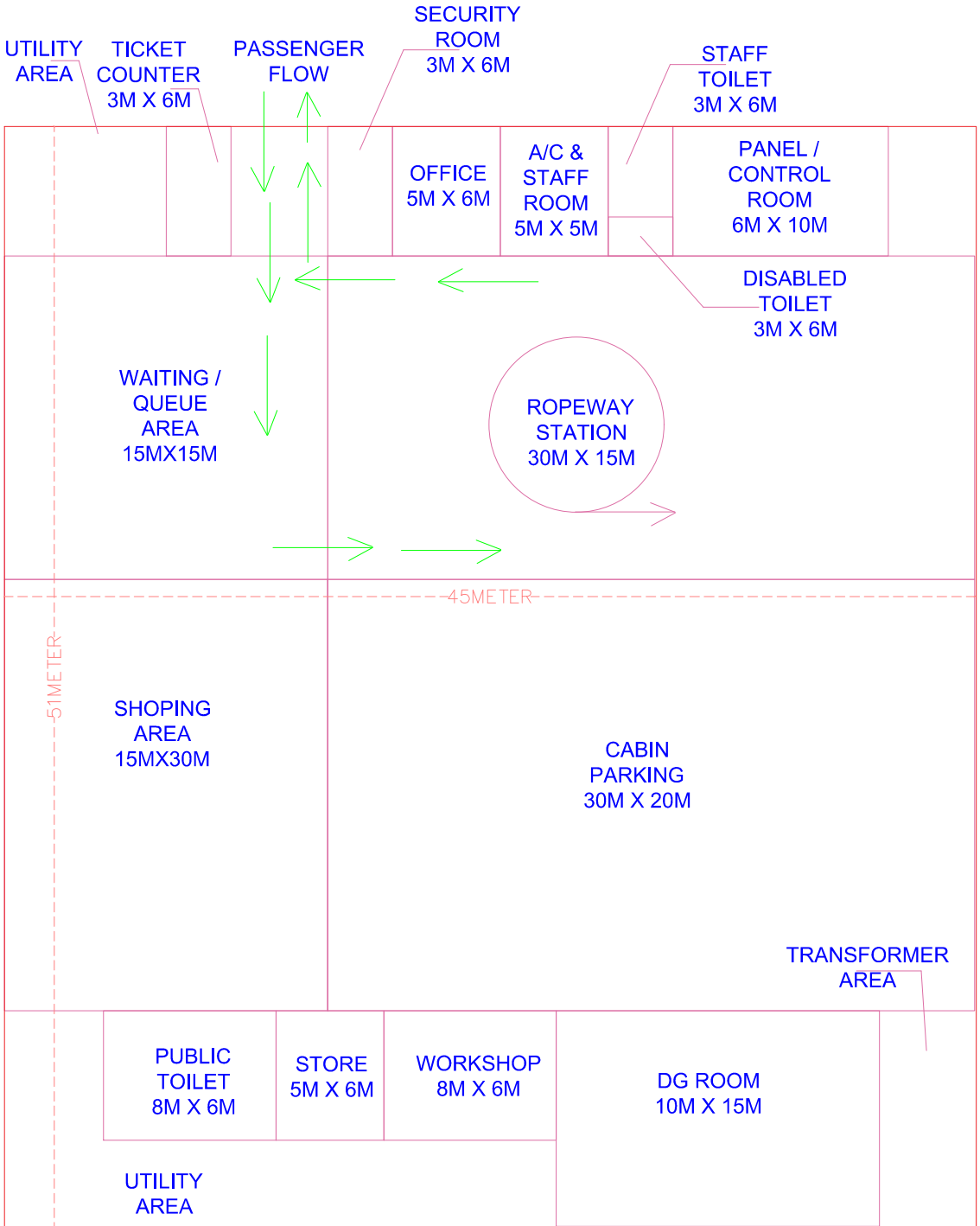




PROPOSED ROUTE NO.1-LENGTH:-2397.83MTR

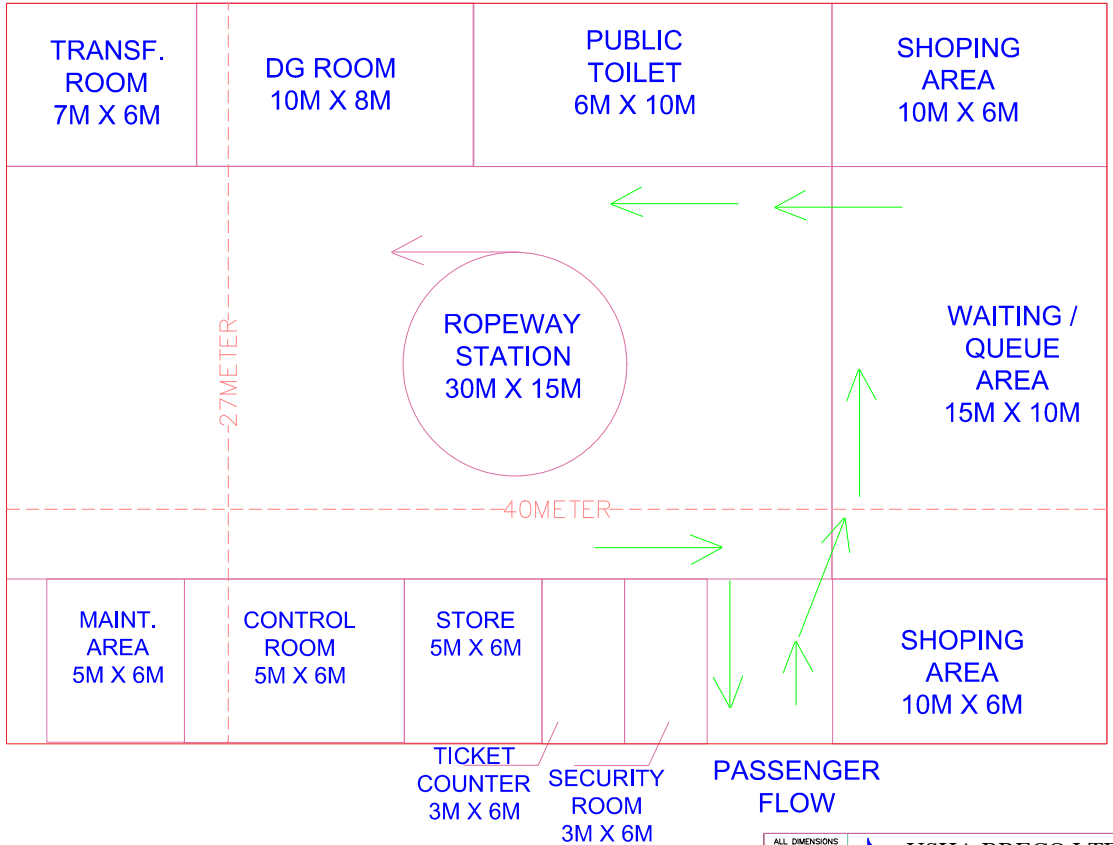




# LOWER TERMINAL LAYOUT



ALL DIMENSIONS ARE IN MILLIMETRES			USHA BRECO LTD.	
SCALE	N.T.S.		DELHI	
DATE	21-02-2020	MACHINE		
DRAWN	VJAY	SUB. ASSEMBLY		
CHKD	J. P. SINGH			SH. 1 OF 2
APPR.	TITLE: --			
		TYPICAL STATION LAYOUT - HARIDWAR ROPEWAY		
		DRG.NO.	UBL - UKMRC - 002	
				REV. 2

# UPPER TERMINAL LAYOUT



ALL DIMENSIONS ARE IN MILLIMETRES		 <b>USHA BRECO LTD.</b> DELHI	
SCALE	N.T.S.		
DATE	21-02-2020	MACHINE	
DRAWN	VJAY	SUB. ASSEMBLY	
CHKD	J. P. SINGH		SH. 2 OF 2
APPR.		TITLES - TYPICAL STATION LAYOUT - HARIDWAR ROPEWAY	
		DRG.NO.	UBL - UKMRC - 002
		REV.	0



कम संख्या- 131

पंजीकृत संख्या-यू0ए0-30/2012-14  
(लाइसेन्स टू पोस्ट विदाउट प्रीपेमेन्ट)



**सरकारी गजट, उत्तराखण्ड**  
**उत्तराखण्ड सरकार द्वारा प्रकाशित**  
**असाधारण**

विधायी परिशिष्ट  
भाग-1, खण्ड (क)  
(उत्तराखण्ड अधिनियम)

देहरादून, शनिवार, 03 जनवरी, 2015 ई०  
पौष 13, 1936 शक सम्वत्

उत्तराखण्ड शासन  
विधायी एवं संसदीय कार्य विभाग  
संख्या 340 / xxxvi(3)/2015/77(1)/2014  
देहरादून, 03 जनवरी, 2015

अधिसूचना  
विविध

“भारत का संविधान” के अनुच्छेद 200 के अधीन राज्यपाल महोदय ने उत्तराखण्ड विधान सभा द्वारा पारित उत्तराखण्ड रज्जुमार्ग विधेयक, 2014 को दिनांक 30 दिसम्बर, 2014 को अनुमति प्रदान की और वह उत्तराखण्ड अधिनियम संख्या 02 वर्ष 2015 के रूप में सर्व-साधारण की सूचनार्थ इस अधिसूचना द्वारा प्रकाशित किया जाता है।

## THE UTTARAKHAND ROPEWAYS ACT, 2014

(Act No. 02 of 2015)

### An Act

to authorize, facilitate and regulate the construction, operations and maintenance of ropeways in the State.

Be it enacted by the Legislative Assembly of Uttarakhand in the sixty-fifth year of the Republic of India as follows:

### CHAPTER - I PRELIMINARY

<b>Short title, extent and commencement</b>	1	<p>(1) This Act may be called the Uttarakhand Ropeways Act, 2014.</p> <p>(2) It extends to the whole of Uttarakhand.</p> <p>(3) It shall come into force at once.</p>
<b>Definitions</b>	2	<p>In this Act, unless there is anything repugnant in the subject or context;</p> <p>(a) "Applicable Law" means all laws, brought into force and effect by the Government of India or the State Government including rules, regulations and notifications made there under, and judgments, decrees, injunctions, writs and orders of any court of record, as may be in force in the State, from time to time;</p> <p>(b) "Carrier" means any vehicle or receptacle hung or suspended from, or hauled by a rope and used for the carriage of passengers, animals or goods or for any other purpose in connection with the operations of a ropeway;</p> <p>(c) "Chief Inspector" and "District Inspector" mean the persons appointed under this Act respectively to be the Chief Inspector of Ropeways for the State and the Inspector of Ropeways for a District;</p> <p>(d) "Collector" means the chief officer in charge of the land revenue administration of a district, and includes any officer specially appointed by the Government to discharge the functions of a Collector for the purpose of this Act;</p> <p>(e) "entity" means and includes a company, trust, society, firm, and / or a body corporate or any other organization established in accordance with the applicable laws.</p>

(f) "Government" or "State Government" means the State Government of Uttarakhand;

(g) "Licence" means a licence authorising the construction, operation and maintenance of a ropeway under this Act and includes a licence authorising the continuance of the operations and maintenance of a ropeway existing immediately before the commencement of this Act as also any licence substituted for, or amending or extending any such licence;

(h) "person" shall mean a natural person;

(i) "post" means a post, trestle, standard, strut, stay or other contrivance or part of a contrivance for carrying, suspending or supporting a rope;

(j) "prescribed" means prescribed by rules made under this Act;

(k) "promoter" means;

(i) the State Government;

(ii) any agency or department of the State Government;

(iii) any person or entity, which may be selected by the State Government as per Applicable Law;

(iv) any person or entity which is owning and or operating an existing ropeway on the date of coming in to force of this Act.

to whom a licence has been granted under section 10 or under sub-section (2) of section 5 or on whom the rights and liabilities conferred and imposed on the promoter by this Act, as to the construction, maintenance and operations of a ropeway, have devolved.

(l) "public ropeway" means a ropeway used for public carriage of passengers, animals or goods or any of them;

(m) "PPP" shall mean and refer to public private partnership;

(n) "rate" includes any fare, charge or other payment for the carriage of passengers, animals or goods;

(o) "rope" includes any cable, wire, rail or way, whether flexible or rigid, used for suspending; carrying or hauling a carrier;

(p) "ropeway" means a ropeway used for public or private carriage of passengers, animals or goods or any of them and



includes posts, ropes, carriers, stations, offices, warehouses, workshops, machinery and where the wheels of carriers are made to run on the rails laid on the surface of the earth, such rails as well as any such other works as are used for the purposes of, or in connection with, such ropeway and all land appurtenant thereto;

- (q) "State" means the State of Uttarakhand; and  
 (r) "Undertaking" means all movable and immovable property of the promoter suitable to and used by him for the purposes of a ropeway.

## CHAPTER-II

### LICENSING AUTHORITY AND ESTABLISHMENT

**Licensing Authority**

3

The Authority having power to grant licences under this Act (hereinafter referred to as the Licensing Authority) shall be the Empowered Committee constituted of the following members:

1	Chief Secretary, Govt. of Uttarakhand	Chairman
2	Principal Secretary/Secretary, PWD	Member
3	Principal Secretary/Secretary, Tourism	Member
4	Managing Director, GMVM	Member
5	Managing Director, KMVM	Member
6	Concerned D.M.	Member
7	Engineer in chief of PWD Department	Member
8	Managing Director, UPCL	Member
9	Superintended Engineer-E&M, PWD	Member
10	Any other expert as nominated by State Government	Member
11	Chief Ropeway Inspector	Member Secretary

**Appointment of certain Inspectors and subordinate officers and their powers and duties**

4

- (1) The State Government may appoint such person to be the Chief Inspector of Ropeways at the State level and other Inspectors of Ropeways at local level (hereinafter referred to as the "District Inspector") as it deems fit and may fix the fees to be charged to promoters for the performance by them of their duties under this Act and as prescribed.
- (2) The Chief Inspector and the District Inspector shall exercise such powers and perform such functions and duties as may be provided by or under the provisions of the Act. It shall also

be the duty of any such Inspector from time to time and at least once a year in the case of the Chief Inspector and once in every six months in the case of the District Inspector to inspect the ropeways and to determine whether they are maintained in a fit condition and worked with due regard to the convenience and safety of the persons using them and of the general public, and consistently with the provisions of this Act.

- (3) The Chief Inspector and the District Inspectors shall, for the purpose of any of the duties which they are authorised or required to perform under this Act, be deemed to be public servants as defined in the Indian Penal Code, 1860 (Central Act 45 of 1860).
- (4) The promoter and his employees and agents shall provide to the Chief Inspector and the District Inspector all reasonable facilities for performing the duties and exercising the powers imposed and conferred upon them by this Act.
- (5) The State Government may also appoint experts, advisors, consultants and other officers with such designations and assign them such powers, duties and functions as may be necessary for carrying out the purposes of this Act.

### **CHAPTER – III**

#### **PROCEDURE AND PRELIMINARY INVESTIGATION**

**Unauthorized construction, maintenance etc. of Ropeways prohibited**

5

- (1) No ropeway shall be constructed, opened, maintained or operated within the State, except in accordance with the provisions of this Act.
- (2) Notwithstanding anything in sub-section (1), any person and / or entity to whom a ropeway has been sanctioned or by whom a ropeway is being operated, in any part of the State, before the commencement of this Act, whether for public, private or industrial purpose may, on an application being made by him in this behalf in accordance with sub-section (3) hereunder, and after such enquiry as may be considered necessary, be, by licence, authorized to continue the development / operations of such ropeway, as far as may be, in accordance with the provisions of this Act.
- (3) The application under sub-section (2) shall, within a period of sixty (60) days from the date of commencement of this

Act, be made to the Licensing Authority in such form and manner and with such technical or other details regarding the concerned ropeway as may be prescribed.

- (4) Any person or entity aggrieved by the order refusing to grant a licence under sub-section (2) or by any order otherwise made under the sub-section may, within a period of sixty days of the date of the order, prefer an appeal to the State Government which may pass such order as it deems necessary.
- (5) Nothing contained in sub-section (1) shall affect the continuance of the operations of the ropeway referred to in sub-section (2) during the period within which an application under the sub-section (3) may be made or, where such application has been made, up to the date of grant of order or refusal to grant a licence under that sub-section becomes final.

**Application for permission to undertake investigations** 6

Every application by an intending promoter for permission to undertake the necessary preliminary investigations in regard to a proposed ropeway shall be submitted to the Licensing Authority in such format as prescribed.

**Contents of applications** 7

Every application to be made under section 6 shall contain all the information relevant to the proposed ropeway and may include:

- (a) a description of all movable and immovable property of the promoter suitable to and used by him for the purposes of a ropeway and of the route to be followed by the proposed ropeway;
- (b) a description of the system of construction and management and of the advantages to the community to be expected from such ropeway;
- (c) an estimate of the cost of construction thereof;
- (d) a statement of the estimated working expenses and profits expected;
- (e) a statement of the maximum rates proposed to be charged; and
- (f) such maps, plans, sections, diagrams and other information as may be prescribed and such other information as the licensing authority may require in order to form an idea of the proposal.



**Sanction to preliminary investigations**

- 8
- (1) The Licensing Authority or, where the immovable properties not belonging to the intending promoter are involved, the State Government may, subject to the provisions of this Act and of the Land Acquisition Act, 2013, accord sanction to the intending promoter to make such surveys as may be necessary.
  - (2) Before according sanction under sub-section (1), the Licensing Authority or, as the case may be, the State Government may also require the intending promoter to submit such detailed estimates, plans, sanctions and specifications and such further information as it may think necessary for the full consideration of the proposal.
  - (3) The intending promoter shall not be entitled to claim any compensation from the State Government for any expense incurred under this section in the event of his application being refused.

**CHAPTER - IV****CONSTRUCTION OF ROPEWAYS****Publication of proposed licence authorizing construction and contents of such licence**

- 9
- (1) The Licensing Authority may, on an application being made by any intending promoter, and after due consideration of the details supplied in accordance with sub-section (2) of section 8, publish in at-least one widely circulated local newspapers and one widely circulated National newspaper in the State, a draft of the proposed licence authorizing the construction by, or on behalf of, such promoter, subject to such restrictions and conditions as the Licensing Authority may think proper, of a ropeway within any area or along any route specified in such licence -
    - (a) for the public carriage of passengers;
    - (b) for the public carriage of passengers and goods;
    - (c) for the public carriage of animals and goods;
    - (d) for the public carriage of passengers, animals and goods; or
    - (e) for any private or industrial purpose.
  - (2) A notice shall be published with the draft licence stating that any objection or suggestion which any person may desire to make with respect to the proposed licence will, if submitted to the Licensing Authority, within a period of thirty days from the date of the notice be received and considered by it.

- (3) The Licensing Authority shall also cause public notice of the intention to grant the licence to be given at conspicuous places within the said area or along the said route, and shall, so far as may be possible cause a like notice to be served on every owner or occupier of land over which such route lies, and shall consider any objection or suggestion, with respect to the proposed licence, which may be received from any person within the period specified in sub-section (2) and take decision thereon.
- (4) The draft of the proposed licence shall contain such details of the proposed ropeway as may be prescribed.
- Grant of licence** 10 (1) If, after considering any objections or suggestions, which may have been made in respect to the draft before the expiry of the period specified in sub-section (2) of section 9, the Licensing Authority is of opinion that the application should be granted with or without modifications, or subject to any restrictions or conditions, it shall grant a licence accordingly.
- (2) Every licence authorizing the construction of a ropeway granted under sub-section (1) shall, in such form as may be prescribed, be uploaded on the website of the State Government.
- Cessation of powers given by licence under section 10** 11 If a promoter authorised by a licence granted under section 10 to construct a ropeway does not, within the time specified in the licence, make progress according to the schedule of progress approved by the Licensing Authority, the powers given to the promoter by such licence shall, unless, on an application made by the promoter in this behalf, the Licensing Authority, extends the time so specified, cease to be exercised;
- Provided that in case the Licencing Authority rejects an application made under this section, it shall do so by an order made in this behalf and for reasons to be recorded in writing.
- Revocation of licence and grant of a further licence** 12 (1) The Licensing Authority may, on the application of the promoter, by order, revoke the licence or amend or extend it by a further licence.
- (2) An application under sub-section (1) for an amendment or extensions of the licence shall be made in the same manner and subject to the same conditions as an application for licence.

- (3) If the Licensing Authority grants the application, it shall, by order, revoke the licence or, as the case may be, grant the further licence in the same manner as a licence except that the rights, powers and authorities asked for in the said application shall not be increased, modified or restricted by the further licence without the consent in writing of the promoter.

## **CHAPTER - V**

### **INSPECTION OF ROPEWAYS**

**Inspection of a ropeway before opening**

13

- (1) No ropeway shall be opened for any kind of traffic until the State Government has, by order, sanctioned the opening thereof for that purpose. The sanction of the Licensing Authority under this section shall not be given until the Chief Inspector has reported in writing to the Licensing Authority -
- (a) that it has made a careful inspection of the ropeway and appurtenances;
  - (b) that the moving and fixed dimensions and such other conditions as may be prescribed have been complied with;
  - (c) that the ropeway is sufficiently equipped for the traffic for which it is intended;
  - (d) that due compliance of the rules and conditions of licence has been made;
  - (e) that in his opinion sufficient measures have been taken to prevent and control the pollution caused or likely to be caused by the working of the ropeway; and
  - (f) that in his opinion the ropeway is fit for traffic and can be used without danger to those using it, or to the persons employed thereon, or to the general public.
- (2) The provisions of sub-section (1) shall extend to the opening of additional sections of the ropeway, to deviation lines, and to any alteration or reconstruction materially affecting the structural character or any work to which the provisions of sub-section (1) apply or are extended by this sub-section. The said provisions shall also extend to the continuance of the ropeways referred to in sub-section (2) of section 5.

## **CHAPTER-VI**

### **CONSTRUCTION AND MAINTENANCE OF PUBLIC ROPEWAYS**

- Constitution of District Committee** 14 A District Level Committee shall be constituted consisting of the following members:
- |     |   |                  |
|-----|---|------------------|
| (a) | District Magistrate                                     | Chairman         |
| (b) | Superintendent of Police                                | Member           |
| (c) | Division Forest Officer (of the concerned division)     | Member           |
| (d) | Sub-Division Magistrate (of the concerned sub-division) | Member           |
| (e) | District Ropeway Inspector                              | Member Secretary |
| (f) | Any other member invited by District Magistrate         | Member           |
- Functions of the District Level Committee** 15 (1) With regard to the ropeway projects being implemented by the State Government or any of its departments or agency or by any entity/person selected by or on behalf of the State Government, in case a ropeway project is being implemented on PPP basis, the committee shall discharge following functions, or as may be prescribed by the State Government:-
- (a) Assistance in Forest land diversion and clearance process;
  - (b) Assistance in Private land acquisition / procurement and land registration;
  - (c) Assistance in procuring clearance from State Pollution Control Board;
  - (d) Assistance in getting supply of electricity & water to the ropeway projects;
  - (e) Assistance in the diversion of transmission lines, electric poles, pipelines, etc. falling along the route alignment;
  - (f) Assistance in resolution of Relocation and Rehabilitation issues, if any, involved in the project;
  - (g) to act as a single window for providing district level clearances to the promoter; and
  - (h) to review the progress on the ropeway projects the State Government on bi-monthly basis.
- Authority of promoter to execute works** 16 (1) Subject to the provisions of this Act, the rules made thereunder, and in the case of immovable property not belonging to the promoter, to the provisions of any enactment for the time being in force for the acquisition of land for public

purposes and for companies, a promoter may -

- (a) make such survey as it thinks necessary;
  - (b) place and maintain a rope over, along or access any immovable property;
  - (c) suspend and maintain a rope over, along or across any immovable property;
  - (d) make such bridges, culverts, drains, embankments and roads, as may be necessary;
  - (e) erect and construct such machinery, offices, stations, warehouses and other buildings, works and conveniences as may be necessary; and
  - (f) do all other acts necessary for constructing, maintaining, altering, repairing and using a public ropeway;
- (2) Subsequent to the consideration of objections or suggestions, if any, by the Licensing Authority and grant of license under section 10, the promoter may take any action under clause (b) or clause (c), notwithstanding the objection of the owner or occupier of the property affected.
  - (3) The Collector shall fix the amount of compensation, or of annual rent, or of both, which should, in his opinion, be paid by the promoter to the owner of the property affected thereby or in the case of immovable property to the owner or occupier thereof, or any person interested therein and the amount to be paid to each.
  - (4) The order so made shall also fix the date by which such amount of compensation or of the first annual rent shall be paid.

**Temporary entry upon immovable property adjoining ropeway** 17

- (1) The promoter, subject to the rules made under this Act, at any time for the purpose of examining or repairing a public ropeway, or of preventing any accident, enter upon any immovable property adjoining such ropeway, and may do all such works as may be necessary for such purposes.
- (2) In the exercise of the powers conferred by sub-section (1), the promoter or his duly authorised employee or agent, as the case may be, shall cause as little damage as possible, and compensation shall be paid by him for any damage so caused; and in the case of any dispute as to the amount of



such compensation, or the person to whom it shall be paid, the matter shall be referred to the decision of the Collector.

- |                                |    |   |
|--------------------------------|----|---|
| <b>Removal of obstructions</b> | 18 | <p>(1) When any structure standing or lying near a public ropeway, or where any other object which has been placed or has fallen near such ropeway subsequent to the grant of a licence under section 10 in regard to such ropeway, interrupts or interferes with, or is likely to interrupt or interfere with the construction, maintenance or use of such ropeway, the Collector may, subject to the provisions of other Applicable Laws in this regard, on the application of the promoter after affording a reasonable opportunity of being heard to the persons affected, cause the structure or object to be removed or otherwise dealt with as it thinks fit.</p> <p>(2) When disposing of an application under, sub-section (1), the Collector shall award to the person interested such compensation as the Collector may recover such amount from the promoter as if it were an arrear of land revenue.</p> |
|--------------------------------|----|---|

#### **CHAPTER - VII**

#### **WORKING OF ROPEWAYS**

- |   |    |  |
|---|----|--|
| <b>Promoter may fix tariff</b>                                | 19 | The promoter shall for the purposes of operation of a public ropeway and subject to such maximum rates as may be prescribed by the Licensing Authority, have power, from time to time, to fix the rates for the carriage of passengers, animals or goods on the ropeway.   |
| <b>Duty of promoter to operate ropeway without partiality</b> | 20 | No promoter shall make or give any undue or unreasonable preference or advantage to or in favour of any particular person or any particular description of traffic in any respect whatsoever, or subject any particular person or any particular description of traffic to any undue or disadvantage in any respect whatsoever.  |
| <b>Reporting of accidents</b>                                 | 21 | <p>When any accident occurs in the course of operations of a ropeway, the promoter shall, with the least possible delay, send notice of the accident to:</p> <ul style="list-style-type: none"> <li>(i) the State Government;</li> <li>(ii) to the Licensing Authority and to District Ropeway Inspector;</li> <li>(iii) to the Collector of the District;</li> <li>(iv) to the police station within the local limits of which the accident has occurred</li> </ul> |

- or to such other magistrate and police officer as the State Government may appoint in this behalf and shall also, if the accident is attended with loss of human life or serious physical injury to any human being, send information to the nearest medical facility.
- Liability to pay compensation on the principles of no fault** 21. A
- (1) Where death or permanent disablement of any person or livestock and/ or damage to a property, has resulted from an accident arising out of the use of ropeway, the promoter or promoters of the ropeway shall jointly and severally, be liable to pay compensation in respect of such death or disablement of any person and or livestock or damage to a property.
- (2) The amount of compensation for death or permanent disablement of persons or in the case of minor injury or in case of loss of livestock or loss or damage of property, to be paid under sub section (1) shall be such sums as may be prescribed.
- (3) A claim for compensation under sub-section (1) shall neither be defeated by reason of any neglect or default of the person or livestock, in respect of whose death or permanent disablement, the claim has been made nor shall be quantum of compensation recoverable in respect of such death or permanent disablement be reduced on the basis of the share of such person or livestock in the responsibility for such death or permanent disablement.
- (4) The right to claim compensation under this section in respect of death or permanent disablement of any person or livestock shall be in addition to the right of any such person to claim compensation in respect thereof under any other law for the time being in force:
- Provided that the amount of compensation payable under any other law, for the death or bodily injury shall be reduced from the amount of compensation payable under this section.
- Power to close and reopen ropeways** 22.
- (1) If after inspecting any ropeway opened to traffic, the District Inspector is of opinion that the ropeway or any, specified class of traffic, it shall state that opinion, together with the grounds thereof to the Licensing Authority and the Licensing Authority after such further enquiry if any, as it may think fit, may thereupon order that, for reasons to be set forth in the order, the ropeway, or the

part thereof so specified, be closed to all traffic or to any specified class of traffic:

Provided that in any case of extreme urgency, the District Inspector may order the suspension of the working of the ropeway or any part thereof which it considers necessary pending the order of the Licensing Authority. The District Inspector shall forthwith make a report of his order to the Licensing Authority who will make necessary order within a period of seven days.

(2) When under sub-section (1), a ropeway or any part thereof has been closed to any traffic, it shall not be reopened to such traffic until it has been inspected and its reopening sanctioned, in the prescribed manner.

## CHAPTER - VIII

### DISCONTINUANCE OF ROPEWAYS

**Cessation of powers of promoter on discontinuance of public ropeway**

23. If, at any time after the opening of a ropeway, it is proved that the promoter has discontinued the operations of such ropeway or of any part thereof, without a reason sufficient, in the opinion of the Licensing Authority to warrant such discontinuance, the Licensing Authority may, if it thinks fit after providing a reasonable opportunity of being heard to the promoter, declare, that the powers of the promoter in respect of such ropeway or part thereof shall, from such dates as it may determine, be at an end; and thereupon the said powers shall cease and determine.

*Explanation.* - The working of a ropeway shall be deemed to have been discontinued if it has ceased for the period determined in the licence granted under section 10, or if the period has not been so determined, for a period of three months.

**Powers of licensing Authority to remove a ropeway on cessation of promoter's powers**

24. (1) When a declaration has been made by the Licensing Authority under section 23 in respect of any ropeway or of any part thereof, an officer appointed in that behalf by the Licensing Authority may at any time after the expiration of two months from the date determined as aforesaid, remove such ropeway or part thereof, as the case may be, and the promoter shall pay to the officer so appointed such costs of removal as shall be certified by that officer to have been incurred by him.

(2) If the promoter fails to pay the amount of costs so certified within one month after the delivery to him of the certificate or of a copy thereof, such officer may, either by public auction or by private sale, and with due notice to the promoter but without prejudice to

any other remedy which it may have for the recovery of the said amount, sell and dispose-off the materials of the ropeway or part thereof so removed; it may, out of the proceeds of the sale, pay and reimburse to himself the amount of costs certified as aforesaid and the costs of sale, and shall pay over residue (if any) of such proceeds to the promoter.

## **CHAPTER - IX**

### **PURCHASE OF ROPEWAYS**

**Power of State Government and its departments and agencies to purchase ropeways**

25

(1) Where the promoter is the State Government, the State Government may at any time transfer the undertaking or any part thereof to-

(a) its departments and or agencies under terms and conditions approved by, and with the consent of, such departments or agencies; or

(b) to any other person selected in accordance with the Applicable Law, under such terms and conditions as may be mutually agreed upon between the State Government and the transferee.

(2) Where the promoter is not the State Government or its agency or department, the State Government may in its sole discretion

(a) within such limits of time and upon such terms and conditions as specified in this behalf in the license, or

(b) within two months after the publication of a notification under section 23 or within six-months after the publication of a notification under section 27,

By a notice in writing, require the promoter to sell to the State Government or to any of its department or agency the ropeway or a part thereof, and thereupon the promoter shall sell the same upon the terms specified in the license, or if the terms were not specified in the license, then upon such terms as may be prescribed in this regard.

(3) A requisition shall not be made under sub-section (2) requiring the promoter to sell to any department or agency of the State Government, unless such requisition has been approved by the concerned department or agency.

(4) When a sale has been made under this section, all the rights, powers and authorities of the promoter in respect of the

undertaking or part thereof sold, or, where a notification has been published under section 23 or section 27, all the rights, powers and authorities of the promoter previous to the publication of the notification in respect of the undertaking or part thereof sold, shall be transferred to the authorities to whom the undertaking or part has been sold, and shall vest in, and may be exercised by, that authority in the same manner as if the ropeway had been constructed by it under a license granted under this Act.

(5) Subject to, and in accordance with the preceding provisions of this section, two or more government departments and agencies may jointly purchase an undertaking or so much thereof as is within their jurisdiction.

(6) Where a purchase has been effected under sub-section (1) or sub-section (5),-

(a) the undertaking shall vest in the purchaser free from any debts, mortgages or similar obligations of the promoter or attaching to the undertaking:

b) save as aforesaid, the license granted under section 10 shall remain in full force and the purchaser shall be deemed to be the promoter:

Provided that where the State Government elects to purchase, the licence granted under section 10 shall, after purchase, in so far as the State Government is concerned, cease to have any further operation.

(7) Not less than two years' notice in writing of any election to purchase under clause (a) or clause (b) of sub-section (2) of this section shall be served upon the promoter by the State Government or the local authority, as the case may be.

(8) Notwithstanding anything hereinbefore contained, a department/ agency may, with the previous sanction of the State Government, waive its option to purchase and enter into an agreement with the promoter for the working by him of the undertaking until the expiration of the next subsequent period mentioned in the order or referred to in clause (b) of sub-section (2), upon such terms and conditions as may be stated in the agreement.

**Power of  
promoter to sell**

26 Where, on the expiration of any of the periods referred to in section 24, neither the State Government nor any of its department or



**when option to purchase not exercised and license revoked by consent**

agency purchases the undertaking, and the license granted under section 10 is, on the application or with the consent of the promoter, revoked, the promoter shall have the option of disposing of all lands, buildings, works, materials, plants and apparatus belonging to the undertaking in such manner as it may think fit

**Expropriation by the State Government** 27

(1) If, at any time, after the opening of a ropeway, the State Government is of the opinion that an existing ropeway is required or needed by the Government in the national security interest or in the interest of the public, the State Government may, after considering any statement which the promoter may desire to make, and after such enquiry as it deems necessary, declare, subject to such terms and conditions as the State Government may prescribe in this regard, that the powers of the promoter in respect of such ropeway, shall, at the expiration of six months from the date of such declaration, be at an end and thereupon all the rights, powers and authorities of the promoter in respect of the said ropeway shall vest absolutely in the State Government, free from all debts, encumbrances or similar obligations.

(2) As soon as may be, after a notification under sub-section (1), has been made, the State Government shall by a notice in writing, require the promoter to transfer and handover the undertaking including all land, building, equipments and assets, clearances and permits and documents pertaining thereto, forming part of the ropeway subject matter of the notification under sub-section (1), to the State Government;

Provided that the notice set forth in sub-section (2) shall set forth the modalities for the handover of the ropeway and the amount of compensation payable to the promoter in lieu of the takeover of the ropeway by the State Government, which shall be an amount equivalent to the cost of procurement of all land, if owned by the promoter, and the depreciated value of the buildings, plant and machinery of the promoter, suitable to, and used by him for the purposes of the undertaking and taken over by the Government and which compensation shall in all events be paid to the promoter by the State Government prior to the expiration of the period set forth in sub-section (1) of this Section 27:

**CHAPTER – X  
INABILITY OR INSOLVENCY OF PROMOTER**

**Proceedings in  
case of inability  
or insolvency of  
promoter**

- 28 (1) If, at any time, after the opening of a ropeway, it appears to the State Government that the promoter is insolvent or is unable to maintain the ropeway or operate the same with advantage to the public, or at all, the State Government may, after considering any statement which the promoter may desire to make, and after such enquiry as it deems necessary, declare that the powers of the promoter in respect of such ropeway, shall, at the expiration of six months from the date of such declaration, be at an end, and thereupon the said powers shall, at the expiration of that period, cease and determine.
- (2) At any time after the expiration of the said six months, an officer appointed by the State Government in that behalf, may remove the ropeway in the same manner and subject to the same provisions as to the payment of costs and to the same remedy for the recovery thereof in every respect as in cases of removal under section 24.

**CHAPTER – XI**

**APPEALS**

**Review by the  
Licensing  
Authority**

- 29 (1) All orders made by the Licensing Authority under this Act except those which are made by the Collector under the provisions of the Land Acquisition Act, 2013, shall be appealable within thirty days from the date of order and the appeal shall lie to the State Government.
- (2) Any appeal preferred under sub-section (1) shall normally be disposed of by the State Government within three months from the date of receipt of the appeal.
- (3) The State Government may, of its own motion, call for and examine the records of any proceedings for the purpose of satisfying itself as to the legality or propriety of any order made under this Act by the Licensing Authority not being an award or order made or passed by the Collector under the provisions of the Land Acquisition Act, 2013 and if in any case it shall appear to the State Government that any such order should be modified, annulled or revised or remitted for reconsideration, the State Government may, after giving the party to be affected thereby a reasonable opportunity of being heard, pass such order thereon as it may deem fit.

**CHAPTER - XII**

**SUPPLEMENTARY PROVISIONS**

<b>Returns</b>	30	A promoter shall, in respect of the ropeway, submit to the State Government, returns of capital and revenue expenditure, receipts and traffic, at such intervals, and in such form, as may be prescribed.
<b>Protection of roads, railways, tramways, and waterways</b>	31	No promoter shall, in the course of the construction, repair, working or management of a ropeway, cause any permanent injury to any public road, railway, tramway or waterway, or obstruct or interfere with, otherwise than temporarily as may be necessary, the traffic on any public road, railway, tramway or waterway.
<b>Acquisition of land by the State Government</b>	32	<p>(1) The State Government may, suo motto, acquire land for the purposes of this Act, in accordance with the provisions of the Land Acquisition Act, 2013, and may if it thinks fit, transfer the land owned, acquired or controlled by it to any promoter, for the purposes of this Act.</p> <p>(2) The State Government may, if it thinks fit, subject to the provisions of the Act, on the application of any promoter desirous of obtaining any land for the purpose of constructing, extending, working or managing a ropeway, acquire on his behalf such land under the provisions of Part VII of the Land Acquisition Act, 2013 whether the said promoter is or is not a company as defined in the Land Acquisition Act.</p>
<b>Notification of claims to refund of overcharges and compensation for losses</b>	33	No person shall be entitled to a refund of an overcharge in respect of animals or goods carried by a ropeway or to compensation for the loss, destruction or deterioration of animals or goods delivered to be so carried, unless his claim to the refund or compensation has been preferred in writing by him or on his behalf to the promoter within six months from the date of the delivery of the animals or goods for carriage by the ropeway.

### **CHAPTER – XIII**

#### **DELEGATION OF POWERS OF, AND MAKING OF RULES BY STATE GOVERNMENT**

<b>Power of State Government to make Rules</b>	34	<p>(1) The State Government may, after previous publication, make rules to carry out the purpose of this Act.</p> <p>(2) In particular, and without prejudice to the generality of the foregoing power, such rules may prescribe-</p> <p style="padding-left: 40px;">a) the power and duties of the Chief Inspector and the District</p>
--	----	--

Inspector appointed under section 4;

- b) the accidents of which notice shall be given to the Licensing Authority and to the District Inspector
- c) the maximum rates for passengers, animals or various classes of goods on the ropeway, which a promoter may fix under section 19.
- d) the duties of the promoter, promoter's employees and of police officers, and magistrate on the occurrence of an accident;
- e) the standard dimensions and specifications to which the ropeway is to conform;
- f) the manner in which notice under this Act shall be served;
- g) the safe and efficient working of ropeways;
- h) the conditions under which, and the manner in which, the powers conferred on promoters by section 16 and section 17 may be exercised;
- i) the procedure for the disposal of application under sub-section (2) of section 22 to reopen any ropeway or part thereof and the conditions under which such ropeway may be reopened;
- j) the procedure for filing, hearing and disposing of appeals under this Act;
- k) the fees to be charged to promoters and other persons in respect of licenses, application, enquiries, inspection, and services rendered under this Act;
- l) the procedure for making, hearing and disposing of applications under this Act;
- m) provisions for fire aid and other amenities; and
- n) any other matter which is to be or may be prescribed under this Act.

(3) All rules made under this section shall be published in the Official Gazette.

(4) Every rule made under this Act shall be laid, as soon as may be after it is made, before the House of the State Legislature while it is in session for a total period of not less than fourteen days which may be comprised in one section or in two or more successive sessions and if before the expiry of the session in which it is so laid

or the sessions aforesaid, the House makes any modification in the rule or decides that the rule should not be made, the rule shall thereafter have effect only in such modified form or be of no effect, as the case may be, so, however, that any such modification or annulment shall be without prejudice to the validity of anything previously done under that rule.

- Power of State Government to award projects** 35 The State Government may, if it deems fit, enter into an agreement with an entity/ person for implementing and operating a ropeway project within the State on a PPP basis, provided that, the process for selection of such an entity/ person shall be such as stipulated under the Applicable Law.

**CHAPTER – XIV  
BYE-LAWS**

- power to make bye-laws** 36 (1) The Licensing Authority shall, subject to the provisions of sub-section (3), make bye-laws consistent with this Act,-
- a) for regulating the speed at which carriers are to be moved or propelled;
  - b) for declaring what shall be deemed to be dangerous or offensive goods and for regulating the carriage of such goods;
  - c) for regulating the maximum passengers and animals and the maximum weight of goods to be carried in each carrier;
  - d) for regulating the use of steam power or any other mechanical power or electrical power on the ropeway;
  - e) for regulating the conduct of the promoter's servants;
  - f) for regulating the qualifications of the staff employed for running and maintaining the ropeway;
  - g) for regulating the terms and condition on which the promoter will warehouse or retain goods at any station on behalf of the consignee or owner of such goods; and
  - h) generally for regulating the travelling upon, and the use, working and management of the ropeway.
- (2) Such bye-laws may provide that any person who contravenes the provisions of any of them shall be liable to such fine which may extend to any sum not exceeding one

hundred rupees and that, in the case of a breach of a bye-law made under clause (c) of sub-section (1), the promoter's servant responsible for the same shall forfeit a sum not exceeding one month's pay, which sum may be deducted by the promoter from his pay.

(3) A bye-law made under this section shall not take effect until it has been approved by the State Government and published in the Official Gazette:

Provided that no such bye-law shall be so confirmed until it has been previously published by the promoter in such manner as may be prescribed.

## CHAPTER - XV

### OFFENCES AND PENALTIES

**failure of promoter to comply with Act**

37 If a promoter

- a) constructs or opens or operates or maintains a ropeway otherwise, than in accordance with the terms of a licence granted under section 10 or under sub-section (2) of section 5; or
- b) contravenes any of the provisions of this Act or the provisions of any rule made under section 35; or
- c) fails to pay within a reasonable time any compensation awarded by a Collector or by the State Government under the provisions of this Act;

it shall, without prejudice to the enforcement of specific performance of the requirements of this Act or of any other remedy which may be obtained against him, be punishable with fine which may extend to ten thousand rupees and in case of a continuing offence to a further fine which may extend to one thousand rupees for every day after the date of the first conviction during which the offender is proved to have persisted in the offense.

**Unlawfully obstructing promoter's employees in discharge of his duty**

38

If a person, without lawful excuse, the burden of proving which shall lie upon him, wilfully obstructs or impedes any officer or employee of a promoter in the discharge of his duty, it shall be punishable with fine which may extend to two hundred rupees.

**Unlawfully interfering with ropeways**

39

If any person, without lawful excuse, the burden of proving which shall lie upon him, wilfully does any of the following things, namely:-

- a) interferes with, removes or alters any part of a ropeway or

of the works connected therewith;

- b) does anything in such manner as to obstruct any carrier travelling on a ropeway;
- c) attempts to do or abets within the meaning of the Indian Penal Code, 1860 (Central Act 45 of 1860) the doing of anything mentioned in clause (a) or clause (b);

it shall, without prejudice to any other remedy which may be obtained against him in a civil court, be punishable with fine which may extend to four hundred rupees.

**Punishments for acts or attempts tending to endanger safety or persons travelling or being upon ropeways**

- 40 (1) If any person does anything mentioned in clause (a), clause (b) or clause (c) of section 39 or does, attempts to do, or abets, within the meaning of the Indian Penal Code, 1860 (Central Act 45 of 1860), the doing of any other act or thing in relation to a ropeway with intent, or with knowledge that it is likely to endanger the safety of any person travelling or being upon the ropeway, it shall be punishable with imprisonment for a term which may extend to fourteen years.

- (2) If the promoter does anything or omits to do anything, mentioned in section 37, in relation to an ropeway with intent or with knowledge that such act or omission is likely to endanger the safety of any person travelling or being upon the ropeway, it shall be punishable with imprisonment for a term which shall not be less than one month but may extend to five years.

**Arrest for offence against certain sections and procedure thereupon**

- 41 (1) If any person commits any offence under section 38 or section 39 which obstructs the working of a ropeway or commits any offence punishable with imprisonment under section 40, it may be arrested without warrant or other written authority by any servant of the promoter or by any police officer, or by other persons whom such servant or officer may call to his aid.

- (2) A person so arrested shall, with the least possible delay, be taken before a Magistrate having authority to try him or to commit him for trial.

---



(Published in the Gazette of India, Extraordinary, Part-II, and Section 3, Sub-section (ii)  
MINISTRY OF ENVIRONMENT AND FORESTS

New Delhi 14<sup>th</sup> September, 2006

**Notification**

S.O. 1533 Whereas, a draft notification **under sub-rule (3) of Rule 5 of the Environment (Protection) Rules, 1986 for imposing** certain restrictions and prohibitions on new projects or activities, or on the expansion or modernization of existing projects or activities based on their potential environmental impacts as indicated in the Schedule to the notification, being undertaken in any part of India<sup>1</sup>, unless prior environmental clearance has been accorded in accordance with the objectives of National Environment Policy **as approved by the Union Cabinet on 18<sup>th</sup> May, 2006** and the procedure specified in the notification, by the Central Government or the State or Union territory Level Environment Impact Assessment Authority (SEIAA), to be constituted by the Central Government in consultation with the State Government or the Union territory Administration concerned under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 for the purpose of this notification, was published in the Gazette of India ,Extraordinary, Part II, section 3, sub-section (ii) vide number S.O. 1324 (E) dated the 15<sup>th</sup> September ,2005 inviting objections and suggestions from all persons likely to be affected thereby within a period of sixty days from the date on which copies of Gazette containing the said notification were made available to the public;

And whereas, copies of the said notification were made available to the public on 15<sup>th</sup> September, 2005;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986, read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986 and in supersession of the notification number S.O. 60 (E) dated the 27<sup>th</sup> January, 1994, except in respect of things done or omitted to be done before such supersession, the Central Government hereby directs that on and from the date of its publication the required construction of new projects or activities or the expansion or modernization of existing projects or activities listed in the Schedule to this notification entailing capacity addition with change in process and or technology shall be undertaken in any part of India only after the prior environmental clearance from the Central Government or as the case may be, by the State Level Environment Impact Assessment Authority, duly constituted by the Central Government under sub-section (3) of section 3 of the said Act, in accordance with the procedure specified hereinafter in this notification.

---

<sup>1</sup>Includes the territorial waters

**2. Requirements of prior Environmental Clearance (EC):-** The following projects or activities shall require prior environmental clearance from the concerned regulatory authority, which shall hereinafter referred to be as the Central Government in the Ministry of Environment and Forests for matters falling under Category 'A' in the Schedule and at State level the State Environment Impact Assessment Authority (SEIAA) for matters falling under Category 'B' in the said Schedule, before any construction work, or preparation of land by the project management except for securing the land, is started on the project or activity:

- (i) All new projects or activities listed in the Schedule to this notification;
- (ii) Expansion and modernization of existing projects or activities listed in the Schedule to this notification with addition of capacity beyond the limits specified for the concerned sector, that is, projects or activities which cross the threshold limits given in the Schedule, after expansion or modernization;
- (iii) Any change in product - mix in an existing manufacturing unit included in Schedule beyond the specified range.

**3. State Level Environment Impact Assessment Authority:- (1)** A State Level Environment Impact Assessment Authority hereinafter referred to as the SEIAA shall be constituted by the Central Government under sub-section (3) of section 3 of the Environment (Protection) Act, 1986 comprising of three Members including a Chairman and a Member – Secretary to be nominated by the State Government or the Union territory Administration concerned.

- (2) The Member-Secretary shall be a serving officer of the concerned State Government or Union territory administration familiar with environmental laws.
- (3) The other two Members shall be either a professional or expert fulfilling the eligibility criteria given in Appendix VI to this notification.
- (4) One of the specified Members in sub-paragraph (3) above who is an expert in the Environmental Impact Assessment process shall be the Chairman of the SEIAA.
- (5) The State Government or Union territory Administration shall forward the names of the Members and the Chairman referred in sub- paragraph 3 to 4 above to the Central Government and the Central Government shall constitute the SEIAA as an authority for the purposes of this notification within thirty days of the date of receipt of the names.
- (6) The non-official Member and the Chairman shall have a fixed term of three years (from the date of the publication of the notification by the Central Government constituting the authority).
- (7) All decisions of the SEIAA shall be unanimous and taken in a meeting.

**4. Categorization of projects and activities:-**

- (i) All projects and activities are broadly categorized in to two categories - Category A and Category B, based on the spatial extent of potential impacts and potential impacts on human health and natural and man made resources.

(ii) All projects or activities included as Category 'A' in the Schedule, including expansion and modernization of existing projects or activities and change in product mix, shall require prior environmental clearance from the Central Government in the Ministry of Environment and Forests (MoEF) on the recommendations of an Expert Appraisal Committee (EAC) to be constituted by the Central Government for the purposes of this notification;

(iii) All projects or activities included as Category 'B' in the Schedule, including expansion and modernization of existing projects or activities as specified in sub paragraph (ii) of paragraph 2, or change in product mix as specified in sub paragraph (iii) of paragraph 2, but excluding those which fulfill the General Conditions (GC) stipulated in the Schedule, *will* require prior environmental clearance from the State/Union territory Environment Impact Assessment Authority (SEIAA). The SEIAA shall base its decision on the recommendations of a State or Union territory level Expert Appraisal Committee (SEAC) as to be constituted for in this notification. In the absence of a duly constituted SEIAA or SEAC, a Category 'B' project shall be treated as a Category 'A' project;

#### **5. Screening, Scoping and Appraisal Committees:-**

The same Expert Appraisal Committees (EACs) at the Central Government and SEACs (hereinafter referred to as the (EAC) and (SEAC) at the State or the Union territory level shall screen, scope and appraise projects or activities in Category 'A' and Category 'B' respectively. EAC and SEAC's shall meet at least once every month.

(a) The composition of the EAC shall be as given in Appendix VI. The SEAC at the State or the Union territory level shall be constituted by the Central Government in consultation with the concerned State Government or the Union territory Administration with identical composition;

(b) The Central Government may, with the prior concurrence of the concerned State Governments or the Union territory Administrations, constitute one SEAC for more than one State or Union territory for reasons of administrative convenience and cost;

(c) The EAC and SEAC shall be reconstituted after every three years;

(d) The authorised members of the EAC and SEAC, concerned, may inspect any site(s) connected with the project or activity in respect of which the prior environmental clearance is sought, for the purposes of screening or scoping or appraisal, with prior notice of at least seven days to the applicant, who shall provide necessary facilities for the inspection;

(e) The EAC and SEACs shall function on the principle of collective responsibility. The Chairperson shall endeavour to reach a consensus in each case, and if consensus cannot be reached, the view of the majority shall prevail.

#### **6. Application for Prior Environmental Clearance (EC):-**

An application seeking prior environmental clearance in all cases shall be made in the prescribed Form 1 annexed herewith and Supplementary Form 1A, if applicable, as given in Appendix II, after the identification of prospective site(s) for the project and/or activities to which the application relates, before commencing any construction activity, or preparation of land, at the site by the applicant. The applicant shall furnish, along with the application, a copy of the pre-feasibility project report except that, in case of construction projects or activities (item 8 of the Schedule) in addition to Form 1 and the Supplementary Form 1A, a copy of the conceptual plan shall be provided, instead of the pre-feasibility report.

## **7. Stages in the Prior Environmental Clearance (EC) Process for New Projects:-**

**7(i)** The environmental clearance process for new projects will comprise of a maximum of four stages, all of which may not apply to particular cases as set forth below in this notification. These four stages in sequential order are:-

- Stage (1) Screening (Only for Category ‘B’ projects and activities)
- Stage (2) Scoping
- Stage (3) Public Consultation
- Stage (4) Appraisal

### **I. Stage (1) - Screening:**

In case of Category ‘B’ projects or activities, this stage will entail the scrutiny of an application seeking prior environmental clearance made in Form 1 by the concerned State level Expert Appraisal Committee (SEAC) for determining whether or not the project or activity requires further environmental studies for preparation of an Environmental Impact Assessment (EIA) for its appraisal prior to the grant of environmental clearance depending up on the nature and location specificity of the project . The projects requiring an Environmental Impact Assessment report shall be termed Category ‘B1’ and remaining projects shall be termed Category ‘B2’ and will not require an Environment Impact Assessment report. For categorization of projects into B1 or B2 except item 8 (b), the Ministry of Environment and Forests shall issue appropriate guidelines from time to time.

### **II. Stage (2) - Scoping:**

(i) “Scoping”: refers to the process by which the Expert Appraisal Committee in the case of Category ‘A’ projects or activities, and State level Expert Appraisal Committee in the case of Category ‘B1’ projects or activities, including applications for expansion and/or modernization and/or change in product mix of existing projects or activities, determine detailed and comprehensive Terms Of Reference (TOR) addressing all relevant environmental concerns for the preparation of an Environment Impact Assessment (EIA) Report in respect of the project or activity for which prior environmental clearance is sought. The Expert Appraisal Committee or State level Expert Appraisal Committee concerned shall determine the Terms of Reference on the basis of the information furnished in the prescribed application Form1/Form 1A including Terms of Reference proposed by the applicant, a site visit by a sub- group of Expert Appraisal Committee or State level Expert Appraisal Committee concerned only if considered necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, Terms of Reference suggested by the applicant if furnished and other information that may be available with the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned. All projects and activities listed as Category ‘B’ in Item 8 of the Schedule (Construction/Township/Commercial Complexes /Housing) shall not require Scoping and will be appraised on the basis of Form 1/ Form 1A and the conceptual plan.

(ii) The Terms of Reference (TOR) shall be conveyed to the applicant by the Expert Appraisal Committee or State Level Expert Appraisal Committee as concerned within sixty days of the receipt of Form 1. In the case of Category A Hydroelectric projects Item 1(c) (i) of the Schedule the Terms of Reference shall be conveyed along with the clearance for pre-construction activities .If the Terms of Reference are not finalized and conveyed to the applicant within sixty days of the receipt of Form 1, the Terms of Reference suggested by the applicant shall be deemed as the final Terms of Reference approved for the EIA studies. The approved Terms of

Reference shall be displayed on the website of the Ministry of Environment and Forests and the concerned State Level Environment Impact Assessment Authority.

(iii) Applications for prior environmental clearance may be rejected by the regulatory authority concerned on the recommendation of the EAC or SEAC concerned at this stage itself. In case of such rejection, the decision together with reasons for the same shall be communicated to the applicant in writing within sixty days of the receipt of the application.

### III. Stage (3) - Public Consultation:

(i) "Public Consultation" refers to the process by which the concerns of local affected persons and others who have plausible stake in the environmental impacts of the project or activity are ascertained with a view to taking into account all the material concerns in the project or activity design as appropriate. All Category 'A' and Category B1 projects or activities shall undertake Public Consultation, except the following:-

- (a) modernization of irrigation projects (item 1(c) (ii) of the Schedule).
- (b) all projects or activities located within industrial estates or parks (item 7(c) of the Schedule) approved by the concerned authorities, and which are not disallowed in such approvals.
- (c) expansion of Roads and Highways (item 7 (f) of the Schedule) which do not involve any further acquisition of land.
- (d) all Building /Construction projects/Area Development projects and Townships (item 8).
- (e) all Category 'B2' projects and activities.
- (f) all projects or activities concerning national defence and security or involving other strategic considerations as determined by the Central Government.

(ii) The Public Consultation shall ordinarily have two components comprising of:-

(a) a public hearing at the site or in its close proximity- district wise, to be carried out in the manner prescribed in Appendix IV, for ascertaining concerns of local affected persons;

(b) obtain responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity.

(iii) the public hearing at, or in close proximity to, the site(s) in all cases shall be conducted by the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) concerned in the specified manner and forward the proceedings to the regulatory authority concerned within 45(forty five ) of a request to the effect from the applicant.

(iv) in case the State Pollution Control Board or the Union territory Pollution Control Committee concerned does not undertake and complete the public hearing within the specified period, and/or does not convey the proceedings of the public hearing within the prescribed period

directly to the regulatory authority concerned as above, the regulatory authority shall engage another public agency or authority which is not subordinate to the regulatory authority, to complete the process within a further period of forty five days,.

(v) If the public agency or authority nominated under the sub paragraph (iii) above reports to the regulatory authority concerned that owing to the local situation, it is not possible to conduct the public hearing in a manner which will enable the views of the concerned local persons to be freely expressed, it shall report the facts in detail to the concerned regulatory authority, which may, after due consideration of the report and other reliable information that it may have, decide that the public consultation in the case need not include the public hearing.

(vi) For obtaining responses in writing from other concerned persons having a plausible stake in the environmental aspects of the project or activity, the concerned regulatory authority and the State Pollution Control Board (SPCB) or the Union territory Pollution Control Committee (UTPCC) shall invite responses from such concerned persons by placing on their website the Summary EIA report prepared in the format given in Appendix IIIA by the applicant along with a copy of the application in the prescribed form , within seven days of the receipt of a written request for arranging the public hearing . Confidential information including non-disclosable or legally privileged information involving Intellectual Property Right, source specified in the application shall not be placed on the web site. The regulatory authority concerned may also use other appropriate media for ensuring wide publicity about the project or activity. The regulatory authority shall, however, make available on a written request from any concerned person the Draft EIA report for inspection at a notified place during normal office hours till the date of the public hearing. All the responses received as part of this public consultation process shall be forwarded to the applicant through the quickest available means.

(vii) After completion of the public consultation, the applicant shall address all the material environmental concerns expressed during this process, and make appropriate changes in the draft EIA and EMP. The final EIA report, so prepared, shall be submitted by the applicant to the concerned regulatory authority for appraisal. The applicant may alternatively submit a supplementary report to draft EIA and EMP addressing all the concerns expressed during the public consultation.

#### **IV. Stage (4) - Appraisal:**

(i) Appraisal means the detailed scrutiny by the Expert Appraisal Committee or State Level Expert Appraisal Committee of the application and other documents like the Final EIA report, outcome of the public consultations including public hearing proceedings, submitted by the applicant to the regulatory authority concerned for grant of environmental clearance. This appraisal shall be made by Expert Appraisal Committee or State Level Expert Appraisal Committee concerned in a transparent manner in a proceeding to which the applicant shall be invited for furnishing necessary clarifications in person or through an authorized representative. On conclusion of this proceeding, the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall make categorical recommendations to the regulatory authority concerned either for grant of prior environmental clearance on stipulated terms and conditions, or rejection of the application for prior environmental clearance, together with reasons for the same.

(ii) The appraisal of all projects or activities which are not required to undergo public consultation, or submit an Environment Impact Assessment report, shall be carried out on the basis of the prescribed application Form 1 and Form 1A as applicable, any other relevant

validated information available and the site visit wherever the same is considered as necessary by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned.

(iii) The appraisal of an application shall be completed by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned within sixty days of the receipt of the final Environment Impact Assessment report and other documents or the receipt of Form 1 and Form 1 A, where public consultation is not necessary and the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee shall be placed before the competent authority for a final decision within the next fifteen days. The prescribed procedure for appraisal is given in Appendix V ;

**7(ii). Prior Environmental Clearance (EC) process for Expansion or Modernization or Change of product mix in existing projects:**

All applications seeking prior environmental clearance for expansion with increase in the production capacity beyond the capacity for which prior environmental clearance has been granted under this notification or with increase in either lease area or production capacity in the case of mining projects or for the modernization of an existing unit with increase in the total production capacity beyond the threshold limit prescribed in the Schedule to this notification through change in process and or technology or involving a change in the product –mix shall be made in Form I and they shall be considered by the concerned Expert Appraisal Committee or State Level Expert Appraisal Committee within sixty days, who will decide on the due diligence necessary including preparation of EIA and public consultations and the application shall be appraised accordingly for grant of environmental clearance.

**8. Grant or Rejection of Prior Environmental Clearance (EC):**

(i) The regulatory authority shall consider the recommendations of the EAC or SEAC concerned and convey its decision to the applicant within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned or in other words within one hundred and five days of the receipt of the final Environment Impact Assessment Report, and where Environment Impact Assessment is not required, within one hundred and five days of the receipt of the complete application with requisite documents, except as provided below.

(ii) The regulatory authority shall normally accept the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned. In cases where it disagrees with the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, the regulatory authority shall request reconsideration by the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned within forty five days of the receipt of the recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned while stating the reasons for the disagreement. An intimation of this decision shall be simultaneously conveyed to the applicant. The Expert Appraisal Committee or State Level Expert Appraisal Committee concerned, in turn, shall consider the observations of the regulatory authority and furnish its views on the same within a further period of sixty days. The decision of the regulatory authority after considering the views of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall be final and conveyed to the applicant by the regulatory authority concerned within the next thirty days.

(iii) In the event that the decision of the regulatory authority is not communicated to the applicant within the period specified in sub-paragraphs (i) or (ii) above, as applicable, the



applicant may proceed as if the environment clearance sought for has been granted or denied by the regulatory authority in terms of the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned.

(iv) On expiry of the period specified for decision by the regulatory authority under paragraph (i) and (ii) above, as applicable, the decision of the regulatory authority, and the final recommendations of the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned shall be public documents.

(v) Clearances from other regulatory bodies or authorities shall not be required prior to receipt of applications for prior environmental clearance of projects or activities, or screening, or scoping, or appraisal, or decision by the regulatory authority concerned, unless any of these is sequentially dependent on such clearance either due to a requirement of law, or for necessary technical reasons.

(vi) Deliberate concealment and/or submission of false or misleading information or data which is material to screening or scoping or appraisal or decision on the application shall make the application liable for rejection, and cancellation of prior environmental clearance granted on that basis. Rejection of an application or cancellation of a prior environmental clearance already granted, on such ground, shall be decided by the regulatory authority, after giving a personal hearing to the applicant, and following the principles of natural justice.

#### **9. Validity of Environmental Clearance (EC):**

The “Validity of Environmental Clearance” is meant the period from which a prior environmental clearance is granted by the regulatory authority, or may be presumed by the applicant to have been granted under sub paragraph (iv) of paragraph 7 above, to the start of production operations by the project or activity, or completion of all construction operations in case of construction projects (item 8 of the Schedule), to which the application for prior environmental clearance refers. The prior environmental clearance granted for a project or activity shall be valid for a period of ten years in the case of River Valley projects (item 1(c) of the Schedule), project life as estimated by Expert Appraisal Committee or State Level Expert Appraisal Committee subject to a maximum of thirty years for mining projects and five years in the case of all other projects and activities. However, in the case of Area Development projects and Townships [item 8(b)], the validity period shall be limited only to such activities as may be the responsibility of the applicant as a developer. This period of validity may be extended by the regulatory authority concerned by a maximum period of five years provided an application is made to the regulatory authority by the applicant within the validity period, together with an updated Form 1, and Supplementary Form 1A, for Construction projects or activities (item 8 of the Schedule). In this regard the regulatory authority may also consult the Expert Appraisal Committee or State Level Expert Appraisal Committee as the case may be.

#### **10. Post Environmental Clearance Monitoring:**

(i) It shall be mandatory for the project management to submit half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions in hard and soft copies to the regulatory authority concerned, on 1<sup>st</sup> June and 1<sup>st</sup> December of each calendar year.

(ii) All such compliance reports submitted by the project management shall be public documents. Copies of the same shall be given to any person on application to the concerned regulatory authority. The latest such compliance report shall also be displayed on the web site of the concerned regulatory authority.

**11. Transferability of Environmental Clearance (EC):**

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor, or by the transferee with a written “no objection” by the transferor, to, and by the regulatory authority concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period. No reference to the Expert Appraisal Committee or State Level Expert Appraisal Committee concerned is necessary in such cases.

**12. Operation of EIA Notification, 1994, till disposal of pending cases:**

From the date of final publication of this notification the Environment Impact Assessment (EIA) notification number S.O.60 (E) dated 27<sup>th</sup> January, 1994 is hereby superseded, except in suppression of the things done or omitted to be done before such suppression to the extent that in case of all or some types of applications made for prior environmental clearance and pending on the date of final publication of this notification, the Central Government may relax any one or all provisions of this notification except the list of the projects or activities requiring prior environmental clearance in Schedule I , or continue operation of some or all provisions of the said notification, for a period not exceeding one year from the date of issue of this notification.

[No. J-11013/56/2004-IA-II (I)]

(R.CHANDRAMOHAN)  
JOINT SECRETARY TO THE GOVERNMENT OF INDIA

**SCHEDULE**

(See paragraph 2 and 7)

**LIST OF PROJECTS OR ACTIVITIES REQUIRING PRIOR ENVIRONMENTAL CLEARANCE**

Project or Activity		Category with threshold limit		Conditions if any
		A	B	
<b>1</b>		<b>Mining, extraction of natural resources and power generation (for a specified production capacity)</b>		
(1)	(2)	(3)	(4)	(5)
<b>1(a)</b>	Mining of minerals	<p>≥ 50 ha. of mining lease area</p> <p>Asbestos mining irrespective of mining area</p>	<p>&lt;50 ha</p> <p>≥ 5 ha .of mining lease area.</p>	<p>General Condition shall apply</p> <p><u>Note</u> Mineral prospecting (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey</p>
<b>1(b)</b>	Offshore and onshore oil and gas exploration, development & production	All projects		<p><u>Note</u> Exploration Surveys (not involving drilling) are exempted provided the concession areas have got previous clearance for physical survey</p>
<b>1(c)</b>	River Valley projects	<p>(i) ≥ 50 MW hydroelectric power generation;</p> <p>(ii) ≥ 10,000 ha. of culturable command area</p>	<p>(i) &lt; 50 MW ≥ 25 MW hydroelectric power generation;</p> <p>(ii) &lt; 10,000 ha. of culturable command area</p>	General Condition shall apply
<b>1(d)</b>	Thermal Power Plants	<p>≥ 500 MW (coal/lignite/naphtha &amp; gas based);</p> <p>≥ 50 MW (Pet coke diesel and all other fuels -)</p>	<p>&lt; 500 MW (coal/lignite/naphtha &amp; gas based);</p> <p>&lt;50 MW</p> <p>≥ 5MW (Pet coke ,diesel and all other fuels )</p>	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
1(e)	Nuclear power projects and processing of nuclear fuel	All projects	-	
2		<b>Primary Processing</b>		
2(a)	Coal washeries	≥ 1 million ton/annum throughput of coal	<1million ton/annum throughput of coal	General Condition shall apply  (If located within mining area the proposal shall be appraised together with the mining proposal)
2 (b)	Mineral beneficiation	≥ 0.1million ton/annum mineral throughput	< 0.1million ton/annum mineral throughput	General Condition shall apply  (Mining proposal with Mineral beneficiation shall be appraised together for grant of clearance)

<b>3</b>				
<b>Materials Production</b>				
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
<b>3(a)</b>	Metallurgical industries (ferrous & non ferrous)	a) Primary metallurgical industry All projects  b) Sponge iron manufacturing $\geq 200$ TPD  c) Secondary metallurgical processing industry  All toxic and heavy metal producing units $\geq 20,000$ tonnes /annum  -	Sponge iron manufacturing $<200$ TPD  Secondary metallurgical processing industry  i.) All toxic and heavy metal producing units $<20,000$ tonnes /annum  ii.) All other non-toxic secondary metallurgical processing industries  $>5000$ tonnes/annum	General Condition shall apply for Sponge iron manufacturing
<b>3(b)</b>	Cement plants	$\geq 1.0$ million tonnes/annum production capacity	$<1.0$ million tonnes/annum production capacity. All Stand alone grinding units	General Condition shall apply

<b>4</b>	<b>Materials Processing</b>			
<b>(1)</b>	<b>(2)</b>	<b>(3)</b>	<b>(4)</b>	<b>(5)</b>
<b>4(a)</b>	Petroleum refining industry	All projects	-	-
<b>4(b)</b>	Coke oven plants	≥2,50,000 tonnes/annum -	<2,50,000 & ≥25,000 tonnes/annum	-
<b>4(c)</b>	Asbestos milling and asbestos based products	All projects	-	-
<b>4(d)</b>	Chlor-alkali industry	≥300 TPD production capacity or a unit located outside the notified industrial area/estate	<300 TPD production capacity and located within a notified industrial area/estate	Specific Condition shall apply  No new Mercury Cell based plants will be permitted and existing units converting to membrane cell technology are exempted from this Notification
<b>4(e)</b>	Soda ash Industry	All projects	-	-
<b>4(f)</b>	Leather/skin/hide processing industry	New projects outside the industrial area or expansion of existing units outside the industrial area	All new or expansion of projects located within a notified industrial area/estate	Specific condition shall apply
<b>5</b>	<b>Manufacturing/Fabrication</b>			
<b>5(a)</b>	Chemical fertilizers	All projects	-	-
<b>5(b)</b>	Pesticides industry and pesticide specific intermediates (excluding formulations)	All units producing technical grade pesticides	-	-

(1)	(2)	(3)	(4)	(5)
<b>5(c)</b>	Petro-chemical complexes (industries based on processing of petroleum fractions & natural gas and/or reforming to aromatics)	All projects -	-	-
<b>5(d)</b>	Manmade fibres manufacturing	Rayon	Others	General Condition shall apply
<b>5(e)</b>	Petrochemical based processing (processes other than cracking & reformation and not covered under the complexes)	Located out side the notified industrial area/ estate -	Located in a notified industrial area/ estate	Specific Condition shall apply
<b>5(f)</b>	Synthetic organic chemicals industry (dyes & dye intermediates; bulk drugs and intermediates excluding drug formulations; synthetic rubbers; basic organic chemicals, other synthetic organic chemicals and chemical intermediates)	Located out side the notified industrial area/ estate	Located in a notified industrial area/ estate	Specific Condition shall apply
<b>5(g)</b>	Distilleries	(i)All Molasses based distilleries  (ii) All Cane juice/ non-molasses based distilleries $\geq 30$ KLD	All Cane juice/non-molasses based distilleries - <30 KLD	General Condition shall apply
<b>5(h)</b>	Integrated paint industry	-	All projects	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
5(i)	Pulp & paper industry excluding manufacturing of paper from waste paper and manufacture of paper from ready pulp with out bleaching	Pulp manufacturing and Pulp& Paper manufacturing industry -	Paper manufacturing industry without pulp manufacturing	General Condition shall apply
5(j)	Sugar Industry	- -	≥ 5000 tcd cane crushing capacity	General Condition shall apply
5(k)	Induction/arc furnaces/cupola furnaces 5TPH or more	- -	All projects	General Condition shall apply
6		<b>Service Sectors</b>		
6(a)	Oil & gas transportation pipe line (crude and refinery/ petrochemical products), passing through national parks /sanctuaries/coral reefs /ecologically sensitive areas including LNG Terminal	All projects -		-



(1)	(2)	(3)	(4)	(5)
<b>6(b)</b>	Isolated storage & handling of hazardous chemicals (As per threshold planning quantity indicated in column 3 of schedule 2 & 3 of MSIHC Rules 1989 amended 2000)	-	All projects	General Condition shall apply
<b>7</b>		<b>Physical Infrastructure including Environmental Services</b>		
<b>7(a)</b>	Air ports	All projects	-	-
<b>7(b)</b>	All ship breaking yards including ship breaking units	All projects	-	-
<b>7(c)</b>	Industrial estates/ parks/ complexes/ areas, export processing Zones (EPZs), Special Economic Zones (SEZs), Biotech Parks, Leather Complexes.	If at least one industry in the proposed industrial estate falls under the Category A, entire industrial area shall be treated as Category A, irrespective of the area.  Industrial estates with area greater than 500 ha. and housing at least one Category B industry.	-Industrial estates housing at least one Category B industry and area <500 ha.  Industrial estates of area > 500 ha. and not housing any industry belonging to Category A or B.	Special condition shall apply  Note: Industrial Estate of area below 500 ha. and not housing any industry of category A or B does not require clearance.
<b>7(d)</b>	Common hazardous waste treatment, storage and disposal facilities (TSDFs)	All integrated facilities having incineration & landfill or incineration alone	All facilities having land fill only	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
7(e)	Ports, Harbours	≥ 5 million TPA of cargo handling capacity (excluding fishing harbours)	< 5 million TPA of cargo handling capacity and/or ports/ harbours ≥10,000 TPA of fish handling capacity	General Condition shall apply
7(f)	Highways	i) New National High ways; and  ii) Expansion of National High ways greater than 30 KM, involving additional right of way greater than 20m involving land acquisition and passing through more than one State.	i) New State High ways; and  ii) Expansion of National / State Highways greater than 30 km involving additional right of way greater than 20m involving land acquisition.	General Condition shall apply
7(g)	Aerial ropeways		All projects	General Condition shall apply
7(h)	Common Effluent Treatment Plants (CETPs)		All projects	General Condition shall apply
7(i)	Common Municipal Solid Waste Management Facility (CMSWMF)		All projects	General Condition shall apply

(1)	(2)	(3)	(4)	(5)
<b>8</b>		<b>Building /Construction projects/Area Development projects and Townships</b>		
<b>8(a)</b>	Building and Construction projects		≥20000 sq.mtrs and <1,50,000 sq.mtrs. of built-up area#	#(built up area for covered construction; in the case of facilities open to the sky, it will be the activity area )
<b>8(b)</b>	Townships and Area Development projects.		Covering an area ≥ 50 ha and or built up area ≥1,50,000 sq .mtrs ++	++All projects under Item 8(b) shall be appraised as Category B1

**Note:-****General Condition (GC):**

Any project or activity specified in Category 'B' will be treated as Category A, if located in whole or in part within 10 km from the boundary of: (i) Protected Areas notified under the Wild Life (Protection) Act, 1972, (ii) Critically Polluted areas as notified by the Central Pollution Control Board from time to time, (iii) Notified Eco-sensitive areas, (iv) inter-State boundaries and international boundaries.

**Specific Condition (SC):**

If any Industrial Estate/Complex / Export processing Zones /Special Economic Zones/Biotech Parks / Leather Complex with homogeneous type of industries such as Items 4(d), 4(f), 5(e), 5(f), or those Industrial estates with pre –defined set of activities (not necessarily homogeneous, obtains prior environmental clearance, individual industries including proposed industrial housing within such estates /complexes will not be required to take prior environmental clearance, so long as the Terms and Conditions for the industrial estate/complex are complied with (Such estates/complexes must have a clearly identified management with the legal responsibility of ensuring adherence to the Terms and Conditions of prior environmental clearance, who may be held responsible for violation of the same throughout the life of the complex/estate).

## APPENDIX I

(See paragraph – 6)

### FORM 1

**(I) Basic Information**

Name of the Project:

Location / site alternatives under consideration:

Size of the Project: \*

Expected cost of the project:

Contact Information:

Screening Category:

- *Capacity corresponding to sectoral activity (such as production capacity for manufacturing, mining lease area and production capacity for mineral production, area for mineral exploration, length for linear transport infrastructure, generation capacity for power generation etc.,)*

**(II) Activity**

1. **Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)**

S.No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)		
1.2	Clearance of existing land, vegetation and buildings?		
1.3	Creation of new land uses?		
1.4	Pre-construction investigations e.g. bore houses, soil testing?		
1.5	Construction works?		

1.6	Demolition works?		
1.7	Temporary sites used for construction works or housing of construction workers?		
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations		
1.9	Underground works including mining or tunneling?		
1.10	Reclamation works?		
1.11	Dredging?		
1.12	Offshore structures?		
1.13	Production and manufacturing processes?		
1.14	Facilities for storage of goods or materials?		
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?		
1.16	Facilities for long term housing of operational workers?		
1.17	New road, rail or sea traffic during construction or operation?		
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?		
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?		
1.20	New or diverted transmission lines or pipelines?		
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?		
1.22	Stream crossings?		
1.23	Abstraction or transfers of water from ground or surface waters?		
1.24	Changes in water bodies or the land surface affecting drainage or run-off?		

1.25	Transport of personnel or materials for construction, operation or decommissioning?		
1.26	Long-term dismantling or decommissioning or restoration works?		
1.27	Ongoing activity during decommissioning which could have an impact on the environment?		
1.28	Influx of people to an area in either temporarily or permanently?		
1.29	Introduction of alien species?		
1.30	Loss of native species or genetic diversity?		
1.31	Any other actions?		

**2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):**

<b>S.No.</b>	<b>Information/checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities /rates, wherever possible) with source of information data</b>
2.1	Land especially undeveloped or agricultural land (ha)		
2.2	Water (expected source & competing users) unit: KLD		
2.3	Minerals (MT)		
2.4	Construction material – stone, aggregates, and / soil (expected source – MT)		
2.5	Forests and timber (source – MT)		
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)		
2.7	Any other natural resources (use appropriate standard units)		

**3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.**

<b>S.No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</b>
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)		
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)		
3.3	Affect the welfare of people e.g. by changing living conditions?		
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,		
3.5	Any other causes		

**4. Production of solid wastes during construction or operation or decommissioning (MT/month)**

<b>S.No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</b>
4.1	Spoil, overburden or mine wastes		
4.2	Municipal waste (domestic and or commercial wastes)		
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)		

4.4	Other industrial process wastes		
4.5	Surplus product		
4.6	Sewage sludge or other sludge from effluent treatment		
4.7	Construction or demolition wastes		
4.8	Redundant machinery or equipment		
4.9	Contaminated soils or other materials		
4.10	Agricultural wastes		
4.11	Other solid wastes		

**5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr)**

<b>S.No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</b>
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources		
5.2	Emissions from production processes		
5.3	Emissions from materials handling including storage or transport		
5.4	Emissions from construction activities including plant and equipment		
5.5	Dust or odours from handling of materials including construction materials, sewage and waste		



5.6	Emissions from incineration of waste		
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)		
5.8	Emissions from any other sources		

**6. Generation of Noise and Vibration, and Emissions of Light and Heat:**

<b>S.No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data with source of information data</b>
6.1	From operation of equipment e.g. engines, ventilation plant, crushers		
6.2	From industrial or similar processes		
6.3	From construction or demolition		
6.4	From blasting or piling		
6.5	From construction or operational traffic		
6.6	From lighting or cooling systems		
6.7	From any other sources		

**7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:**

<b>S.No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</b>
7.1	From handling, storage, use or spillage of hazardous materials		
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)		
7.3	By deposition of pollutants emitted to air into the land or into water		
7.4	From any other sources		
7.5	Is there a risk of long term build up of pollutants in the environment from these sources?		

**8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment**

<b>S.No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</b>
8.1	From explosions, spillages, fires etc from storage, handling, use or production of hazardous substances		
8.2	From any other causes		
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?		

**9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality**

<b>S. No.</b>	<b>Information/Checklist confirmation</b>	<b>Yes/No</b>	<b>Details thereof (with approximate quantities/rates, wherever possible) with source of information data</b>
9.1	<p>Lead to development of supporting, lities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:</p> <ul style="list-style-type: none"> <li>• Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.)</li> <li>• housing development</li> <li>• extractive industries</li> <li>• supply industries</li> <li>• other</li> </ul>		
9.2	Lead to after-use of the site, which could have an impact on the environment		
9.3	Set a precedent for later developments		
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects		

**(III) Environmental Sensitivity**

<b>S.No.</b>	<b>Areas</b>	<b>Name/ Identity</b>	<b>Aerial distance (within 15 km.) Proposed project location boundary</b>
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value		

2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration		
4	Inland, coastal, marine or underground waters		
5	State, National boundaries		
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas		
7	Defence installations		
8	Densely populated or built-up area		
9	Areas occupied by sensitive man-made land uses ( <i>hospitals, schools, places of worship, community facilities</i> )		
10	Areas containing important, high quality or scarce resources ( <i>ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals</i> )		
11	Areas already subjected to pollution or environmental damage. ( <i>those where existing legal environmental standards are exceeded</i> )		
12	Areas susceptible to natural hazard which could cause the project to present environmental problems ( <i>earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions</i> )		

**(IV). Proposed Terms of Reference for EIA studies**

## APPENDIX II

(See paragraph 6)

**FORM-1 A (only for construction projects listed under item 8 of the Schedule)**

### **CHECK LIST OF ENVIRONMENTAL IMPACTS**

**(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed environmental management plan & monitoring programme)**

#### **1. LAND ENVIRONMENT**

**(Attach panoramic view of the project site and the vicinity)**

1.1. Will the existing landuse get significantly altered from the project that is not consistent with the surroundings? (Proposed landuse must conform to the approved Master Plan / Development Plan of the area. Change of landuse if any and the statutory approval from the competent authority be submitted). Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

1.2. List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

1.3. What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities, details of the existing landuse, disturbance to the local ecology).

1.4. Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given).

1.5. Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)

1.6. What are the quantities of earthwork involved in the construction activity-cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc.)

1.7. Give details regarding water supply, waste handling etc during the construction period.

1.8. Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)

1.9. Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)

#### **2. WATER ENVIRONMENT**

2.1. Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

- 2.2. What is the capacity (dependable flow or yield) of the proposed source of water?
- 2.3. What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)
- 2.4. How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)
- 2.5. Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)
- 2.6. What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)
- 2.7. Give details of the water requirements met from water harvesting? Furnish details of the facilities created.
- 2.8. What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long term basis? Would it aggravate the problems of flooding or water logging in any way?
- 2.9. What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)
- 2.10. What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)
- 2.11. How is the storm water from within the site managed?(State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels)
- 2.12. Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)
- 2.13. What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)
- 2.14. Give details of dual plumbing system if treated waste used is used for flushing of toilets or any other use.

### **3. VEGETATION**

- 3.1. Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with it's unique features, if any)

3.2. Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

3.3. What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale)

#### **4. FAUNA**

4.1. Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

4.2. Any direct or indirect impacts on the avifauna of the area? Provide details.

4.3. Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna

#### **5. AIR ENVIRONMENT**

5.1. Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions)

5.2. What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.

5.3. Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.

5.4. Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

5.5. Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.

5.6. What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details.

#### **6. AESTHETICS**

6.1. Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

6.2. Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

6.3. Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

6.4. Are there any anthropological or archaeological sites or artefacts nearby? State if any other significant features in the vicinity of the proposed site have been considered.

#### **7. SOCIO-ECONOMIC ASPECTS**

7.1. Will the proposal result in any changes to the demographic structure of local population? Provide the details.

7.2. Give details of the existing social infrastructure around the proposed project.

7.3. Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?

## **8. BUILDING MATERIALS**

8.1. May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

8.2. Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

8.3. Are recycled materials used in roads and structures? State the extent of savings achieved?

8.4. Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

## **9. ENERGY CONSERVATION**

9.1. Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

9.2. What type of, and capacity of, power back-up to you plan to provide?

9.3. What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

9.4. What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.

9.5. Does the layout of streets & buildings maximise the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.

9.6. Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?

9.7. Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.

9.8. What are the likely effects of the building activity in altering the micro-climates? Provide a self assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?



9.9. What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R values of the individual components.

9.10. What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

9.11. If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics.

9.12. What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.

9.13. To what extent the non-conventional energy technologies are utilised in the overall energy consumption? Provide details of the renewable energy technologies used.

### **10. Environment Management Plan**

The Environment Management Plan would consist of all mitigation measures for each item wise activity to be undertaken during the construction, operation and the entire life cycle to minimize adverse environmental impacts as a result of the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the site including fire.

### APPENDIX III

(See paragraph 7

#### GENERIC STRUCTURE OF ENVIRONMENTAL IMPACT ASSESMENT DOCUMENT

S.NO	EIA STRUCTURE	CONTENTS
1.	Introduction	<ul style="list-style-type: none"> <li>• Purpose of the report</li> <li>• Identification of project &amp; project proponent</li> <li>• Brief description of nature, size, location of the project and its importance to the country, region</li> <li>• Scope of the study – details of regulatory scoping carried out (As per Terms of Reference)</li> </ul>
2.	Project Description	<ul style="list-style-type: none"> <li>• Condensed description of those aspects of the project (based on project feasibility study), likely to cause environmental effects. Details should be provided to give clear picture of the following: <ul style="list-style-type: none"> <li>• Type of project</li> <li>• Need for the project</li> <li>• Location (maps showing general location, specific location, project boundary &amp; project site layout)</li> <li>• Size or magnitude of operation (incl. Associated activities required by or for the project)</li> <li>• Proposed schedule for approval and implementation</li> <li>• Technology and process description</li> <li>• Project description. Including drawings showing project layout, components of project etc. Schematic representations of the feasibility drawings which give information important for EIA purpose</li> <li>• Description of mitigation measures incorporated into the project to meet environmental standards, environmental operating conditions, or other EIA requirements (as required by the scope)</li> <li>• Assessment of New &amp; untested technology for the risk of technological failure</li> </ul> </li> </ul>

3.	Description of the Environment	<ul style="list-style-type: none"> <li>• Study area, period, components &amp; methodology</li> <li>• Establishment of baseline for valued environmental components, as identified in the scope</li> <li>• Base maps of all environmental components</li> </ul>
4.	Anticipated Environmental Impacts & Mitigation Measures	<ul style="list-style-type: none"> <li>• Details of Investigated Environmental impacts due to project location, possible accidents, project design, project construction, regular operations, final decommissioning or rehabilitation of a completed project</li> <li>• Measures for minimizing and / or offsetting adverse impacts identified</li> <li>• Irreversible and Irretrievable commitments of environmental components</li> <li>• Assessment of significance of impacts (Criteria for determining significance, Assigning significance)</li> <li>• Mitigation measures</li> </ul>
5.	Analysis of Alternatives (Technology & Site)	<ul style="list-style-type: none"> <li>• In case, the scoping exercise results in need for alternatives:</li> <li>• Description of each alternative</li> <li>• Summary of adverse impacts of each alternative</li> <li>• Mitigation measures proposed for each alternative and</li> <li>• Selection of alternative</li> </ul>
6.	Environmental Monitoring Program	<ul style="list-style-type: none"> <li>• Technical aspects of monitoring the effectiveness of mitigation measures (incl. Measurement methodologies, frequency, location, data analysis, reporting schedules, emergency procedures, detailed budget &amp; procurement schedules)</li> </ul>
7.	Additional Studies	<ul style="list-style-type: none"> <li>• Public Consultation</li> <li>• Risk assessment</li> <li>• Social Impact Assessment. R&amp;R Action Plans</li> </ul>
8.	Project Benefits	<ul style="list-style-type: none"> <li>• Improvements in the physical infrastructure</li> <li>• Improvements in the social infrastructure</li> <li>• Employment potential –skilled; semi-skilled and unskilled</li> <li>• Other tangible benefits</li> </ul>

9.	Environmental Cost Benefit Analysis	If recommended at the Scoping stage
10.	EMP	<ul style="list-style-type: none"> <li>• Description of the administrative aspects of ensuring that mitigative measures are implemented and their effectiveness monitored, after approval of the EIA</li> </ul>
11	Summary & Conclusion (This will constitute the summary of the EIA Report )	<ul style="list-style-type: none"> <li>• Overall justification for implementation of the project</li> <li>• Explanation of how, adverse effects have been mitigated</li> </ul>
12.	Disclosure of Consultants engaged	<ul style="list-style-type: none"> <li>• The names of the Consultants engaged with their brief resume and nature of Consultancy rendered</li> </ul>

**APPENDIX III A**  
**(See paragraph 7)**

**CONTENTS OF SUMMARY ENVIRONMENTAL IMPACT ASSESSMENT**

The Summary EIA shall be a summary of the full EIA Report condensed to ten A-4 size pages at the maximum. It should necessarily cover in brief the following Chapters of the full EIA Report: -

1. Project Description
2. Description of the Environment
3. Anticipated Environmental impacts and mitigation measures
4. Environmental Monitoring Programme
5. Additional Studies
6. Project Benefits
7. Environment Management Plan

**APPENDIX IV**  
**(See paragraph 7)**

**PROCEDURE FOR CONDUCT OF PUBLIC HEARING**

1.0 The Public Hearing shall be arranged in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site(s) or in its close proximity District -wise, by the concerned State Pollution Control Board (SPCB) or the Union Territory Pollution Control Committee (UTPCC).

**2.0 The Process:**

2.1 The Applicant shall make a request through a simple letter to the Member Secretary of the SPCB or Union Territory Pollution Control Committee, in whose jurisdiction the project is located, to arrange the public hearing within the prescribed statutory period. In case the project site is extending beyond a State or Union Territory, the public hearing is mandated in each State or Union Territory in which the project is sited and the Applicant shall make separate requests to each concerned SPCB or UTPCC for holding the public hearing as per this procedure.

2.2 The Applicant shall enclose with the letter of request, at least 10 hard copies and an equivalent number of soft (electronic) copies of the draft EIA Report with the generic structure given in Appendix III including the Summary Environment Impact Assessment report in English and in the local language, prepared strictly in accordance with the Terms of Reference communicated after Scoping (Stage-2). Simultaneously the applicant shall arrange to forward copies, one hard and one soft, of the above draft EIA Report along with the Summary EIA report to the Ministry of Environment and Forests and to the following authorities or offices, within whose jurisdiction the project will be located:

- (a) District Magistrate/s
- (b) Zila Parishad or Municipal Corporation
- (c) District Industries Office
- (d) Concerned Regional Office of the Ministry of Environment and Forests

2.3 On receiving the draft Environmental Impact Assessment report, the above-mentioned authorities except the MoEF, shall arrange to widely publicize it within their respective jurisdictions requesting the interested persons to send their comments to the concerned regulatory authorities. They shall also make available the draft EIA Report for inspection electronically or otherwise to the public during normal office hours till the Public Hearing is over. The Ministry of Environment and Forests shall promptly display the Summary of the draft Environmental Impact Assessment report on its website, and also make the full draft EIA available for reference at a notified place during normal office hours in the Ministry at Delhi.

2.4 The SPCB or UTPCC concerned shall also make similar arrangements for giving publicity about the project within the State/Union Territory and make available the Summary of the draft Environmental Impact Assessment report (Appendix III A) for inspection in select offices or public libraries or panchayats etc. They shall also additionally

make available a copy of the draft Environmental Impact Assessment report to the above five authorities/offices viz, Ministry of Environment and Forests, District Magistrate etc.

### **3.0 Notice of Public Hearing:**

3.1 The Member-Secretary of the concerned SPCB or UTPCC shall finalize the date, time and exact venue for the conduct of public hearing within 7(seven) days of the date of receipt of the draft Environmental Impact Assessment report from the project proponent, and advertise the same in one major National Daily and one Regional vernacular Daily. A minimum notice period of 30(thirty) days shall be provided to the public for furnishing their responses;

3.2 The advertisement shall also inform the public about the places or offices where the public could access the draft Environmental Impact Assessment report and the Summary Environmental Impact Assessment report before the public hearing.

3.3 No postponement of the date, time, venue of the public hearing shall be undertaken, unless some untoward emergency situation occurs and only on the recommendation of the concerned District Magistrate the postponement shall be notified to the public through the same National and Regional vernacular dailies and also prominently displayed at all the identified offices by the concerned SPCB or Union Territory Pollution Control Committee;

3.4 In the above exceptional circumstances fresh date, time and venue for the public consultation shall be decided by the Member –Secretary of the concerned SPCB or UTPCC only in consultation with the District Magistrate and notified afresh as per procedure under 3.1 above.

### **4.0 The Panel**

4.1 The District Magistrate or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC, shall supervise and preside over the entire public hearing process.

### **5.0 Videography**

5.1 The SPCB or UTPCC shall arrange to video film the entire proceedings. A copy of the videotape or a CD shall be enclosed with the public hearing proceedings while forwarding it to the Regulatory Authority concerned.

### **6.0 Proceedings**

6.1 The attendance of all those who are present at the venue shall be noted and annexed with the final proceedings.

6.2 There shall be no quorum required for attendance for starting the proceedings.

6.3 A representative of the applicant shall initiate the proceedings with a presentation on the project and the Summary EIA report.

6.4 Every person present at the venue shall be granted the opportunity to seek information or clarifications on the project from the Applicant. The summary of the public

hearing proceedings accurately reflecting all the views and concerns expressed shall be recorded by the representative of the SPCB or UTPCC and read over to the audience at the end of the proceedings explaining the contents in the vernacular language and the agreed minutes shall be signed by the District Magistrate or his or her representative on the same day and forwarded to the SPCB/UTPCC concerned.

6.5 A Statement of the issues raised by the public and the comments of the Applicant shall also be prepared in the local language and in English and annexed to the proceedings:

6.6 The proceedings of the public hearing shall be conspicuously displayed at the office of the Panchyats within whose jurisdiction the project is located, office of the concerned Zila Parishad, District Magistrate ,and the SPCB or UTPCC . The SPCB or UTPCC shall also display the proceedings on its website for general information. Comments, if any, on the proceedings which may be sent directly to the concerned regulatory authorities and the Applicant concerned.

#### **7.0 Time period for completion of public hearing**

7.1 The public hearing shall be completed within a period of 45 (forty five) days from date of receipt of the request letter from the Applicant. Therefore the SPCB or UTPCC concerned shall sent the public hearing proceedings to the concerned regulatory authority within 8(eight) days of the completion of the public hearing .The applicant may also directly forward a copy of the approved public hearing proceedings to the regulatory authority concerned along with the final Environmental Impact Assessment report or supplementary report to the draft EIA report prepared after the public hearing and public consultations.

7.2 If the SPCB or UTPCC fails to hold the public hearing within the stipulated 45(forty five) days, the Central Government in Ministry of Environment and Forests for Category 'A' project or activity and the State Government or Union Territory Administration for Category 'B' project or activity at the request of the SEIAA, shall engage any other agency or authority to complete the process, as per procedure laid down in this notification.



**APPENDIX –V**  
**(See paragraph 7)**

**PROCEDURE PRESCRIBED FOR APPRAISAL**

1. The applicant shall apply to the concerned regulatory authority through a simple communication enclosing the following documents where public consultations are mandatory: -

- Final Environment Impact Assessment Report [20(twenty) hard copies and 1 (one) soft copy)]
- A copy of the video tape or CD of the public hearing proceedings
- A copy of final layout plan (20 copies)
- A copy of the project feasibility report (1 copy)

2. The Final EIA Report and the other relevant documents submitted by the applicant shall be scrutinized in office within 30 days from the date of its receipt by the concerned Regulatory Authority strictly with reference to the TOR and the inadequacies noted shall be communicated electronically or otherwise in a single set to the Members of the EAC /SEAC enclosing a copy each of the Final EIA Report including the public hearing proceedings and other public responses received along with a copy of Form -1or Form 1A and scheduled date of the EAC /SEAC meeting for considering the proposal .

3. Where a public consultation is not mandatory and therefore a formal EIA study is not required, the appraisal shall be made on the basis of the prescribed application Form 1 and a pre-feasibility report in the case of all projects and activities other than Item 8 of the Schedule .In the case of Item 8 of the Schedule, considering its unique project cycle , the EAC or SEAC concerned shall appraise all Category B projects or activities on the basis of Form 1, Form 1A and the conceptual plan and stipulate the conditions for environmental clearance . As and when the applicant submits the approved scheme /building plans complying with the stipulated environmental clearance conditions with all other necessary statutory approvals, the EAC /SEAC shall recommend the grant of environmental clearance to the competent authority.

4. Every application shall be placed before the EAC /SEAC and its appraisal completed within 60 days of its receipt with requisite documents / details in the prescribed manner.

5. The applicant shall be informed at least 15 (fifteen) days prior to the scheduled date of the EAC /SEAC meeting for considering the project proposal.

6. The minutes of the EAC /SEAC meeting shall be finalised within 5 working days of the meeting and displayed on the website of the concerned regulatory authority. In case the project or activity is recommended for grant of EC, then the minutes shall clearly list out the specific environmental safeguards and conditions. In case the recommendations are for rejection, the reasons for the same shall also be explicitly stated.

## APPENDIX VI

(See paragraph 5)

### COMPOSITION OF THE SECTOR/ PROJECT SPECIFIC EXPERT APPRAISAL COMMITTEE (EAC) FOR CATEGORY A PROJECTS AND THE STATE/UT LEVEL EXPERT APPRAISAL COMMITTEES (SEACs) FOR CATEGORY B PROJECTS TO BE CONSTITUTED BY THE CENTRAL GOVERNMENT`

1. The Expert Appraisal Committees (EAC(s) and the State/UT Level Expert Appraisal Committees (SEACs) shall consist of only professionals and experts fulfilling the following eligibility criteria:

**Professional:** The person should have at least (i) 5 years of formal University training in the concerned discipline leading to a MA/MSc Degree, or (ii) in case of Engineering /Technology/Architecture disciplines, 4 years formal training in a professional training course together with prescribed practical training in the field leading to a B.Tech/B.E./B.Arch. Degree, or (iii) Other professional degree (e.g. Law) involving a total of 5 years of formal University training and prescribed practical training, or (iv) Prescribed apprenticeship/article ship and pass examinations conducted by the concerned professional association (e.g. Chartered Accountancy ),or (v) a University degree , followed by 2 years of formal training in a University or Service Academy (e.g. MBA/IAS/IFS). In selecting the individual professionals, experience gained by them in their respective fields will be taken note of.

**Expert:** A professional fulfilling the above eligibility criteria with at least 15 years of relevant experience in the field, or with an advanced degree (e.g. Ph.D.) in a concerned field and at least 10 years of relevant experience.

**Age:** Below 70 years. However, in the event of the non-availability of /paucity of experts in a given field, the maximum age of a member of the Expert Appraisal Committee may be allowed up to 75 years

2. The Members of the EAC shall be Experts with the requisite expertise and experience in the following fields /disciplines. In the event that persons fulfilling the criteria of “Experts” are not available, Professionals in the same field with sufficient experience may be considered:

- **Environment Quality Experts:** Experts in measurement/monitoring, analysis and interpretation of data in relation to environmental quality
- **Sectoral Experts in Project Management:** Experts in Project Management or Management of Process/Operations/Facilities in the relevant sectors.
- **Environmental Impact Assessment Process Experts:** Experts in conducting and carrying out Environmental Impact Assessments (EIAs) and preparation of Environmental Management Plans (EMPs) and other Management plans and who have wide expertise and knowledge of predictive techniques and tools used in the EIA process
- **Risk Assessment Experts**
- **Life Science Experts in floral and faunal management**
- **Forestry and Wildlife Experts**

- **Environmental Economics Expert with experience in project appraisal**

3. The Membership of the EAC shall not exceed 15 (fifteen) regular Members. However the Chairperson may co-opt an expert as a Member in a relevant field for a particular meeting of the Committee.

4. The Chairperson shall be an outstanding and experienced environmental policy expert or expert in management or public administration with wide experience in the relevant development sector.

5. The Chairperson shall nominate one of the Members as the Vice Chairperson who shall preside over the EAC in the absence of the Chairman /Chairperson.

6. A representative of the Ministry of Environment and Forests shall assist the Committee as its Secretary.

7. The maximum tenure of a Member, including Chairperson, shall be for 2 (two) terms of 3 (three) years each.

8. The Chairman / Members may not be removed prior to expiry of the tenure without cause and proper enquiry.



ANNEXIRE-10

## MINISTRY OF ENVIRONMENT AND FORESTS

## NOTIFICATION

New Delhi, the 1st December, 2009

S.O. 3067(E).— Whereas, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986 (29 of 1986), a draft notification for making certain amendments in the Environment Impact Assessment notification, 2006 issued vide no. S.O. 1533 (E), dated the 14<sup>th</sup> September, 2006, was published under sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, vide number S.O. 195 (E), dated the 19<sup>th</sup> January, 2009, inviting objections and suggestions from all the persons likely to be affected thereby, within a period of 60 days from the date of publication of the said notification in the Gazette of India;

And whereas, all objections and suggestions received in response to the above mentioned draft notification have been duly considered by the Central Government;

Now, therefore, in exercise of the powers conferred by sub-section (1) and clause (v) of sub-section (2) of section 3 of the Environment (Protection) Act, 1986, read with clause (d) of sub-rule (3) of rule 5 of the Environment (Protection) Rules, 1986, the Central Government hereby makes the following amendments in the said notification, namely:-

In the said notification, -

**I in para 3, for sub-para (7), the following shall be substituted, namely:—**

“(7) All decisions of the SEIAA shall be taken in a meeting and shall ordinarily be unanimous:

Provided that, in case a decision is taken by majority, the details of views, for and against it, shall be clearly recorded in the minutes and a copy thereof sent to MoEF.”

**II in para 4, in sub-para (iii), for the words and letters “In the absence of a duly constituted SEIAA or SEAC, a Category ‘B’ project shall be treated as a Category ‘A’ project”, the words and letters “In the absence of a duly constituted SEIAA or SEAC, a Category ‘B’ project shall be considered at the Central Level as a Category ‘B’ project” shall be substituted.**



**III in para 7(i), in sub-para III relating to Stage (3) - Public Consultation, in clause (i),—**

(i) after item (c), the following item shall be inserted, namely:—

“(cc) maintenance dredging provided the dredged material shall be disposed within port limits.”;

(ii) for item (d), the following item shall be substituted, namely:—

“(d) All Building or Construction projects or Area Development projects (which do not contain any category ‘A’ projects and activities) and Townships (item 8(a) and 8(b) in the Schedule to the notification).”.

**IV In para 10 relating to Post Environmental Clearance Monitoring,-**

(a) the existing sub-para (i) shall be renumbered as sub-para (ii) and before sub-para (ii) as so re-numbered, the following sub-para shall be inserted namely;

“(i) (a) In respect of Category ‘A’ projects, it shall be mandatory for the project proponent to make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the district or State where the project is located and in addition, this shall also be displayed in the project proponent’s website permanently. (b) In respect of Category ‘B’ projects, irrespective of its clearance by MoEF / SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environment clearance and the details of MoEF website where it is displayed. (c) The Ministry of Environment and Forests and the State/Union Territory Level Environmental Impact Assessment Authorities (SEIAAs), as the case may be, shall also place the environmental clearance in the public domain on Government portal. (d) The copies of the environmental clearance shall be submitted by the project proponents to the Heads of local bodies, Panchayats and Municipal Bodies in addition to the relevant offices of the Government who in turn has to display the same for 30 days from the date of receipt.”;

(b) existing sub-para (ii) shall be renumbered as sub-para (iii).

**V in the Schedule,—**

(i) for item 1(a) and the entries relating thereto, the following item and entries shall be substituted, namely:—

4372 GI/09-3

(1)	(2)	(3)	(4)	(5)
"1(a)	(i) Mining minerals. of	<p>≥50 ha of mining lease area in respect of non-coal mine lease.</p> <p>&gt;150 ha of mining lease area in respect of coal mine lease.</p> <p>Asbestos mining irrespective of mining area.</p>	<p>&lt;50 ha ≥5 ha of mining lease area in respect of non-coal mine lease.</p> <p>≤150 ha ≥5 ha of mining lease area in respect of coal mine lease.</p>	<p>General Condition shall apply.</p> <p>Note: Mineral prospecting is exempted.”;</p>
	(ii) Slurry pipelines (coal lignite and other ores) passing through national parks/ sanctuaries/ coral reefs, ecologically sensitive areas.	All projects.		

(ii) against item 1(c), for the entries in column (5), the following entries shall be substituted, namely:—

“General Condition shall apply.

Note: Irrigation projects not involving submergence or inter-state domain shall be appraised by the SEIAA as Category 'B' Projects.”;

(iii) against item 1(d),—

(a) in column (3), for the entries, the following entries shall be substituted, namely—

- “≥ 500 MW (coal/lignite/naphtha and gas based);
- ≥ 50 MW (Pet coke, diesel and all other fuels including refinery residual oil waste except biomass);

≥ 20 MW (based on biomass or non hazardous municipal solid waste as fuel).”;

**(b) in column (4), for the entries, the following entries shall be substituted, namely:—**

“<500MW (coal/lignite/naphtha and gas based);  
<50 MW ≥ 5 MW (Pet coke, diesel and all other fuels including refinery residual oil waste except biomass);  
<20MW > 15MW (based on biomass or non hazardous municipal solid waste as fuel).”;

**(c) in column (5), for the entries, the following entries shall be substituted, namely:—**

“General Condition shall apply.

Note:

- (i) Power plants up to 15 MW, based on biomass and using auxiliary fuel such as coal / lignite / petroleum products up to 15% are exempt.
- (ii) Power plants up to 15 MW, based on non-hazardous municipal waste and using auxiliary fuel such as coal / lignite / petroleum products up to 15% are exempt.
- (iii) Power plants using waste heat boiler without any auxiliary fuel are exempt.”;

**(iv) against item 3(a), in column (5), for the entries, the following entries shall be substituted, namely:—**

“General condition shall apply.

Note:

- (i) The recycling industrial units registered under the HSM Rules, are exempted.
- (ii) In case of secondary metallurgical processing industrial units, those projects involving operation of furnaces only such as induction and electric arc furnace, submerged arc furnace, and cupola with capacity more than 30,000 tonnes per annum (TPA) would require environmental clearance.
- (iii) Plant / units other than power plants (given against entry no. 1(d) of the schedule), based on municipal solid waste (non-hazardous) are exempted.”.

- (v) **against item 4(b), in column (5), for the entry, the following entry shall be substituted, namely:—**

"General conditions shall apply.";

- (vi) **against item 4(d),—**

- (a) **in column (4), for the entry, the following entry shall be substituted, namely:—**

- "(i) All projects irrespective of the size, if it is located in a Notified Industrial Area/Estate.  
(ii) < 300 tonnes per day (TPD) and located outside a Notified Industrial Area/ Estate.";

- (b) **in column (5), for the entry, the following entry shall be substituted, namely:—**

"General as well as specific conditions shall apply.

No new Mercury Cell based plants will be permitted and existing units converting to membrane cell technology are exempt from the notification.";

- (vii) **against item 4(f), in column (5), for the existing entry, the following entry shall be substituted, namely:—**

"General as well as specific conditions shall apply.";

- (viii) **against item 5(a),—**

- (a) **in column (3), for the existing entry, the following entry shall be substituted, namely:—**

"All projects except Single Super Phosphate.";

- (b) **in column (4), for the entry, the following entry shall be substituted, namely:—**

"Single Super Phosphate.";

**(ix) against item 5(e), in column (5), for the existing entry, the following entry shall be substituted, namely:—**

“General as well as specific conditions shall apply.”;

**(x) against item 5(f), in column (5), for the existing entry, the following entry shall be substituted, namely:—**

“General and specific conditions shall apply.” ;

**(xi) item 5(k) and the entries relating thereto shall be omitted;**

**(xii) against item 7(a),—**

**(a) in column (3), for the entry, the following entry shall be substituted, namely:—**

“All projects including airstrips, which are for commercial use.”;

**(b) in column (5), for the entry, the following entry shall be substituted, namely:—**

“Note:

Air strips, which do not involve bunkering/ refueling facility and or Air Traffic Control, are exempted.”;

**(xiii) against item 7(c), in column (5), for the entry, the following entry shall be substituted, namely:—**

“General as well as specific conditions shall apply.

Note:

1. Industrial Estate of area below 500 ha. and not housing any industry of Category 'A' or 'B' does not require clearance.
2. If the area is less than 500 ha. but contains building and construction projects > 20,000 Sq. mtr. and or development area more than 50 ha it will be treated as activity listed at serial no. 8(a) or 8(b) in the Schedule, as the case may be.”;



**(xiv) against item 7(e),—**

**(a) in column (2), for the entry, the following entry shall be substituted, namely:—**

“Ports, harbours, break waters, dredging.”

**(b) in column (5), for the entry, the following entry shall be substituted, namely:—**

“General Condition shall apply.

Note:

1. Capital dredging inside and outside the ports or harbors and channels are included;
2. Maintenance dredging is exempt provided it formed part of the original proposal for which Environment Management Plan (EMP) was prepared and environmental clearance obtained.”;

**(xv) against item 7(f),**

**(a) in column (4), for the entry, the following entry shall be substituted namely:-**

- “(i) All State Highway Projects; and
- (ii) State Highway expansion projects in hilly terrain (above 1,000 m AMSL) and or ecologically sensitive areas.”;

**(b) in column (5) for the existing entry, the following entry shall be substituted, namely:-**

“General Condition shall apply.

Note:

Highways include expressways.”;

**(xvi) against item 7(g),—**

**(a) in column (3), for the entry, the following entry shall be substituted, namely:—**

- "(i) All projects located at altitude of 1,000 mtr. and above.  
(ii) All projects located in notified ecologically sensitive areas.";

**(b) in column (4), for the entry, the following entry shall be substituted, namely:—**

"All projects except those covered in column (3).";

**(xvii) after the Schedule, in the 'Note', for sub-heading relating to 'General Condition (GC)', the following shall be substituted, namely:—**

**"General Condition (GC):**

Any project or activity specified in Category 'B' will be treated as Category 'A', if located in whole or in part within 10 km from the boundary of: (i) Protected areas notified under the Wildlife (Protection) Act, 1972; (ii) Critically polluted areas as identified by the Central Pollution Control Board from time to time; (iii) Eco-sensitive areas as notified under section 3 of the Environment (Protection) Act, 1986, such as, Mahabaleshwar Panchgani, Matheran, Pachmarhi, Dahanu, Doon Valley, and (iv) inter-State boundaries and international boundaries:

Provided that the requirement regarding distance of 10 km of the inter-State boundaries can be reduced or completely done away with by an agreement between the respective States or U.Ts sharing the common boundary in case the activity does not fall within 10 kilometres of the areas mentioned at item (i), (ii) and (iii) above."

**VI in the Appendix I, in Form I,—**

**(a) for item (I) relating to the Basic Information, the following shall be substituted, namely:—**

**"(I) Basic Information**

Serial Number	Item	Details
1.	Name of the project/s	
2.	S. No. in the schedule	

437291/09-5

3.	Proposed capacity/area/length/tonnage to be handled/command area/lease area/number of wells to be drilled	
4.	New/Expansion/Modernization	
5.	Existing Capacity/Area etc.	
6.	Category of Project i.e. 'A' or 'B'	
7.	Does it attract the general condition? If yes, please specify.	
8.	Does it attract the specific condition? If yes, please specify.	
9.	Location	
	Plot/Survey/Khasra No.	
	Village	
	Tehsil	
	District	
	State	
10.	Nearest railway station/airport along with distance in kms.	
11.	Nearest Town, city, District Headquarters along with distance in kms.	
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	
13.	Name of the applicant	
14.	Registered Address	
15.	Address for correspondence :	
	Name	
	Designation (Owner/Partner/CEO)	
	Address	
	Pin Code	
	E-mail	
	Telephone No.	
	Fax No.	
16.	Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet.	Village-District-State 1. 2. 3. ";
17.	Interlinked Projects	
18.	Whether separate application of interlinked project has been submitted?	
19.	If yes, date of submission	
20.	If no, reason	

21.	Whether the proposal involves approval/clearance under: if yes, details of the same and their status to be given. (a) The Forest (Conservation) Act, 1980 ? (b) The Wildlife (Protection) Act, 1972 ? (c) The C.R.Z Notification, 1991 ?	
22.	Whether there is any Government Order/Policy relevant/relating to the site?	
23.	Forest land involved (hectares)	
24.	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	

**(b) the following shall be inserted at the end, namely:—**

"I hereby given undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance give, if any to the project will be revoked at our risk and cost.

Date: \_\_\_\_\_  
Place: \_\_\_\_\_

Signature of the applicant  
With Name and Full Address  
(Project Proponent / Authorised Signatory)

**NOTE:**

1. The projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z Notification, 1991 for the activities to be located in the CRZ.
2. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the

- recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC)."
3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project."

**VII for Appendix IV, the following shall be substituted, namely:—**

**"APPENDIX IV  
(See paragraph 7)**

**PROCEDURE FOR CONDUCT OF PUBLIC HEARING**

1.0 The Public Hearing shall be arranged in a systematic, time bound and transparent manner ensuring widest possible public participation at the project site(s) or in its close proximity District-wise, by the concerned State Pollution Control Board (SPCB) or the Union Territory Pollution Control Committee (UTPCC).

**2.0 The Process:**

2.1 The applicant shall make a request through a simple letter to the Member Secretary of the SPCB or Union Territory Pollution Control Committee, in whose jurisdiction the project is located, to arrange the public hearing within the prescribed statutory period. In case the project site is covering more than one District or State or Union Territory, the public hearing is mandated in each District, State or Union Territory in which the project is located and the applicant shall make separate requests to each concerned SPCB or UTPCC for holding the public hearing as per this procedure.

2.2 The applicant shall enclose with the letter of request, at least 10 hard copies and an equivalent number of soft (electronic) copies of the draft EIA Report with the generic structure given in Appendix III including the Summary Environment Impact Assessment report in English and **in the official language of the state/local language**, prepared strictly in accordance with the Terms of Reference communicated after Scoping (Stage-2). Simultaneously the applicant shall arrange to forward copies, one hard and one soft, of the above draft EIA Report along with the Summary EIA report to the following authorities or offices, within whose jurisdiction the project will be located:

- (a) District Magistrate/**District collector/Deputy commissioner/s**
- (b) Zila Parishad or Municipal Corporation **or Panchayats Union**

- (c) District Industries Office
- (d) Urban Local Bodies (ULBs) / PRIs Concerned/**Development authorities**
- (e) Concerned Regional Office of the Ministry of Environment and Forests

2.3 On receiving the draft Environmental Impact Assessment report, the above-mentioned authorities except the Regional Office of MoEF, shall arrange to widely publicize it within their respective jurisdictions requesting the interested persons to send their comments to the concerned regulatory authorities. They shall also make available the draft EIA Report for inspection electronically or otherwise to the public during normal office hours till the Public Hearing is over.

2.4 The SPCB or UTPCC concerned shall also make similar arrangements for giving publicity about the project within the State/Union Territory and make available the Summary of the draft Environmental Impact Assessment report (Appendix III A) for inspection in select offices or public libraries or any other suitable location etc. They shall also additionally make available a copy of the draft Environmental Impact Assessment report to the above five authorities/offices as given in para 2.2.

### **3.0 Notice of Public Hearing:**

3.1 The Member-Secretary of the concerned SPCB or UTPCC shall finalize the date, time and exact venue for the conduct of public hearing within 7 (seven) days of the date of receipt of the draft Environmental Impact Assessment report from the project proponent, and advertise the same in **one** major National Daily and one Regional vernacular Daily / Official State Language. A minimum notice period of 30 (thirty) days shall be provided to the public for furnishing their responses;

3.2 The advertisement shall also inform the public about the places or offices where the public could access the draft Environmental Impact Assessment report and the Summary Environmental Impact Assessment report before the public hearing. In places where the newspapers do not reach, the Competent Authority should arrange to inform the local public about the public hearing by other means such as by way of beating of drums as well as advertisement / announcement on radio / television.

3.3 No postponement of the date, time, venue of the public hearing shall be undertaken, unless some untoward emergency situation occurs and then only on the recommendation of the concerned District Magistrate/District collector/Deputy commissioner, the postponement shall be notified to the public through the same National and Regional vernacular dailies and also prominently displayed at all the identified offices by the concerned SPCB or Union Territory Pollution Control Committee;

3.4 In the above exceptional circumstances, fresh date, time and venue for the public consultation shall be decided by the Member – Secretary of the concerned SPCB or UTPCC only in consultation with the District



Magistrate/**District Collector/Deputy Commissioner** and notified afresh as per procedure under 3.1 above.

#### 4.0 **Supervision and Presiding over the Hearing:**

4.1 The District Magistrate / District Collector / Deputy Commissioner or his or her representative not below the rank of an Additional District Magistrate assisted by a representative of SPCB or UTPCC, shall supervise and preside over the entire public hearing process.

#### 5.0 **Videography**

5.1 The SPCB or UTPCC shall arrange to video film the entire proceedings. A copy of the videotape or a CD shall be enclosed with the public hearing proceedings while forwarding it to the Regulatory Authority concerned.

#### 6.0 **Proceedings**

6.1 The attendance of all those who are present at the venue shall be noted and annexed with the final proceedings.

6.2 There shall be no quorum required for attendance for starting the proceedings.

6.3 A representative of the applicant shall initiate the proceedings with a presentation on the project and the Summary EIA report.

6.4 Persons present at the venue shall be granted the opportunity to seek information or clarifications on the project from the applicant. The summary of the public hearing proceedings accurately reflecting all the views and concerns expressed shall be recorded by the representative of the SPCB or UTPCC and read over to the audience at the end of the proceedings explaining the contents in the **local**/vernacular language and the agreed minutes shall be signed by the District Magistrate/**District Collector/Deputy Commissioner** or his or her representative on the same day and forwarded to the SPCB/UTPCC concerned.

6.5 A Statement of the issues raised by the public and the comments of the applicant shall also be prepared in the local language or the Official State language, as the case may be, and in English and annexed to the proceedings:

6.6 The proceedings of the public hearing shall be conspicuously displayed at the office of the Panchyats within whose jurisdiction the project is located, office of the concerned Zila Parishad, District Magistrate / **District collector / Deputy Commissioner**, and the SPCB or UTPCC. The SPCB or UTPCC shall also display the proceedings on its website for general information. Comments, if any, on the proceedings, may be sent directly to the concerned regulatory authorities and the applicant concerned.

## 7.0 Time period for completion of public hearing

7.1 The public hearing shall be completed within a period of forty five days from date of receipt of the request letter from the applicant. Thereafter the SPCB or UTPCC concerned shall sent the public hearing proceedings to the concerned regulatory authority within eight days of the completion of the public hearing. ***Simultaneously, a copy will also be provided to the project proponent.*** The applicant may also directly forward a copy of the approved public hearing proceedings to the regulatory authority concerned along with the final Environmental Impact Assessment report or supplementary report to the draft EIA report prepared after the public hearing and public consultations incorporating the concerns expressed in the public hearing along with action plan and financial allocation, item-wise, to address those concerns."

7.2 If the SPCB or UTPCC fails to hold the public hearing within the stipulated 45 (forty five) days, the Central government in Ministry of Environment and Forests for Category 'A' project or activity and the State Government or Union Territory Administration for Category 'B' project or activity at the request of the SEIAA, shall engage any other agency or authority to complete the process, as per procedure laid down in this Notification."

### VIII in Appendix V, for para 3, the following para shall be substituted, namely:—

"3. Where a public consultation is not mandatory, the appraisal shall be made on the basis of the prescribed application Form 1 and EIA report, in the case of all projects and activities other than Item 8 of the Schedule. In the case of Item 8 of the Schedule, considering its unique project cycle, the EAC or SEAC concerned shall appraise all Category B projects or activities on the basis of Form 1, Form 1A and the conceptual plan and make recommendations on the project regarding grant of environmental clearance or otherwise and also stipulate the conditions for environmental clearance."

[No. J-11013/56/2004-IA. II(I)]

G. K. PANDEY, Advisor

**Note:** The principal rules were published in the Gazette of India, Extraordinary, Part II, Section 3, Sub-section (ii) vide notification number S.O. 1533(E), dated the 14<sup>th</sup> September, 2006 and amended vide S.O. 1737(E), dated the 11<sup>th</sup> October, 2007.



जहाँ है हरियाली ।  
वहाँ है खुशहाली ॥

Ministry of Environment & Forests  
GOVERNMENT OF INDIA, NEW DELHI

Environmental Impact Assessment Guidance Manual  
for  
**AERIAL ROPEWAYS**



*Prepared by*



Administrative Staff College of India  
Bellavista, Khairatabad, Hyderabad

February 2010

An abstract graphic on the left side of the page, consisting of several overlapping, curved, ribbon-like shapes in various shades of green, ranging from light lime green to dark forest green. The shapes flow from the top left towards the bottom right, creating a sense of movement and depth.

**Environmental  
Impact Assessment Guidance Manual  
for**

**Aerial  
Ropeways**




---

## Foreword

---

The EIA Notification 2006 not only reengineered the entire EC process specified under the EIA Notification 1994 but also highlighted the need to introduce specific sectors/categories under the sectors such as Industry and Infrastructure and also introduced new sectors such as Construction to be brought in the ambit of the EC process based on their extent of impacts on environment. The EIA Notification 2006 has notified 39 developmental sectors, which require prior environmental clearance. Based on the capacity, the Projects have been categorised into Category A or B which has been further categorised as B1 or B2. The Ministry of Environment and Forests (MOEF) has so far constituted 25 State level Environmental Impact Assessment Authorities (SEIAs) and State Expert Appraisal Committees (SEACs) to appraise B category projects.

The need for Sector specific manuals and guidelines for appraisal of projects under the EIA Notification 2006 has been felt for some time with a view to bringing clarity in the EC process consists of Screening, Scoping, Public Consultation and Appraisal for the purpose of granting and expediting environmental clearance. This need was further reinforced after the constitution of various SEIAs and SEACs in the various States, who were assigned this task for the first time. It was also felt that Manuals on each Sector would help in standardisation of the quality of appraisal and in reducing inconsistencies between SEACs/SEIAAs in granting ECs for similar projects in different States.

The MOEF at the first instance decided to bring out EIA Sector Specific Manuals for 37 developmental projects and the preparation of EIA Manuals of ten of these Sectors was assigned to Administrative Staff College of India (ASCI), Hyderabad.

1. Mining
2. Mineral Beneficiation
3. Ports & Harbours
4. Airports
5. (A) Building Construction
5. (B) Townships
6. Asbestors
7. Highways
8. Coal Washery
9. Aerial Ropeways
10. Nuclear Power Plants, Nuclear Fuel Processing Plants and Nuclear Waste Management Plants



The Manual for the sectors contain Model TOR of that Sector, technological options and processes for a cleaner production and waste minimisation, wherever applicable, monitoring of environmental quality, related regulations, and procedure of obtaining EC if linked to other clearances for eg., CRZ, etc.

The draft Manuals were uploaded on the MOEF website and comments/responses received were considered and finalised. Since the environmental clearance process itself is a dynamic one dependent on developmental needs, technologies available and standards for cleaner environment for a sustainable development, these manuals would require regular updation in the future. I hope the Manuals in their present form are of use and we would appreciate receiving responses from various stakeholders for further improvements that could be taken up in the future.

I congratulate the entire team in the Administrative Staff College of India, Hyderabad, experts of the sectors who were involved in the preparation of the Manuals, members of the Core and Peer Committees of various sectors and various Resource persons whose inputs were indeed valuable in the preparation and finalisation of the Manuals.



(JAIRAM RAMESH)

MINISTER OF STATE FOR ENVIROMENT & FORESTS

5<sup>th</sup> May 2010







**Siripurapu K. Rao**

*M.A. (Cantab), Ph.D. (Cantab)*

**DIRECTOR GENERAL**



## Acknowledgements

Environmental Impact Assessment (EIA) is a planning tool generally accepted as an integral component of sound decision-making. EIA is to give the environment its due place in the decision-making process by clearly evaluating the environmental consequences of the proposed activity before action is taken. Early identification and characterization of critical environmental impacts allow the public and the government to form a view about the environmental acceptability of a proposed developmental project and what conditions should apply to mitigate or reduce those risks and impacts.

Environmental Clearance (EC) for certain developmental projects has been made mandatory by the Ministry of Environment & Forests through its Notification issued on 27.01.1994 under the provisions of Environment (Protection) Act, 1986. Keeping in view a decade of experience in the Environmental Clearance process and the demands from various stakeholders, the Ministry of Environment and Forests (MoEF) issued revised Notification on EC process in September 2006 and amended it in December 2009. It was considered necessary by MoEF to make available EIA guidance manuals for each of the development sector.

Accordingly, at the instance of the MoEF, the Administrative Staff College of India, with the assistance of experts, undertook the preparation of sector specific Terms of Reference (TOR) and specific guidance manual for Aerial Ropeways. I wish to thank **Mr. J M Mauskar**, IAS, Additional Secretary, Govt. of India MoEF for his continuing support during the preparation of the manuals. I wish to place on record also my sincere thanks to **Dr. B Sengupta**, former Member Secretary, Central Pollution Control Board and Chairman of the Core Committee for his help in the preparation of the manuals. His suggestions helped us a great deal in improving the technical quality of the manuals. **Mr M Parabrahmam**, Former advisor MoEF and Chairman of the Peer Committee II for this project, has given constant guidance to the ASCI project team. His vast experience has been immensely helpful in preparing these manuals. I would like to thank the officials of the Ministry, **Dr. Nalini Bhat** and **Dr. T Chandini**, for coordinating the project from the Ministry side and for providing guidance whenever needed. My thanks are also due to **Dr. Bharat Bhushan** and **Dr. A Senthil Vel** of MoEF for the valuable inputs they had given during our interactions with the Officials at Delhi and Hyderabad.

I thank **Dr. Valli Manickam**, Member of Faculty of ASCI, who, drawing on her experience, prepared the EIA guidance manual for the **Aerial Ropeways**. The efforts put by her are commendable.

I would like to thank all the Peer and Core Committee members for having given a valuable feed back in the preparation of the manual. I hope the manuals would prove to be useful to the community at large and to the experts working in this area in particular.

**26 February, 2010**

  
**S.K. Rao**

---

**ADMINISTRATIVE STAFF COLLEGE OF INDIA**

Bella Vista, Raj Bhavan Road, Hyderabad-500 082 (India)  
Tel: +91-40-2331-0852, Fax: 2332-1401 Email: skrao@asci.org.in

# CONTENTS

Chapter No.	Title	Page no.
	Foreword	
	Acknowledgements	
	Team	vii
	Core Committee	viii
	Peer Committee I	ix
	Abbreviations	x
	List of Tables	xi
	List of Annexures	xii
	Lists of Figures	xiii
	About the Manual	xiv
<b>Chapter 1</b>	<b>Introduction</b>	
	1.0 Preamble	1
	1.1 General Information on Aerial Ropeways	1
	1.2 Environmental Clearance Process	2
	1.3 Terms of Reference	3
	1.4 Validity of Environmental Clearance	3
	1.5 Post Environmental Clearance Monitoring	3
	1.6 Transferability of Environmental Clearance	4
	1.7 Generic Structure of Environmental Impact Assessment Document	7
	1.8 Profile of Project Proponent / Company	7
<b>Chapter 2</b>	<b>Project Description</b>	
	2.0 Background of the Project	9
	2.1 Description of the Project	9
	2.2 Manpower Requirement	10
	2.3 Project Implementation Schedule	10
<b>Chapter 3</b>	<b>Analysis of Alternatives (Technology and Site)</b>	
	3.0 General	11
	3.1 Alternate Site	11
	3.2 Technology	11
<b>Chapter 4</b>	<b>Description of Environment</b>	
	4.0 Introduction	13
	4.1 Land Environment	13
	4.2 Air Environment	13
	4.3 Noise Environment	14
	4.4 Water Environment	14
	4.5 Biological Environment	15
	4.6 Socio Economic and Health	15
	4.7 Solid Waste	15

<b>Chapter 5</b>	<b>Anticipated Impact and Mitigation Measures</b>	
	5.0 Introduction	17
	5.1 Land Environment	17
	5.4 Water Environment	17
	5.2 Air Environment	18
	5.3 Noise Environment	18
	5.5 Biological Environment	18
	5.6 Socio Economic and Health	19
	5.7 Solid Waste Environment	20
<b>Chapter 6</b>	<b>Environmental Monitoring Program</b>	
	6.0 General	21
<b>Chapter 7</b>	<b>Additional Studies</b>	
	7.0 General	23
	7.1 Items Identified by the Proponent	23
	7.2 Items Identified by the Regulatory Authority	23
	7.3 Items Identified by the Public and other Stakeholders	23
	7.4 Risk Assessment and Disaster Management Plan	23
	7.5 Natural Resource Conservation	29
	7.6 R&R Action Plan	29
<b>Chapter 8</b>	<b>Project Benefits</b>	
	8.0 General	31
<b>Chapter 9</b>	<b>Environmental Cost Benefit Analysis</b>	
	9.0 General	33
<b>Chapter 10</b>	<b>Environmental Management Plan</b>	
	10.0 General	35
	10.1 Components of EMP	35
	10.2 Environmental Cell	35
	10.3 Managements Issues with Reference to Safety of Passengers Using Ropeway	36
<b>Chapter 11</b>	<b>Summary and Conclusion</b>	
	11.0 General	39
<b>Chapter 12</b>	<b>Disclosure of the Consultants Engaged</b>	
	12.0 General	41
	<b>Bibliography</b>	45
	<b>Glossary</b>	46
	<b>Tables</b>	49
	<b>Annexures</b>	53
	<b>Questionnaire</b>	79

---

## Team

Project Coordination Ministry of Environment & Forests	<b>Dr. Nalini Bhat</b> Advisor, Ministry of Environment and Forests
	<b>Dr. T Chandini</b> Director, Ministry of Environment and Forests
Chairman, Core Committee & Peer Committee I	<b>Dr. B. Sengupta</b> Former Member Secretary, CPCB
Chairman, Peer Committee II	<b>Shri. M. Parabrahmam</b> Former Advisor, MoEF
Project Coordination Team ASCI	<b>Prof. VS Chary</b> Director Centre for Energy, Environment Urban Governance, and Infrastructure Development Administrative Staff College of India
	<b>Shri. G Bala Subramanyam</b> Advisor Environment Area, ASCI, Hyderabad
	<b>Dr. Valli Manickam</b> Area Chairperson Environment Area, ASCI & Project Coordinator

## Core Committee

<b>Dr. B. Sengupta</b> Former Member Secretary Central Pollution Control Board, New Delhi	<b>Chairman</b>
<b>Shri. M. Parabrahmam</b> Former Advisor, Ministry of Environment & Forests, New Delhi	
<b>Chairman</b> Karnataka Pollution Control Board	
<b>Dr. M. S. Narayanan</b> Former Chairman, Coal India, New Delhi	
<b>Dr. S. R. Wate</b> Head, EIA Division NEERI, Nagpur	
<b>Prof. P. G. Sastry</b> Former Chairman EAC (River Valley Projects), MoEF	
<b>Member Secretary</b> Rajasthan Pollution Control Board	
<b>Mrs. Rohini Devi</b> Director, HTCC, Sg -'G' ASL Representative of DRDO, Hyderabad	
<b>Dr. M. Irulappan</b> General Manager (Com), Representative of Airport Authority of India, New Delhi	
<b>Shri. V. K. Sharma</b> Head, Environment Division, Representative of NHAI, New Delhi	
<b>Shri A. K. Debnath</b> CG M, Central Mine Plan & Design Institute, Ranchi	
<b>Ms. Sarita Sawhny</b> Representative of Confederation of Indian Industry, New Delhi	



## Peer Committee I

<b>Dr. B. Sengupta</b> Former Member Secretary Central Pollution Control Board, New Delhi	<b>Chairman</b>
<b>Representative of CPCB</b> Regional office, Bangalore	
<b>Shri G. V. Raghava Rao</b> Former Superintending Engineer, AP Pollution Control Board	
<b>Dr. P.M. Raju</b> Representative of Vishakapatnam Port Trust	
<b>Shri. G. Udaya Bhaskar</b> GM-Env, Essar Group, Mumbai	
<b>Shri N. V. Bhasakara Rao</b> AP Pollution Control Board	
<b>Dr. Swarna Subba Rao</b> Director, Survey of India, Hyderabad	
<b>Shri. P. Janardhan Reddy</b> SPEQUEL, Hyderabad	
<b>Er. Nanda Kumar</b> Energy Conservation Mission, Institute of Engineers, Hyderabad	
<b>Shri. V.K. Sharma</b> Head of Environment Division, National Highway Authority of India, New Delhi	
<b>The Chief Planning Officer</b> Hyderabad Urban Development Authority	
<b>Representative of GMR</b> Samshabad International Airport Ltd	

## ABBREVIATIONS

ASCI	- Administrative Staff College of India
CPCB	- Central Pollution Control Board
CRZ	- Coastal Regulation Zone
CSR	- Corporate Social Responsibility
CGWB	- Central Ground Water Board
EAC	- Expert Appraisal Committee
EIA	- Environmental Impact Assessment
EC	- Environmental Clearance
ETP	- Effluent Treatment Plant
EMP	- Environmental Management Plan
DMP	- Disaster Management Plan
IA	- Impact Assessment
MoEF	- Ministry of Environment and Forests
R O	- Regional offices
R&R	- Rehabilitation and Resettlement
SEAC	- State Expert Appraisal Committee
SPCBs	- State Pollution Control Boards
STP	- Sewage Treatment Plant
TOR	- Terms of Reference

---

## List of Tables

Table No.	Title	Page No.
Table 4.1	Description of soil sampling locations	49
Table 4.2	Analysis of soil samples	49
Table 4.3	Description of ground water sampling locations	49
Table 4.4	Analysis of Ground water	49
Table 4.5	Description of surface water sampling locations	50
Table 4.6	Analysis of surface water	50
Table 4.7	Description of Ambient air quality monitoring stations	50
Table 4.8	Analysis of Ambient air quality	50
Table 4.9	Description of noise monitoring stations	51
Table 4.10	Demographic Profiles	51

## List of Annexures

Annexure No.	Title	Page No.
Annexure 1	TOR for aerial ropeways	53
Annexure 2	National Landuse / Land Cover Classification	63
Annexure 3	Sampling, Frequency & Method of Baseline Environment Monitoring	64
Annexure 4	Criteria for raw water used for organized community water supplies (surface and ground water) primary parameters	66
Annexure 5	National Ambient Air Quality Standards	68
Annexure 6	Ambient Air Quality Standards in respect of Noise	70
Annexure 7	List of critically polluted industrial cluster/area identified by CPCB	71
Annexure 8	Indian standards on wire ropes and wire products	74
Annexure 9	Testing of carrier	76
Annexure 10	Safety conditions	77

---

## List of Figures

Figure No.	Title	Page No.
Figure 1.1	Prior Environmental clearance process for category A projects	7
Figure 1.2	Prior Environmental clearance process for category B projects	8

## ABOUT THE MANUAL

Environmental Impact Notification S.O.1533 (E), dt.14th September 2006, as amended 2009, issued under Environment (Protection) Act 1986, has made it mandatory to obtain environmental clearance for scheduled development projects. The notification has classified projects under two categories 'A' & 'B'. Category A projects (including expansion and modernization of existing projects) require clearance from Ministry of Environment and Forest (MoEF), Govt. of India (GoI) and for category B from State Environmental Impact Assessment Authority (SEIAA), constituted by Government of India.

The existing manual on Environmental Impact Assessment (EIA) of MoEF, is common for all the sectors requiring prior environmental clearance. Considering the diversity in all sectors related to infrastructure and industrial development projects, MoEF launched a program for development of sector specific technical EIA guidance manuals. The EIA guidance manual will help the project proponent/consultant in the preparation of the EIA report. It also helps the regulatory authority to review the report as well as the public to become aware of the related environmental issues. This EIA guidance manual accordingly addresses the related environmental concerns for the specific sector - "Aerial Ropeways". This manual consists of terms of reference (TOR), manual and questionnaire.

The sector specific manual consists of twelve chapters, which correspond to the generic structure given as per EIA notification 2006, as amended Dec 2009.

### **Chapter 1: Introduction**

This chapter contains the general information on the aerial ropeway projects, major sources of environmental impact in respect of aerial ropeway projects and details of the environmental clearance process.

### **Chapter 2: Project Description**

In this chapter the proponent should furnish detailed description of the proposed project, such as the type of the project, need for the project, project location, land availability, utilities (power and water supply) and infrastructure facilities such as roads and other requirements. The project implementation schedule, estimated cost of development should also be included.

### **Chapter 3: Analysis of Alternatives (Technology and Site)**

This chapter gives details of various alternatives both in respect of location of site and technologies to be deployed, in case the initial scoping exercise considers such a need.

### **Chapter 4: Description of Environment**

This chapter should cover baseline data in the project area and study area.

### **Chapter 5: Impact Analysis and Mitigation Measures**

This chapter describes the anticipated impact on the environment and mitigation measures. The method of assessment of impact including studies carried out, modelling techniques adopted to assess the impact where pertinent should be elaborated in this chapter. It should give the details of the impact on the baseline parameters, both during the construction and operational phases and suggests the mitigation measures to be implemented by the proponent.



---

### **Chapter 6: Environmental Monitoring Program**

This chapter should cover the planned environmental monitoring program. It should also include the technical aspects of monitoring the effectiveness of mitigation measures.

### **Chapter 7: Additional Studies**

This chapter should cover the details of the additional studies required in addition to those specified in the ToR and which are necessary to cater to more specific issues applicable to the particular project.

### **Chapter 8: Project Benefits**

This chapter should cover the benefits accruing to the locality, neighbourhood, region and nation as a whole. It should bring out details of benefits by way of improvements in the physical infrastructure, social infrastructure, employment potential and other tangible benefits.

### **Chapter 9: Environmental Cost Benefit Analysis**

This chapter should cover on Environmental Cost Benefit Analysis of the project.

### **Chapter 10: Environmental Management Plan**

This chapter should comprehensively present the Environmental Management Plan (EMP), which includes the administrative and technical setup, summary matrix of EMP, the cost involved to implement the EMP, both during the construction and operational phase and provisions made towards the same in the cost estimates of project construction and operation. This chapter should also describe the proposed post-monitoring scheme as well as inter-organizational arrangements for effective implementation of the mitigation measures.

### **Chapter 11: Summary and Conclusions**

This chapter gives the summary of the full EIA report condensed to ten A-4 size pages at the maximum. It should provide the overall justification for implementation of the project and should explain how the adverse effects have been mitigated.

### **Chapter 12: Disclosure of Consultants**

This chapter should include the names of the consultants engaged with their brief resume and nature of consultancy rendered.

This manual is meant to provide general guidance for preparation of EIA report. The contents of the manual are to be considered as version 1.0 (2010). An updation / revision of the manual will be taken up as per the requirements. In case of interpretation of any question related to law, the provisions of the original law and the Rules made thereunder with various Government directions/resolutions will have to be read and followed. In case of amendment to the original Act/Rules /Notifications made thereunder, the provisions as amended from time to time shall be applicable.



# INTRODUCTION

---

## 1.0 Preamble

Environment plays a vital role in over all development of the country. Recognizing the importance of environment, Ministry of Environment and Forest, Government of India had formulated policies and procedures governing the industrial and other developmental activities to prevent indiscriminate exploitation of natural resources and to promote integration of environmental concern in developmental projects.

This manual provides information and guidance on Environmental Impact Assessment in aerial ropeway projects. It is intended as a resource for those who are involved in EIA practice. Particular emphasis is given to concepts, procedures and tools that are used currently or are potentially relevant in preparing environmental impact assessment reports for clearance from regulatory agencies. EIA is a technical exercise, to predict environmental impact, assess their significance, and provide recommendations for their mitigation. The assessment covers construction and operation of the development and future expansion. EIA report covers a wide range of technical disciplines and covers areas such as noise and vibration, air quality, ecology, water quality & hydrology, archaeology & cultural heritage, landscape & visual character, sustainability and socio-economics. The EIA report will describe how the project has been improved through the EIA process and what alternatives were considered.

## 1.1 General Information on Aerial Ropeways

Aerial ropeway development may have a wide range of impact on the environment through activities like construction work, reclamation, excavation and other related activities. Aerial ropeway development and operation should therefore be planned with careful consideration of their environmental impact. The preparation of EIA report and implementation of EMP is essential for effectively managing these adverse effects. Aerial ropeways are particularly important in regions where the facility of surmounting natural barriers gives them an advantage over railways or road in high altitude regions. The choice of a particular type depends upon the length and topography of the route, the type and intensity of traffic and the relative inaccessibility of the site.

### Passenger Ropeway Categories Include:

- *aerial tramways (single and double reversible)* which are defined as Ropeways on which passengers are transported in cable-supported carriers and are not in contact with the ground or snow surface, and in which the carrier(s) reciprocate between terminals. Aerial tramway systems may have a single carrier, or group of carriers, that move back and forth on a single path of travel; or, two carriers, or groups of carriers, oscillating between terminals on two (usually very nearly parallel) paths of travel. The systems may be monocable or bicable.

- *aerial lifts (detachable lifts, chair lifts, and similar equipment)* which are defined as Ropeways on which passengers are transported in cabins or on chairs and that circulate in one direction between terminals without reversing the travel path.

- *surface lifts (T-bar lifts, J-bar lifts, platter lifts, and similar equipment)* which are defined as Ropeways on which passengers are propelled by means of a circulating overhead wire rope while remaining in contact with the ground or snow surface. Connection between the passengers and the wire rope is by means of a device attached to, and circulating with, the haul rope, known as a "towing device."

## 1.2 Environmental Clearance Process

The objective of the EIA Notification, 2006 and its amendments of Dec, 2009 is to set procedures of environmental clearance before establishment of identified nature and size. The suitability of site proposed for a proposed development is one of primary concerns in according environmental clearance to a project.

All aerial ropeway projects as per the EIA notification of 2006 and its amendments of Dec, 2009 fall under:

Project Activity		Category With Threshold Limit		General Conditions (GC) Apply*
		A	B	
7(g)	Aerial Ropeways	All projects located at altitude of 1000 mts and above All projects located in notified ecological sensitive areas	All projects except covered in column 3	

\* "Any project or activity specified in Category 'B' will be treated as Category 'A' if located in whole or in part within 10 km from the boundary of: (i) Protected areas notified under the Wildlife (Protection) Act, 1972; (ii) Critically polluted areas as identified by the Central Pollution Control Board from time to time; (iii) Eco-sensitive areas as notified under section 3 of the Environment (Protection) Act, 1986, such as, Mahabaleswar Panchangi, Matheran, Pachmarhi, Dahanu, Doon Valley and (iv) inter-state boundaries and international boundaries

Provided that the requirement regarding distance of 10km of the inter-state boundaries can be reduced or completely done away with by an agreement between the respective states or U.Ts sharing the common boundary in the case the activity does not fall within 10 kilometers of the areas mentioned at item (i), (ii) and (iii) above

This manual addresses the important issues to be discussed in the environmental impact assessment of aerial ropeway projects. Fig.1 shows the EIA clearance process for the aerial ropeway

projects. The EIA report should incorporate the page numbers of various chapters, sections and sub-sections, tables, appendices, drawings and figures etc., with titles should be clearly indicated under the heading contents.

### 1.3 Terms of Reference

The terms of reference (TOR) pertinent to preparation of EIA study reports for construction of aerial ropeways is given as Annexure 1 to this EIA guidance Manual. In addition, the proponent is required to identify specific issues, if any, pertinent to the project and include those issues also in the TOR for preparation of EIA and EMP report upon approval of the TOR by the Expert Appraisal Committee.

- ▶ The projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a CRZ map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z (at the stage of TOR) and the recommendations of the State Coastal Zone Management Authority (at the stage of EC). Simultaneous action shall also be take to obtain the requisite clearance under the provisions of the CRZ notification, 1991 for the activities to be located in the CRZ
- ▶ The projects to be located within 10km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory corridors of wild animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon (at the stage of EC)
- ▶ All correspondence with the Ministry of Environment & Forests including submission "of application for TOR/Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project"

Ref:- EIA amendment 2009

### 1.4 Validity of Environmental Clearance

The prior environmental clearance granted is valid for a period of five years. The regulatory authority concerned may extend this validity period by a maximum period of five years.

### 1.5 Post Environmental Clearance Monitoring

For category A projects, it shall be mandatory for the project proponent to make public the environmental clearance granted for their project along with the environmental conditions and safeguards at their cost by prominently advertising it at least in two local newspapers of the district or state where the project is located and in addition, this shall also be displayed in the project proponent's website permanently.

For category B projects, irrespective of its clearance by MoEF/SEIAA, the project proponent shall prominently advertise in the newspapers indicating that the project has been accorded environmental clearance and the details of MoEF website where it is displayed.

The project management should submit half-yearly compliance reports in respect of the stipulated prior environmental clearance terms and conditions on 1st June and 1st December of each calendar year. All such reports should be public documents.

### **1.6 Transferability of Environmental Clearance**

A prior environmental clearance granted for a specific project or activity to an applicant may be transferred during its validity to another legal person entitled to undertake the project or activity on application by the transferor or the transferee with a written "no objection" by the transferor, to, and by the regulatory authorities concerned, on the same terms and conditions under which the prior environmental clearance was initially granted, and for the same validity period.



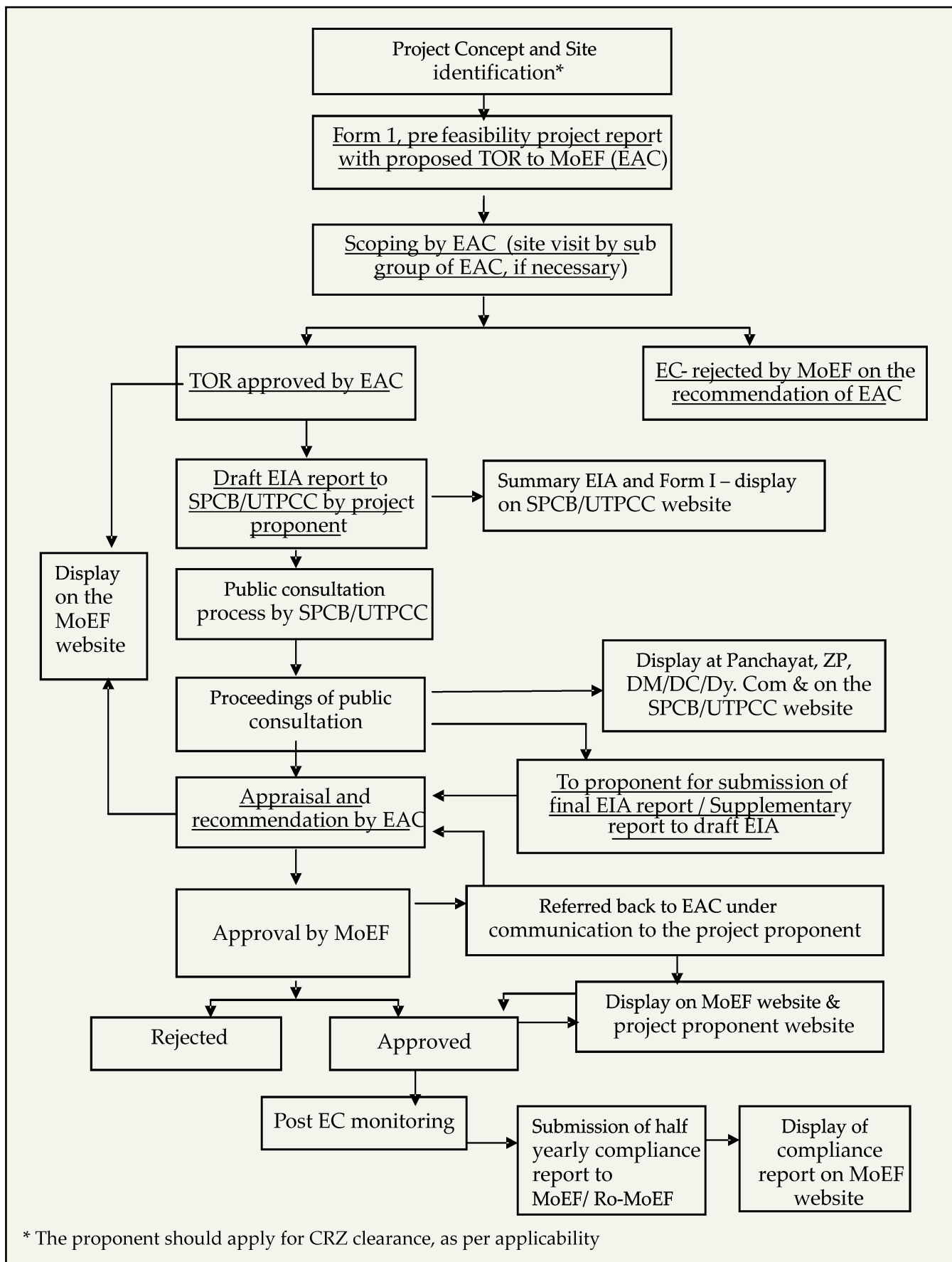


Figure 1.1: Prior Environmental Clearance Process for Category A projects

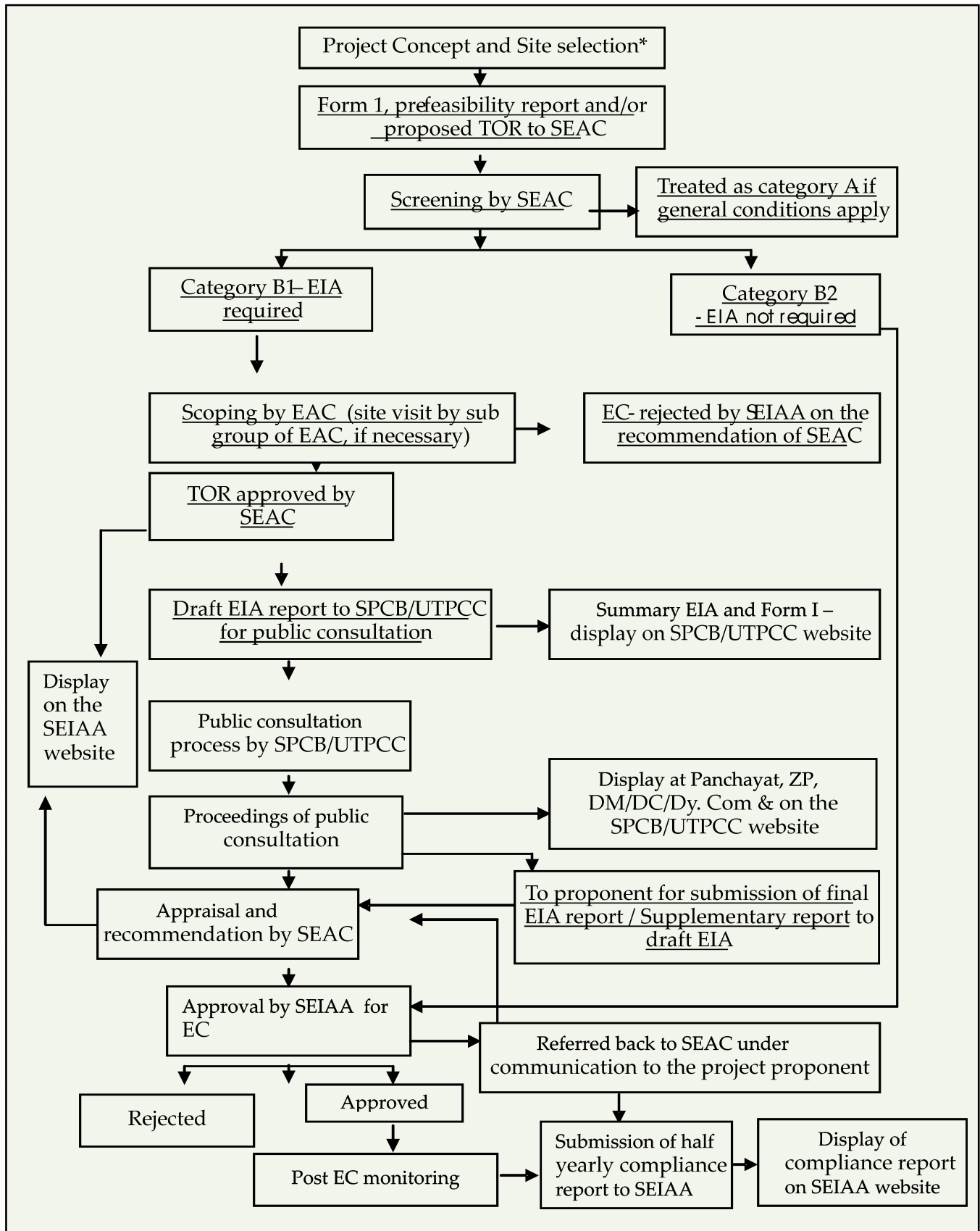


Figure 1.2: Prior Environmental Clearance Process for Category B projects

## 1.7 Generic Structure of Environmental Impact Assessment Document

In terms of the EIA notification of the MoEF dated 14<sup>th</sup> September 2006, the generic structure of the EIA document should be as under:

- ▶ Introduction
- ▶ Project Description
- ▶ Analysis of Alternatives (Technology and site)
- ▶ Description of the Environment
- ▶ Anticipated Impact & Mitigation Measures
- ▶ Environmental Monitoring Programme
- ▶ Additional Studies
- ▶ Project Benefits
- ▶ Environmental Cost Benefit Analysis
- ▶ Environmental Management Plan
- ▶ Summary and Conclusion
- ▶ Disclosure of Consultants Engaged

## 1.8 Profile of Project Proponent / Company

The details of the project proponent along with details of their address for communication / contact should be clearly mentioned in the introduction of the EIA Study. The profile of project proponent / company should include briefly the historical background on commercial activities carried out.



## 2.0 Background of the Project

The background of the project gives broad description of the area in which construction of aerial ropeway is proposed. It will highlight briefly the current existing scenario and the need for the construction of aerial ropeway in this area.

### 2.1 Description of the Project

The following should be given by the proponent in this chapter:

- ▶ The description of the project should include:
  - ▶ the selection of the terminal locations
  - ▶ the alignment selected giving proper reasons
  - ▶ tower locations and angle stations
  - ▶ emergency rescue
  - ▶ construction methods
  - ▶ types of cable car systems to be used
- ii. Location (use maps showing general location, specific location, project boundary and project site layout showing its alignment).

#### *Essential Maps to be provided*

- ▶ Detailed layout plan of proposed project development, access/approach roads, landscape, and waste disposal etc; to be given. Layout plan of proposed development of built up areas with covered construction such as rest rooms, emergency care management, DG set rooms, etc; are to be given.
- ▶ A map of the project area and 10 km area from boundary of the proposed / existing project area, delineating project areas notified under the wild life (Protection) Act, 1972/critically polluted areas as notified by the CPCB from time to time /notified eco-sensitive areas/inter state boundaries and international boundaries
- ▶ A map covering aerial distance of a 15 km from the proposed project boundary delineating environmental sensitive areas as specified in column no 9(iii), Form I of EIA notification dated 14th Sept 2006
- ▶ Land use map of the study area to 1:25,000 scale based on recent satellite imagery of the project area and 500meter from the proposed project boundary delineating the cropping pattern, wastelands, forest area and built up areas, water bodies, human habitation and other specific features such as railway tracks, ports, airports, roads, major industries etc.

- ▶ Area drainage contour map of the project area and 500 meters from the proposed project area should be clearly indicated. In case of any proposed diversion of nallah/ canal/river, should also be shown in the map.
- ▶ Detailed ground surveyed map in 1:5000 scale showing the existing features falling within the right of way namely, trees, structures including archaeological and religious, monuments etc. The natural topography and landscape should be given clearly.

Details regarding the design and installation of the aerial ropeway are to be given. Some of the important issues like capacity and speed of the carrier, location and alignment of the installation, width of clearing, clearance (horizontal and vertical), structures and foundations, communications, loading and unloading areas, DG sets and fuel handling procedures.

Clear details of the procedures for passenger removal from stranded carriers are to be given. The terminal and base stations are to be also detailed out clearly. The latitude and longitude of the stations are to be mentioned. Details of speed and acceleration, stops and shut downs, types of brakes to be used are to be given. The estimated number of passengers to be transported per day along with the time taken for each trip is to given clearly.

The factors which should influence site selection for the development of a project are the infrastructure and utilities available, expected water and power requirement by the proposed new aerial ropeway and feasibility study of how much is available and what is the source of supply for power and water. Provision of alternate source of power in case of emergency also is to be made.

Site selection should be carried out in light of a holistic perspective of land use, development intensity, social well being and preservation of the environment.

## 2.2 Manpower Requirement

The project should indicate the requirement of various categories of manpower such as skilled, semi-skilled, unskilled workers, technicians, engineers, managers and methods for implementing and up gradation of specialized skills, where required, should be mentioned in the EIA report.

## 2.3 Project Implementation Schedule

The proponent should also submit the detailed project implementation schedule bar chart, CPM / PERT etc., duly bringing out interrelationship of major activities, including the mitigation measures that were studied for the project development and to be implemented in the year one itself to avoid adverse effects on the environment.



## ANALYSIS OF ALTERNATIVES (Technology and Site)

### 3.0 General

Clear description of each alternative, and summary of the impact - adverse and positive with each site and technology, and selection of alternatives are to be explained in detail. The following points should be included in this section: -

- ▶ Description of various alternatives like locations or layouts
- ▶ Description of each alternative
- ▶ Summary of adverse / positive impact of each alternative
- ▶ Selection of alternative

### 3.1 Alternate Site

Different alignments are to be studied with their drawbacks examined in detail in terms of engineering feasibility, practicality of construction and operation, landscape, visual and environmental impact. Out of the various alternatives, the reasons for selecting the proposed site should be given in this section. The benefits and drawbacks of each alignments are to be clearly mentioned with reference to technical studies and environmental aspects.

Alternative site analysis

	Alternate 1	Alternate 2	Alternate 3
Heritage / cultural			
Visual Impact			
Traffic / parking / access			
Noise			
Socio - economic			
Vegetation			
Wild life			
Others			

### 3.2 Technology

The type of aerial ropeway systems to be used in this project is to be detailed out. The reasons for selecting the proposed type along with the comparison with other types and its advantages are to be highlighted.



## DESCRIPTION OF THE ENVIRONMENT

### 4.0 Introduction

Environmental data to be considered in relation to aerial ropeway development include (a) land, (b) air, (c) noise, (d) water, (e) biological, (f) socio-economic and health environment and (g) solid waste. Hence it is necessary to ascertain the baseline data of these environmental facets.

#### *Study Area:*

Primary data by measurements, field surveys and secondary data from secondary sources are to be collected in the study area within 500 meters radius from the project boundary. Beyond 500 meters and upto 15kms (as mentioned at column 9(iii) of form 1 of EIA notification 2006), only secondary data is to be collected. Primary data should cover one season other than monsoon and secondary data for one full year.

Map of the study area clearly delineating the location of various monitoring stations (air, noise, water and soil) superimposed with location of habitats are to be shown. Monitoring should be done as per CPCB guidelines.

### 4.1 Land Environment

Data on the land availability is to be ascertained from local authorities, revenue records etc. justification for the proposed quantum of the area is to be given. Baseline data to be given includes description of existing situation of the land at the proposed project area including description of terrain, hill slopes, inland topography, slope and elevation. Study of land use pattern, habitation cropping pattern, forest cover, environmentally sensitive places etc, by employing remote sensing techniques and also through secondary data sources are to be detailed.

Baseline data is to be provided on rock types, and history of any volcanic activity, seismicity and associated hazards. The land use pattern covering forestland, total irrigated land, non-irrigated land, cultivable waste, are to be calculated and given as a map (Annexure 2) at locations where transfer facilities are likely to be provided enroute.

Soil data including type, classification, characteristics, soil properties etc., are important from engineering considerations for design of structures, porosity and permeability, sub soil permeability, inherent fertility etc. Baseline data of the soil, results of investigations carried out to be provided for the project area. The samples are to be collected and analyzed as per CPCB norms and given as shown in Table 4.1 and the results are to be presented as shown in Table 4.2 (Annexure 3)

### 4.2 Water Environment

The physiography of the land will control the drainage pattern in the region. The drainage pattern in the area is to be drawn. Hydro-geological settings and the ground water levels are to be examined and presented.

Baseline data of ground water including data of pH, dissolved solids, suspended solids, coli-form bacteria, oil is to be collected for one season. Usage purpose of ground water, if any, is to be indicated. If ground water is being utilized details of the requirements and availability and its use are to be given.

Baseline data on location of surface water like water bodies, lakes, their dimensions, present quality and their utility is to be provided. Details of the water bodies in the project area should be described specifically. Water quality is to be monitored for one season. Ground water, surface water and wastewater generated in the study area is to be collected as per CPCB norms (Annexure 3). The baseline data of ground water and surface water quality for the season is to be established. The description of the water sampling locations may be given as in Table 4.3 for ground water and Table 4.5 for surface water sampling points and the results to be presented as shown in Table 4.4 and 4.6 respectively. Central Pollution Control Board (CPCB) has stipulated criteria for raw water usages, use based classification of surface water are to be followed (Annexure 4).

### 4.3 Air Environment

The climatic data procured from secondary sources is very important for identifying the season and period of monitoring primary data. The methodology to be adopted for collection of climatic data specific to the site is to compile the mean monthly normals of atmospheric parameters, from previous 10yrs data recorded by the nearest IMD station. Wind Roses for each month giving the wind direction speed are to be collected and presented. Most probable wind speed class and wind direction at the nearest IMD site is to be estimated from this. The cloud cover details along with the humidity in the region are to be mentioned clearly. Site specific data for one season showing wind speed, temp, wind direction, cloud cover, relative humidity are to be compiled and presented in tabular form.

Baseline data of air pollutant parameters extending an area of 500meters from the project should be monitored at a number of locations. Baseline monitoring of ambient air parameters namely Particulate Matter PM 10 and PM2.5, carbon monoxide (CO), SO<sub>x</sub> and NO<sub>x</sub> and other parameters should be monitored. One season data is to be monitored other than monsoon as per the CPCB Norms. Sampling locations are to be located as per CPCB norms. Number and locations of Ambient Air quality monitoring (AAQM) stations are decided based on the nature of project, meteorological conditions, topography, selected pollution pockets in the area and likely impact areas. The monitoring locations for air quality are to be given as shown in Table 4.7 and monitoring results should be presented as in Table 4.8. The values should be compared with National Ambient Air Quality Standards (Annexure 5). The monitoring locations are to be shown on the area map.

### 4.4 Noise Environment

Baseline data on noise pollution at the project area and the neighborhood up to 500 meters or nearest residential areas is to be monitored as per the CPCB norms. Daytime and nighttime data should be collected and presented. The details of noise levels are to be given as indicated in Table 4.9. The Ambient Air Quality with reference of Noise is presented in Annexure 6.

## 4.5 Biological Environment

Details of secondary data on the existing flora and fauna in the study area, carried out by institution under the relevant discipline (such as BSI, ZSI, WII, etc) should be included in the list of flora and fauna along with the classification as per Schedule given in the Wild Life Protection Act, 1972 (for fauna) and in the Red Book Data (flora) and a statement clearly specifying whether the study area forms a part of an ecologically sensitive area or migratory corridor of any endangered fauna. The list of critically polluted areas / industrial clusters as identified by CPCB is given as Annexure 7.

The data should include the dominant species in the area, their densities and distribution and any important specimens that are present. Any species of commercial value (timber) should also be mentioned.

**4**

## 4.6 Socio-Economic Environment

Baseline data at the project area should include the demography, telecommunications, archaeological sites, particularly on settlements, health status of the communities, existing infrastructure facilities of the proposed area and area of impact due to the proposed activity. Present employment and livelihood of these populations, awareness of the population about the proposed activity should also be included. The demographic details are to be presented as shown in Table 4.10.

## 4.7 Solid Waste

Details of authorized municipal solid waste facilities and hazardous waste disposal facilities in the area should be inventorized, in case if it is proposed to utilize the same.





## ANTICIPATED IMPACT AND MITIGATION MEASURES

### 5.0 Introduction

This chapter should describe the likely impact of the project on each of the environmental parameters, methods adopted for assessing the impact such as model studies (Annexure 8), details of mitigation measure proposed to reduce adverse affects of the project, and conservation of natural resources. The identification of specific impact followed with mitigation measures should be done for different stages.

### 5.1 Land Environment

#### *Anticipated Impact*

Some of the anticipated impact, especially during the construction phase which need to be addressed, are

- ▶ There may be a change in the topography and drainage pattern
- ▶ Top soil erosion
- ▶ Soil contamination due to project activities
- ▶ Loss of productive soil and impact on natural drainage pattern

#### *Mitigation Measures*

Some mitigation measures are identified and given below. These measures may be used wherever applicable

- ▶ Natural drainage patterns can often be maintained by preparing sodden waterways or installing culverts.
- ▶ Engineering plans can be drawn to reduce the area of earth cuts on fills below what might otherwise be acceptable, provide physical support for exposed soil or rock faces, concentrate or distribute - as appropriate the weight loading of foundations to areas or state better able to support that weight,
- ▶ The topsoil stockpile is to be protected or can be utilized.

### 5.2 Water Environment

#### *Anticipated Impact*

- ▶ Impact of water resources due to shifting of water courses, if any
- ▶ Impact of water withdrawal on surface water / ground water resources-Impact on exploitation of surface / ground water
- ▶ Waste water from washing of cable cars

- ▶ Waste water generation from toilets

#### *Mitigation Measures*

- ▶ Water conservation in landscaping
- ▶ STP for collection, treatment and disposal of sewage / waste waters

### **5.3 Air Environment**

#### *Anticipated Impact*

- ▶ Construction phase would involve site clearances and preparation, infrastructure development, aerial ropeway construction and other related activities
- ▶ Operational phase would involve emission from vehicular movement and diesel generators.

#### *Mitigation Measures*

- ▶ Provision for spraying water to reduce dust emissions during the construction phase
- ▶ Proper maintenance of vehicles and DG sets.

### **5.4 Noise Environment**

#### *Impact Prediction*

- ▶ Impact of vibrations on the surrounding environment
- ▶ Noise due to demolition / construction activities
- ▶ Impact due to present and future transportation activities by road
- ▶ Operation of DG sets

#### *Mitigation Measures*

Identification and adoption of mitigating measures for noise abatement including noise barriers for point sources and line sources and measures to minimize effect of vibrations due to construction activities are to be detailed. Acoustic enclosure to be provided for DG sets.

### **5.5 Biological Environment**

#### *Anticipated Impact*

- ▶ Loss of forest cover
- ▶ Habitat fragmentation and blocking of migratory corridors due to project activities
- ▶ Loss of plants of economic importance

#### *Mitigation Measure*

- ▶ Mitigating measures to compensate the loss of forest cover by replantation.
- ▶ Restoration/Regeneration of rare plants of economic importance including medicinal plant species.

- ▶ Efforts should be taken to bypass the reserved forest and other ecological sensitive area, so as to cause no disturbance to the ecology of the area.

## 5.6 Socio Economic and Health

### *Anticipated Impact:*

- ▶ Details of public and private land in the proposed and immediate surroundings, socio-economic status of the affected owners of the private lands, if any should be properly compiled
- ▶ Impact of the project on socio cultural aspects should be assessed
- ▶ Damages to any historical sites if present in the area should be reported.

### *Mitigation Measures:*

- ▶ Mitigating measures should take into account the needs of the people based on primary data as obtained through need assessment survey/study.
- ▶ Local people especially the woman and women self help group should be involved in selecting alternative location to be made available to the affected people if applicable.

### *Health and well being of Construction Workers*

Construction activities are emitting large pollution to environment. Large volumes of suspended particulate matters are released during construction work leading to air pollution. Unhygienic site sanitation facilities cause damage to environment and to health of the construction workers.

### *Mitigation Measures*

The objective is to ensure health and safety of the workers during construction, with effective provisions for the basic facilities of sanitation, drinking water, safety of equipments or machinery etc. Following are some of the recommendations to be followed:

- ▶ Comply with the safety procedures, norms and guidelines (as applicable) as outlined in IS 5228, IS 5229 and IS 5230, code of practice for construction of aerial ropeways, Bureau of Indian Standards
- ▶ Provide clean drinking water to all workers
- ▶ Provide adequate number of decentralized latrines and urinals to construction workers.
- ▶ Guarding all parts of dangerous machinery.
- ▶ Precautions for working on machinery.
- ▶ Maintaining hoists and lifts, lifting machines, chains, ropes, and other lifting tackles in good condition.
- ▶ Durable and reusable formwork systems to replace timber formwork and ensure that formwork where used is properly maintained.
- ▶ Ensuring that walking surfaces or boards at height are of sound construction and are provided with safety rails or belts.

- ▶ Provide protective equipment; helmets etc.
- ▶ Provide measures to prevent fires. Fire extinguishers and buckets of sand to be provided in the fire-prone area and elsewhere.
- ▶ Provide sufficient and suitable light for working during night time.
- ▶ Dangers, health hazards, and measures to protect workers from materials of construction, transportation, storage etc.
- ▶ Safety policies of the construction firm/division/company.

## 5.7 Solid Waste and Environment

### *Anticipated Impact:*

Impact due to non-hazardous and hazardous solid waste generated during the construction and operational stages should be assessed.

### *Mitigation Measures:*

Mitigation measures to comply the norms should be planned. Options for minimization of solid waste and environmentally compactable / recycling of waste to conserve natural resources should be planned. Management and disposal of temporary structures, made during construction phase should be planned.

## ENVIRONMENTAL MONITORING PROGRAM

---

### 6.0 General

This includes the technical aspects of monitoring the effectiveness of mitigation measures (including measurement methodologies, data analysis, reporting schedules, emergency procedures, detailed budget and procurement schedules). The details include summary matrix of environmental monitoring, during construction and operation stage; requirement of monitoring facilities; frequency, location, parameters of monitoring; compilation and analysis of data; comparison with base line data and compliance to accepted norms and reporting system and plantation monitoring programme.

The description of the monitoring programme should include:

- (a) A technical plan which spells out in detail the methodologies for measurement, the required frequencies of measurement, the planned location of measurement, data storage and analysis, reporting schedules and emergency procedures, and
- (b) Detailed budgets and procurement schedules for, necessary equipment and supplies, technical and administrative manpower.

The environmental monitoring includes

- ▶ Air pollution monitoring in the areas where DG sets are in operation
- ▶ Noise level monitoring
- ▶ In case of usage of ground water monitoring the ground water table in the area
- ▶ Water usage, wastewater generated etc
- ▶ Records of generation, handling, storage, transportation and disposal of the solid, aqueous and organic hazardous wastes generated.
- ▶ Plantations, afforestation plan need to be monitored.

The entire data is to be furnished to the regulatory agencies.





## ADDITIONAL STUDIES

### 7.0 General

TOR to be adopted for aerial ropeway projects as commonly applicable is prepared and attached to this manual as Annexure 1. It may however, be necessary consider specific issues as applicable to individual projects. The proponent or the regulatory authority may either identify such issues during the scoping process or other stakeholders including the public during public consultation. The EIA report and EMP should therefore address such issues also

### 7.1 Items Identified by the Proponent

The proponent may be able to identify issues beyond those included in the common TOR as may be specifically considered by him important from environmental point of view. In such cases the proponent shall include such issues as additional studies under TOR and pursue them in the EIA study after the regulatory authority approves TOR.

### 7.2 Items Identified by the Regulatory Authority

During the scoping process, the regulatory authority may direct specific issues, beyond those is included in the TOR proposed by the proponent, as may be specifically considered important from environmental point of view. In such cases the proponent should pursue those issues as additional studies in the EIA report after the regulatory authority approves TOR.

### 7.3 Items Identified by the Public and Other Stakeholders

After completion of the public consultation, the applicant shall address all the material environmental concerns expressed during the process, and make appropriate changes in the draft EIA and EMP. The final EIA report, so prepared, shall be submitted by the applicant to the concerned regulatory authority for appraisal. The applicant may alternatively submit a supplementary report to draft EIA and EMP addressing all the concerns expressed during the public consultation. A statement of the issues raised by the public and the comments of the applicant shall also be prepared in the local language and in English and annexed to the proceedings.

### 7.4 Risk Assessment and Disaster Management Plan

Ropeways are liable to suffer from environmentally induced threats, risks and hazards as well as human -caused occurrences.

Disasters due to technical failures and natural causes should be identified. Natural disasters include earthquakes, landslides, rock falls, storms, avalanches, lightning etc and technical failures may include rope with broken wires in service, drive / return sheave shaft failure / tension system failure, mount assembly parts failure, over speeding of ropeway / brake failure, rollback,

slippage / fall of cabin, entanglement of cabin, swinging of cabin resulting in fall of passengers outside cabin, cabin derailment at station etc. while accidents include fire in fuel storage areas.

Personnel for disaster failure need to be identified and properly documented in the disaster management plan. The various cells - technical, team for rescue (trained and skilled operators) are to be clearly indicated.

#### **Risk Assessment:**

- ▶ identify all potentially hazardous scenarios associated with the fuel storage at site that will impose risk to cable car passengers and workers during construction and operational phases;
- ▶ conduct Quantitative Risk Assessment to assess the associated risk and express the risks in both individual and societal terms;
- ▶ identify practicable and cost effective risk mitigation measures if required.

The following are the issues to be addressed with reference to technical and natural failures:

Reason	Prevention	Action required to be taken
Socketing failure	Proper material used, design of socket and periodic inspection	Maintenance guidelines to be followed regularly
Splicing failure	Periodic inspection	Training manpower, tools and tackles
Fall / slippage of cabin (Grip failure, Hanger failure, failure of joints, overloading)	Components to be replaced as per life cycles	Replacement at proper time intervals to be done
Cabin door opening (collisions, jerking, component failure)	Simple precaution like locking before leaving, cabin follow rules	Seat fasteners for seats to prevent falling of passengers
Mount assembly parts failure, tower failure (rusting, over-usage, deterioration, natural calamity)	Continuous monitoring, life cycle of components to be ascertained	Life cycle monitoring
to check for fatigue or corrosion of the anchor bolts on a sample tower	whether a continuous uphill load imposed by the subtended angle of the haul rope on any vertical tower might lead to excessive fluctuating loads on the anchor bolts;	Prevent water retention and resultant corrosion
Hitting of cabin (Improper demarcation of area, improper passenger management)	Proper signage, proper demarcation and cordoning of cabin, training of operators	Training of operators, proper maintenance
Electrocution (Lighting)	Proper rope earthing	Periodic monitoring
Entanglement of cabin (High wind, breakage of catenary wire)	Install and monitor Wind speed,	Periodic inspection of catenary wire, monitoring condition of wires
Natural causes like earthquakes, landslides, wind storm, hailstorm, flood, jungle fire	Earthquake resistant constructions, proper retention of landslide prone areas, early warning systems	Early warning systems

## Safety Issues

Activities associated with aerial ropeway construction and operations also give rise to associated hazards and accidents. It is therefore desirable that based on the categories of hazards prevailing at the project site, risk assessment may be carried out by specialists in the field and recommendations may be implemented.

Risk assessment should be carried out for seismicity, slope stability, soil erodibility, and flood hazard (depending on the site). Disaster Management Plan must include emergency planning, emergency procedures, and details on safety measures adopted for the ropeway.

Maintenance of the ropeway for all structural, mechanical, and electrical components has to be done regularly and kept in a state of good repair. A systematic maintenance needs to be followed. Procedures for maintenance and specific frequencies for periodic lubrication, inspection and adjustment are to be clearly mentioned (Annexure 9).

The ropeway designer, wire rope or strand manufacturer should mention the frequency and methods for maintenance or inspections of wire rope or strand in the specification.

These may include, but not be limited to, the following:

- a) conveyor belting;
- b) drums and rollers;
- c) conveyor belt tensioning system;
- d) braking systems;
- e) electrical control systems;
- f) communications systems;
- g) structures.

7

## Maintenance Personnel

Conveyors need to be maintained by trained and competent personnel, and the owner shall be responsible for the supervision and training of such personnel, and such training shall be documented. All personnel need to practice good housekeeping, with particular emphasis on avoiding the development of any condition that might contribute to personal injury. Personnel must also comply with the operational rules and safety regulations of the specific conveyor.

Each conveyor shall be inspected annually, or certain specified hours of operation, whichever comes first, by a conveyor specialist independent of the owner. The inspection need to verify preservation of the original design integrity and cover the requirements of this standard for maintenance, operation, required self-inspections, and record keeping. Items found either deficient or in noncompliance need to be noted and action taken by the competent authority .

Operational log needs to be maintained for each conveyor. Daily entries should be made giving the following minimum information:

- a) date;
- b) names and work position of operating personnel;
- c) operating hours and purpose of operations;

- d) temperature, wind, and weather conditions;
- e) record of compliance with daily operational inspection including signs, loading and unloading zones;
- f) accidents, malfunctions, or abnormal occurrences during operation;
- g) signature of the operator.

Maintenance log should be maintained wherein the actual execution of maintenance work shall be recorded. The log will state the components serviced, and the condition of the components. A record shall be kept of replacement of components.

### *Rescue of Passengers Along the Line*

When designing an installation, suitable means for rescue should be provided (ladders, capstan, etc.) to facilitate the rescue of passengers who might remain trapped along the line on account of unforeseen stopping of the installation in a reasonably short time.

The chosen rescue equipment should be such that the rescue operation can be carried out in a same manner even at the most critical points of the route i.e. over water spread, rugged terrain, high elevation above the ground etc.

The areas exposed to the dangers of natural forces (landslides, rock falls, storms, earthquakes etc.) should be avoided as far as possible. In areas where wind speed are unpredictable proper precautions are to be taken. Under normal conditions, the following equation has to be considered for wind pressure:

For empty vehicles:  $p=120\text{kgf/m}^2$

For passenger vehicles:  $p=30\text{kgf/m}^2$ .

The maximum speed of the vehicle needs to be determined based on the safety of travel. The maximum speeds for the various types of vehicles are given below: any deviation from these norms has to be agreed upon by the inspecting authority:

Type of cable:		
Continuous to and for movement bicable ropeways for passengers (IS5230:2003 reaffirmed 2008)	Attended cabins:	10m/s in long spans and 7.5 m/s over trestles
	Unattended cabins: 4 m/s over trestles	6m/s in long spans and
Continuous movement of monocable with automatic grips (IS 5229:1998)	Systems with closed gondolas having locked doors	6m/s
	Chairlift and system with open gondolas with adequate protection	5m/s
	Others	3 m/s
Continuous movement of monocable with fixed grips (IS 5228:2003 reaffirmed 2008)	Vehicle in station	<1.5m/s
	Along the line	<=3 m/s
	Minimum time spacing / seconds between passing of two vehicles	$J = 4v$ for single seat vehicles and $j = 7v$ for two seat vehicles, where $v$ is the maximum speed in meters per second adopted for installation

7

In areas subjected to storms and where the wind velocity exceeds frequently 150km/h, it is necessary to assume the pressure of the wind as the maximum value ascertained in the areas under consideration.

It is the responsibility of the operator to see if the following conditions are met:

- (i) tightness of the structural connections
- (ii) lubrication of all moving parts
- (iii) alignment and clearances of all open gearing
- (iv) installations and alignment of all drive components
- (v) haul rope alignment at entrance to bull wheels
- (vi) minimum clearances for carriers, track cables, and haul rope sags under the most adverse static loadings,
- (vii) actual testing of evacuation equipment and procedures at the most difficult location.

The wire rope specifications should be given and include the following:

1. nominal diameter;
2. number and arrangement of wires;
3. strength grade;
4. type of core;

5. lay of wire rope;
6. minimum breaking force;
7. type of lubrication.

The strength of the wire rope upon which the designer shall base the ropeway calculations including design factor of safety will not be more than the minimum breaking force.

The nominal breaking strength of the wire rope at the time of putting into service should not be less than five times the maximum axial tension met with in service calculated for the most unfavourable conditions which may occur by the combination of the following factors: (IS 10891 part1)

- a. counter weight
- b. components of the ropeway and that of the loaded vehicles considered conventionally as uniformly distributed along the rope,
- c. the frictional resistance in the tensioning device,
- d. resistance to motion exerted by the line rollers
- e. adequate amount of tension to limit the sag in the wire rope caused by its self weight and load supported by it.

The specification for track strand should include the following:

- a) nominal diameter and tolerances;
- b) number, type/profile, and arrangement of wires;
- c) minimum values for tensile strength, torsion and ductility for wires;
- d) lay length (outside wires) of track strand;
- e) minimum breaking force;
- f) type of lubrication.

Similarly the strength of track strand on which the designer should base all calculations should not be more than the minimum breaking force shown on the specification. The aggregate tensile strength for individual wires should not be exceeded when calculating the minimum breaking force of the track strand:

Generally a rope should be withdrawn from service when it is considered that:

- a) The loss of strength in the rope due to wear or corrosion or both is approaching one sixth of the original strength;
- b) The loss of strength in the rope due to fatigue, surface embrittlement or cracked and broken wires of any kind is approaching one-tenth of the original strength;
- c) The outer wires have lost about one-third of their depth as result of any kind of deterioration;



- d) The outer wires are becoming loose and displaced for any reason;
- e) The rope has become kinked, distorted or damaged and the damaged piece cannot be removed; and
- f) Examination of the rope leaves any doubt as to its safety for any reason whatsoever.

Carrier testing is to be performed to confirm design calculations. Carrier tests will simulate as a minimum the maximum design for carrier loads including restraining bars, foot rests, bubbles, etc. Carrier tests will help verify the carriers' ability to support a vertical load during the testing by arranging loads to simulate individual passenger positions. The details of the methods of testing are given in Annexure 10.

In designing trestles the following loads need to be considered:

- a. The weight of the trestle and the whole pressure exerted by the ropes
- b. The whole of the stresses due to friction which occurs during the motion of the carrying hauling rope. These stresses can be determined with a sufficient margin of safety as 2.5% of the load on the rollers
- c. Weight of vehicles traveling with maximum load and
- d. Load due to wind

7

## 7.5 Natural Resource Conservation

- ▶ Water conservation measures should be addressed.
- ▶ Reforestation / Re-plantation measures to be undertaken
- ▶ Top soil conservation measures to be addressed

## 7.6 R&R Action Plan

Detailed R&R plan with data on the existing socio-economic status of the population in the study area and broad plan for the resettlement of the displaced population, site for the resettlement colony, alternative livelihood concerns/employment and rehabilitation of the displaced people, civil and housing amenities being offered, etc. and the schedule of the implementation of the project specific R&R Plan. Details of provisions (capital & recurring) for the project specific R&R Plan

Specific studies requirement depending on the site and activity proposed should be discussed.

National Policy on Resettlement and Rehabilitation for project affected families-2003 (published in the gazette of India, extraordinary part-i, section 1, no- 46, dated 17th February, 2004) gives the details of the national R&R policy.



## PROJECT BENEFITS

---

### General 8.0

This chapter should include benefits accruing to the locality, neighborhood, region and nation as a whole. It should bring out details of benefits by way of:

- ▶ Improvements in the physical infrastructure by way addition of project infrastructure,
- ▶ Improvements in the social infrastructure
- ▶ Employment potential - skilled; semi-skilled and unskilled labour both during construction and operational phases of the project with specific attention to employment potential of the local population
- ▶ Tourism will be encouraged



## ENVIRONMENTAL COST BENEFIT ANALYSIS

---

### 9.0 General

If recommended by the State Expert Appraisal Committee, this chapter should include the environmental cost benefit analysis of the project.





## ENVIRONMENTAL MANAGEMENT PLAN

### 10.0 General

In practice, mitigation is emphasized in the EIA process following impact identification and prediction, and recommended measures will be an important part of the EIA report. These measures will be incorporated into the terms and conditions of project approval and implemented during the Environmental management stage of the EIA process. The objectives of environmental management are to:

- ▶ Ensure the mitigation measures are implemented
- ▶ Establish systems and procedures for this purpose
- ▶ Monitor the effectiveness of mitigation measures and
- ▶ Take any necessary action when unforeseen impact occur

### 10.1 Components of EMP

The EMP should contain the following:

- ▶ Summary of potential impact & recommended mitigation measures. Allocation of resources and responsibilities for plan implementation
- ▶ Administrative and technical setup for management of environment
- ▶ Institutional arrangements proposed with other organizations/Govt. authorities for effective implementation of environmental measures proposed in the EIA
- ▶ Safe guards/mechanism to continue the assumptions/field conditions made in the EIA
- ▶ Environmental specifications for contractors should cover the required safeguards during the design and construction stage

### 10.2 Environmental Cell

It is desirable for the proponent to set up a separate environmental cell to oversee implementation of the EMP and evaluate the results of monitoring. Survey and analysis is to be carried out periodically. It is necessary to establish a multidisciplinary internal environmental audit team for compliance review.

The report should provide details of maintenance of equipment with respect to

- air pollution
- noise pollution
- safety of the transport along the ropeway

### 10.3 Management Issues with Reference to Safety of Passengers Using the Ropeway

People riding chair lifts and aerial ropeways are subject to a degree of risk in the event of a malfunction or failure of a critical component. Accordingly, there is a need to take all practicable steps to ensure the equipment is maintained in good working order; a methodical approach to inspection and maintenance of chair lifts and aerial ropeways over the life of the plant must be in place.

The maintenance program requirements must be identified during the hazard identification, risk assessment and risk control process as required by the Occupational Health and Safety (Plant) Regulations. These requirements should address any information provided by the designer or manufacturer and also incorporate requirements that may be unique to the particular chairlift or aerial ropeway.

The maintenance program must include systems to identify potential safety issues so that necessary corrective action can be taken before the failure of a component.

The comprehensive maintenance program developed should be properly documented and implemented which includes relevant daily, weekly, monthly and annual or seasonal maintenance activities. Procedures for addressing all components subject to load, wear, corrosion or fatigue must be included:

- ▶ the types of lubricants required and frequency of application;
- ▶ the types of non-destructive testing required and frequency of testing;
- ▶ destructive testing and frequency of testing;
- ▶ the definitions and measurements to determine excessive wear and replacement criteria;
- ▶ the recommended frequency of service to specific parts and details of the service required;

Regular inspections must address:

- ▶ fire safety
- ▶ noise
- ▶ ride access by passengers, maintenance and operational staff;
- ▶ safety during the ride;
- ▶ fundamental mechanical and electrical safety;

The types of inspection activities must include the following:

- ▶ commissioning inspection including load test runs;
- ▶ pre-season inspection;
- ▶ daily and periodic maintenance inspections;
- ▶ annual inspection;
- ▶ periodic major inspection of critical components;

Procedures must be regularly recorded and maintained for:

- ▶ daily start-up, running and shut-down;
- ▶ daily and periodic maintenance; and
- ▶ environmental conditions



## SUMMARY AND CONCLUSION

---

### 11.0 General

**I**t should be a summary of the full EIA report condensed to 10 A-4 size pages at the maximum. It should necessarily cover in brief the following chapters of the full EIA report: -

1. Introduction
2. Project description
3. Analysis of alternative
4. Description of the environment
5. Anticipated impact and mitigation measures
6. Environmental monitoring program
7. Additional studies
8. Project benefits
9. Environmental cost benefit analysis
10. Environmental management plan
11. Summary and conclusion
12. Disclosure of the consultant engaged



## DISCLOSURE OF CONSULTANT ENGAGED

---

### 12.0 General

The EIA consultants shall have accreditation with Quality Control of India (QCI)/National Accreditation Board of Education and Training (NABET) as per office memorandum dated 2nd December 2009 of MoEF. This chapter shall include the names of the consultants engaged with their brief resume and nature of consultancy rendered. The consultants shall include the copy of the accreditation certificate and data provided by the other organizations/ laboratories including their status of approvals etc.





---

## BIBLIOGRAPHY

American National Standard Institute (ANSI). ANSI B77.1 -2006. For Passenger Tramways - Aerial Tramways, Aerial Lifts, Surface Lifts and Tows:- Safety Requirements

British Standard BS 2763:1982. Specification for Round Carbon Steel Wire for Wire Ropes.

British Standard BS 5555:1993. Specification for SI Units and Recommendations for the Use of Their Multiples and of Certain Other Units

*Code of practice on the design, manufacture and installation of aerial ropeways*, Electrical and Mechanical Services Division (EMSD), The Government of the Hong Kong Special Administrative Region, 2002 edition (First Revision), pages 1-51.

Debasish Basak, *"Non-destructive Evaluation of Drive Rope: A Case Study"*, Nondestructive Testing & Evaluation, Taylor & Francis, UK, Vol. 20, No. 4, December, 2005, pp 221-229.

Geotechnical Manual for Slopes, 2nd Edition (1997) Geotechnical Engineering Office of Civil Engineering Department

H.R. Weischedel and C.R. Chaplin, *"The Inspection of Offshore Wire Ropes: The State of the Art"*, 24<sup>th</sup> Annual Offshore Technology Conference (OTC) Houston, Texas, May 4-7, 1992, paper number OTC 6969, 227-239.

Indian Standard : Codes of Practice (various) for the Construction of Aerial Ropeways: IS 5228; IS 5229; IS 5230(1969).

Ministry of Environment and Forests' EIA Notification New Delhi, the 27<sup>th</sup> January 1994 (As amended up to 14<sup>th</sup> Sep 2006), CRZ Notification (19<sup>th</sup> February 1991 as amended up to August 2000). ([www.envfor.nic.in](http://www.envfor.nic.in))

Pollution control Acts, Rules and Notifications issued thereunder (Pollution Control Law Series), CPCB ([www.cpcb.nic.in](http://www.cpcb.nic.in))

## GLOSSARY

**actual (measured) breaking force:** breaking force obtained to part a wire rope or strand during the breaking test.

**aerial lift:** Ropeways on which passengers are transported in cabins or on chairs and that circulate in one direction between terminals without reversing the travel path.

**aerial tramway:** Ropeways on which passengers are transported in cable-supported carriers and are not in contact with the ground or snow surface, and in which the carrier(s) reciprocate between terminals. Also called a reversible.

**auxiliary power unit (APU):** Generic term to generally describe a gas or diesel engine generally used as a backup to the prime mover. It can be designated as a prime mover or evacuation power unit depending upon use and configuration. On aerial tramways an APU can power the rescue drive.

**bicable system:** A system that uses track cable(s) to support the carriers and separate haul rope(s) to control motion of the carriers

**carrier:** The structural and mechanical assemblage in or on which the passenger(s) of a ropeway system are transported. Unless qualified, the carrier includes, for example, the carriage or grip, hanger, and cabin or chair.

**conveyor:** An outdoor transportation system wherein passengers are transported uphill on a flexible moving element (conveyor belt).

**deropement:** The term used when a rope or cable leaves its operating position relative to the groove of a sheave, carriage wheel, or saddle.

**design capacity:** The number of passengers per hour (pph) established by the designer as the current ultimate operating capability of the facility in the direction specified.

**detachable grip lift:** A ropeway system on which carriers circulate around the system alternately attaching to and detaching from a moving haul rope(s). The ropeway system may be monocable or bicable.

**factor of safety (wire rope):** The ratio of the nominal breaking strength of the rope and the maximum static design tension of the rope.

**fixed grip lift:** Ropeway system on which carriers remain attached to a haul rope. The ropeway system may be either continuous or intermittently circulating, and either monocable or bicable.

**gondola:** Name used to describe an aerial lift using cabins; - A cabin used on an aerial lift.

**hanger:** Structural element connecting a cabin, chair, or other passenger-carrying device to the track cable carriage or haul rope grip.

**haul rope:** A wire rope used on a ropeway that provides motion to carrier(s) and is powered by the drive sheave.

**line:** indicates the path of a wire rope on the up-going or return side of a ropeway

**monocable system:** A system that uses a single haul rope to both support and control motion of the carriers.

**sheaves:** Pulleys or wheels grooved for rope.

**stop gate:** A type of automatic stopping device that, when actuated by a passenger's weight, contact, or passage, will automatically stop the tramway.

**surface lift:** Ropeways on which passengers are propelled by means of a circulating overhead wire rope while remaining in contact with the ground or snow surface. Connection between the passengers and the wire rope is by means of a device attached to, and circulating with, the haul rope, known as a "towing device."

**towing device:** A carrier, fixed or detachable, used on surface lifts and tows to pull passengers. Classification or description is by the device configuration and action of the extension element (i.e., handle, button, J-bar, T-bar, platter, etc.).

**tow path:** The path along which a passenger is towed on a surface lift or tow from the load point to a point beyond the stop gate equal to 150% of the distance required to stop the empty surface lift or tow operating at full speed.



# TABLES



**Table No. 4.1 Description of Soil Sampling Locations**

Station	Location	Distance & Direction from project area	Project area/ study area	Environmental setting

**Table No. 4.2 Analysis of Soil Samples**

Station No	Parameters	Unit	Result			Standards
			SS1	SS2	SS3	
1.						
2.						
3.						

**Table No. 4.3 Description of Ground Water Sampling Locations**

Station	Location	Distance & Direction from project area	Project area/ study area	Environmental setting

**Table No. 4.4 Analysis of Ground Water**

Station No	Parameters	Unit	Result			Standards
			GW1	GW2	GW3	
1.						
2.						
3.						



**Table No. 4.5 Description of Surface Water Sampling Locations**

Station	Location	Distance & Direction from project area	Project area/ study area	Environmental setting
SW				

**Table No. 4.6 Analysis of Surface Water**

Station No	Parameters	Unit	Result			Standards
			SW1	SW2	SW3	
1.						
2.						
3.						

**Table No. 4.7 Description of Ambient Air Quality Monitoring Stations**

Station	Location	Distance & Direction from project area	Project area/ study area	Environmental setting

**Table No. 4.8 Analysis of Ambient Air Quality**

Parameter Monitoring Station & Category*	PM <sub>10</sub>			PM <sub>2.5</sub>			NO <sub>x</sub>			SO <sub>2</sub>			CO			
	No. of samples	Maximum	Minimum	Mean	No. of samples	Maximum	Minimum	Mean	No. of samples	Maximum	Minimum	Mean	No. of samples	Maximum	Minimum	Mean

**Table No. 4.9 Description of Noise Monitoring Stations**

S. No	Locations	Environmental setting*	Average Day noise level (dBA)	Average Night noise level	Day time (6.00 A.M. to 10.00 P.M)	Day time (10.00 P.M. to 6.00 A.M)	
					Standard (L <sub>eq</sub> in dBA)	Standard (L <sub>eq</sub> in dBA)	

\*Industrial area/ Commercial area /Residential area /Silence zone

**Table No. 4.10 Demographic Profile**

Particulars	With in the project site	With in 1 km from the project boundary
Population		
No. of villages		
Number of households village-wise		



# ANNEXURES



## Annexure 1

### Terms of Reference (TOR) for Aerial Ropeways

#### Objective

Terms of Reference (TOR) for preparation of Environmental Impact Assessment (EIA) for aerial ropeways projects, as per the EIA notification, 2006 has been devised to improve the quality of the reports and facilitate the decision making transparent and easy. TOR will help the project proponents and consultants to prepare report with relevant project specific data, which are informative, compact and easy to comprehend TOR for aerial ropeway projects is expected to cover all environment related features.

#### General Information

Aerial ropeway development may have a wide range of impacts on the environment through activities like construction work, dredging, reclamation, landfills, excavation and other related activities. Aerial ropeway development and operation should therefore be planned with careful consideration of their environmental impact. The preparation of EIA report and implementation of EMP is essential for effectively managing these adverse effects.

The aerial ropeway projects as per the EIA notification of 2006 fall under Category 'B' and under Category A if located above 1000mts altitude or in ecologically sensitive areas.

Project Activity		Category With Threshold Limit		General Conditions (GC) Apply*
		A	B	
7(g)	Aerial Ropeways	<p>All projects located at altitude of 1000 mts and above</p> <p>All projects located in notified ecological sensitive areas</p>	All projects except covered in column 3	

\* "Any project or activity specified in Category 'B' will be treated as Category 'A' if located in whole or in part within 10 km from the boundary of: (i) Protected areas notified under the Wildlife (Protection) Act, 1972; (ii) Critically polluted areas as identified by the Central Pollution Control Board from time to time; (iii) Eco-sensitive areas as notified under section 3 of the Environment (Protection) Act, 1986, such as, Mahabaleswar Panchangi, Matheran, Pachmarhi, Dahanu, Doon Valley and (iv) inter-state boundaries and international boundaries

Provided that the requirement regarding distance of 10km of the inter-state boundaries can be reduced or completely done away with by an agreement between the respective states or U.Ts sharing the common boundary in the case the activity does not fall within 10 kilometers of the areas mentioned at item (i), (ii) and (iii) above

The report should incorporate the page numbers of various chapters, sections and sub-sections, tables, appendices, drawings and figures etc., with titles should be clearly indicated under the heading contents.

## 1.0 Introduction

This chapter should cover the following

- ▶ Purpose of the project, brief description of the project-name, nature, size, location of the project, its importance
- ▶ Land description-plot/survey numbers/village, tehsil, district, state & content of the land Right of Way (ROW) details & alignment.
- ▶ Profile of the project proponent, name and contact address with email.
- ▶ Whether the project attracts the provisions of general condition of the EIA notification 2006. If so, applicability should be discussed.
- ▶ Whether the project attracts the provisions of CRZ notification. If so, applicability should be discussed.
- ▶ The proponent should confirm that the project meets the central/state/local environmental regulations and standards applicable for the project.
- ▶ Any litigation pending against the proposed project and/or any direction/order passes by any court of law against the project, if so, details thereof should be provided
- ▶ In case of expansion/modernization of the project, the environmental compliance status for the existing project should be explained.

## 2.0 Project Description

This chapter should cover the broader details of the basic activities, location, and layout and implementation schedule of the project.

- ▶ Type of the project-new, expansion, modernization.
- ▶ Need for the project.
- ▶ Relevance of the project in the light of the existing development plans of the region.
- ▶ Project coverage, master plan. Length of the proposed aerial rope way. Details of ROW. Height from MSL. Designed peak capacity of population.
- ▶ Description of the project site, geology, topography, transport and connectivity, demographic aspects, socio-cultural and economic aspects, villages, settlements.
- ▶ Technologies involved for design, construction, equipment and operation.
- ▶ Use of existing public infrastructure - road, railway and networks, water supply, electric power etc.
- ▶ Details of the land acquisition, rehabilitation of communities/villages present status of such activities.
- ▶ Resources, manpower and time frame etc - required for the project implementation

### Essential Maps to be provided with Application

- ▶ Alignment map clearly demarcating location of structures and ROW of the proposed project
- ▶ A map of the project area and 10 km area from boundary of the proposed / existing project area, delineating project areas notified under the wild life (Protection) Act, 1972/critically polluted areas as identified by the CPCB from time to time /notified eco-sensitive areas/inter state boundaries and international boundaries
- ▶ A map covering aerial distance of a 15 km from the proposed project boundary delineating environmental sensitive areas as specified in column no 9(iii), Form I of EIA notification dated 14th Sept 2006
- ▶ Landuse map of the study area to 1:25,000 scale based on recent satellite imagery of the project area and 10 km from the proposed project boundary delineating the cropping pattern, wastelands, forest area and built up areas, water bodies, human habitation and other specific features such as railway tracks, ports, airports, roads, major industries etc.
- ▶ Area drainage contour map of the project area and 500meters from the proposed project area should be clearly indicated. In case of any proposed diversion of nallah/ canal/ river, should also be shown in the map.
- ▶ Detailed ground surveyed map in 1:5000 scale showing the existing features falling within the right of way namely trees, structures including archaeological and religious, monuments wild life corridors etc

### 3.0 Analysis of Alternatives (Technology and Site)

Incase, the scoping exercise results in need for alternatives this chapter should cover:

- ▶ Description of various alternatives like locations or alignments
- ▶ Description of each alternative
- ▶ Summary of adverse / positive impact of each alternative
- ▶ Selection of alternative

### 4.0 Description of the Environment

Environmental data to be considered in relation to aerial ropeway development include (a) land, (b) air, (c) noise, (d) water, (e) biological, (f) socio-economic and health environment and (g) solid waste.

#### *Study Area:*

Primary data by measurements, field surveys and secondary data from secondary sources are to be collected in the study area within 500meters from the project boundary. Beyond 500 meters and upto 15 kms, only secondary data is to be collected. Primary data should cover one season other than monsoon and secondary data for one full year.



Map of the study area clearly delineating the location of various monitoring stations (air, noise, water and soil) superimposed with location of habitats are to be shown. Monitoring should be done as per CPCB guidelines.

#### 4.1 Land Environment

Data on the land availability is to be ascertained from local authorities, revenue records etc. justification for the proposed quantum of the area is to be given. Baseline data to be given on description of existing situation of the land at the proposed project area including description of terrain, hill slopes, inland topography, slope and elevation. Study of land use pattern, habitation cropping pattern, forest cover, environmentally sensitive places etc, by employing remote sensing techniques and also through secondary data sources.

Baseline data to be provided on rock types, regional tectonic setting (reported fractures/faulting/folding, warping), and history of any volcanic activity, seismicity and associated hazards.

Soil data including type, classification, characteristics, soil properties etc., are important from engineering considerations for design of structures, porosity and permeability, sub soil permeability, etc.

#### 4.2 Air Environment

- ▶ Climate and meteorology (max and min temperatures, relative humidity, rainfall, barometric pressure, and history of cyclones and snowfall); the nearest IMD meteorological station from which climatological data (10 years) have been obtained to be indicated
- ▶ Wind rose (wind direction and speed, 24 hourly data)
- ▶ One season data is to be monitored other than monsoon as per the CPCB norms. Sampling locations are to be located as per CPCB norms.
- ▶ Baseline monitoring of ambient air parameters namely PM<sub>10</sub>, PM<sub>2.5</sub>, Sox, NO<sub>x</sub>, CO and other parameters should be monitored.

#### 4.3 Noise Environment

Baseline data on noise pollution at the project area and the neighborhood up to 500 meters and environmentally sensitive receptors should be monitored as per the CPCB norms.

#### 4.4 Water Environment

Water quality from all sources such as groundwater, municipal water, surface water need to meet the water quality norms prescribed for drinking water. Baseline data of ground water including data of pH, dissolved solids, suspended solids, BOD should be collected for one season. Usage purpose of ground water, if any, is to be indicated.

Baseline data on location of surface water like water bodies, lakes, present quality and their utility to be provided. Details of the water bodies in the project area should be described specifically. Water quality is to be monitored for one season.

#### 4.5 Biological Environment

Details of secondary data on the existing flora and fauna in the study area, carried out by institution under the relevant discipline (such as BSI, ZSI, WII, etc) should be included in the list of flora and fauna along with the classification as per Schedule given in the Wild Life Protection Act, 1972 (for fauna) and in the Red Book Data (flora) and a statement clearly specifying whether the study area forms a part of an ecologically sensitive area or migratory corridor of any endangered fauna.

The Baseline status of flora and fauna includes the following: -

- ▶ General Type and dominant species
- ▶ Densities and distribution
- ▶ Habitat value
- ▶ Historically important specimen
- ▶ Introduced species
- ▶ Rare and endangered species (location, distribution and conditions)
- ▶ Timber Value
- ▶ Commercially valued species

#### 4.6 Socio Economic and Health environment

Baseline data at the project area should include the demography, telecommunications, archaeological sites, particularly on settlements, health status of the communities, existing infrastructure facilities of the proposed area and area of impact due to the proposed activity. Present employment and livelihood of these populations, awareness of the population about the proposed activity should also be included.

#### 4.7 Solid Waste

Details of authorized municipal solid waste facilities, in the area should be inventorized, in case if it is proposed to utilize the same.

#### 5.0 Anticipated Impact and Mitigation Measures

This chapter should describe the likely impact of the project on each of the environmental parameters, methods adopted for assessing the impact such as model studies, empirical methods, reference to existing similar situations, reference to previous studies, details of mitigation measure proposed to reduce adverse affects of the project, best environmental practices and conservation of natural resources. The identification of specific impact followed with mitigation measures should be done for different stages.

## 5.1 Land Environment

### *Anticipated Impact:*

Some of the anticipated impact, which need to be addressed, are

- ▶ Estimation of anticipated impact on the surrounding land use pattern, on infrastructure like housing, ground water, surface water, road network, environmentally sensitive places etc,
- ▶ Impact on public utilities arising out of the utilities for the project activities
- ▶ Study of the problem of land slides and assessment of soil erosion potential and the impact
- ▶ Impact of project construction / operation on the landslides, surface drainage etc., are to be estimated.

### *Mitigation Measures*

Proper mitigation measures have to be suggested.

- ▶ Improvement of road network infrastructure to handle the increase in traffic & truck parking arrangements
- ▶ Selection of suitable local plant species for greenbelt development

## 5.2 Air Environment

### *Anticipated Impact:*

Anticipated impact during construction stage and operation stage should be predicted. The immediate surroundings may have a greater impact. The existing surrounding features up to 1 km and impact on them should be addressed separately. It is necessary to predict point source emissions and study air emissions from the vehicular traffic.

### *Mitigation Measures:*

Mitigative measures are to be proposed during the construction stage as well as the operational stage of the project. Some measures include: -

- ▶ Mitigative measures to lower the emissions during loading, un-loading, transportation and storage of construction materials

## 5.3 Noise Environment

### *Anticipated Impact:*

- ▶ Impact of vibrations on the surrounding environment including damage to materials/ structures
- ▶ Noise due to demolition / construction activities

- ▶ Impact due to noise levels generated by existing and proposed activities in relation to human environment and wildlife including avi-fauna
- ▶ Impact due to present and future transportation activities by road
- ▶ Impact of noise levels on auditory function, i.e. hearing activity
- ▶ Operation of DG sets

#### *Mitigation Measures:*

Identification and adoption of mitigating measures for noise abatement including noise barriers for point sources and line sources and also measures to minimize effect of vibrations due to demolition and while new construction.

### 5.4 Water Environment

#### *Anticipated Impact:*

- ▶ Impact on water resources due to shifting of surface watercourses, if any
- ▶ Impact of water withdrawal on surface water / ground water resources-
- ▶ Waste water generation

#### *Mitigation Measures:*

- ▶ Rainwater harvesting to maintain the water level
- ▶ Water conservation in landscape
- ▶ STP for collection, treatment and disposal of sewage

### 5.5 Biological Environment

#### *Anticipated Impact:*

- ▶ Loss of forest cover
- ▶ Habitat fragmentation and blocking of migratory corridors due to project activities
- ▶ Loss of plants of economic importance.
- ▶ Impact on the free movement of animals

#### *Mitigation Measures:*

- ▶ Mitigating measures to compensate the loss of forest cover by replantation
- ▶ Restoration / Regeneration of rare plants of economic importance including medicinal plants species
- ▶ Efforts should be taken to bypass the reserved forest and other ecological sensitive area, so as to cause no disturbance to the ecology of the area
- ▶ Measures for safe passage of animals

## 5.6 Socio-Economic and Health

### *Anticipated Impact:*

- ▶ Details of public and private land in the proposed and immediate surroundings, socio-economic status of the affected owners of the private lands should be properly compiled
- ▶ Impact of the project on socio cultural aspects should be assessed
- ▶ Impact on any historical sites if present in the area should be reported.
- ▶ Impact on local infrastructure i.e. on connecting roads, parking areas, water supply, sanitation, garbage disposal etc especially during peak tourism days

### *Mitigation Measures:*

- ▶ Mitigating measures should take into account the needs of the people based on primary data as obtained through need assessment survey/study.
- ▶ In plantation work, local species especially fruit bearing trees/orchards based on primary survey should be planted by involving local people
- ▶ Local people especially the woman and women self help group should be involved in selecting alternative location to be made available to the affected people if applicable.

## 5.7 Solid Waste

### *Anticipated Impact:*

Impact due to non-hazardous generated during the construction and operational stages should be assessed.

### *Mitigation Measures:*

Mitigation measures to comply the norms should be planned. Options for minimization of solid waste and environmentally compactable / recycling of waste to conserve natural resources should be planned. Management and disposal of temporary structures, made during construction phase should be planned.

## 6.0 Environmental Monitoring Program

This chapter should include details of environmental monitoring program. It should include the technical aspects of monitoring the effectiveness of mitigation measures (including measurement methodologies, data analysis, reporting schedules, emergency procedures, detailed budget and procurement schedules).

- ▶ Summary matrix of environmental monitoring, during construction and operation stage
- ▶ Requirement of monitoring facilities

- ▶ Frequency, location, parameters of monitoring
- ▶ Compilation and analysis of data, comparison with baseline data and
- ▶ Plantation monitoring program

## 7.0 Additional Studies

### 7.1 Public Consultation

Public hearing with the issues raised by the public and the response of the project proponent in tabular form should be discussed.

### 7.2 Risk Assessment and Disaster Management Plan

Activities associated with aerial ropeway construction and operations also give rise to associated hazards and accidents. It is therefore desirable that based on the categories of hazards prevailing at the project site, risk assessment may be carried out by specialists in the field and recommendations may be implemented.

Risk assessment should be carried out for seismicity, slope stability, soil erodibility, and flood hazard.

Disaster Management Plan must include emergency planning, emergency procedures, and details on safety measures adopted for the ropeway.

### 7.3 Natural Resource Conservation and Optimization

Water conservation measures should be addressed. Energy efficiency measures in the activity are to be drawn up.

### 7.4 R&R Action Plan

Detailed R&R plan with data on the existing socio-economic status of the population in the study area and broad plan for the resettlement of the displaced population, site for the resettlement colony, alternative livelihood concerns/employment and rehabilitation of the displaced people, civil and housing amenities being offered, etc. and the schedule of the implementation of the project specific R&R Plan. Details of provisions (capital & recurring) for the project specific R&R Plan

Specific studies requirement depending on the site and activity proposed should be discussed

## 8.0 Project Benefits

This chapter should include benefits accruing to the locality, neighbourhood, region and nation as a whole. It should bring out details of benefits by way of:

- ▶ Improvements in the physical infrastructure by way addition of project infrastructure,
- ▶ Improvements in the social infrastructure like roads, railways, housing, water supply, electrical power, drainage, improved environmental conditions, etc.

- ▶ Employment potential - skilled; semi-skilled and unskilled labour both during construction and operational phases of the project with specific attention to employment potential of the local population as well as necessity for imparting any specialized skills to them to be eligible for such employment in the project on a long term basis i.e., during operational and maintenance stages of the project and
- ▶ Other tangible benefits like improved standards of living, health, education etc.

## 9.0 Environmental Cost Benefit Analysis

If recommended by the State Expert Appraisal Committee, this chapter should include the environmental cost benefit analysis of the project.

## 10.0 Environmental Management Plan (EMP)

- ▶ Summary of potential impact & recommended mitigation measures
- ▶ Allocation of resources and responsibilities for plan implementation
- ▶ Administrative and technical setup for management of environment
- ▶ Institutional arrangements proposed with other organizations/Govt. authorities for effective implementation of environmental measures proposed in the EIA
- ▶ Safe guards/mechanism to continue the assumptions / filed conditions made in the EIA Environmental specifications for contractors should cover the required safeguards during the design and construction stage

## 11.0 Summary and Conclusion (Summary EIA)

It should be a summary of the full EIA report condensed to 10 A-4 size pages at the maximum. It should necessarily cover in brief the following chapters of the full EIA report: -

Introduction/ Project description /Analysis of alternative / Description of the environment / Anticipated environmental impact and mitigation measures / Environmental monitoring program /Additional studies / Project benefits / Environmental cost benefit analysis / Environmental management plan / Summary and conclusion / Disclosure of the consultant engaged

## 12.0 Disclosure of Consultants Engaged

This chapter should include the names of the consultants engaged with their brief resume and nature of consultancy rendered.



## Annexure - 2

### Land Use / Land Cover Classification System

Level -I	Level -II	Level -III
1. Built - up land	1.1. Built -up land	1.1.1. Urban (towns & cities)
2. Agricultural land	2.1. Crop land (i) kharif (ii) rabi (iii) double cropped	2.1.1. Irrigated crop land
		2.1.2. Unirrigated crop land
	2.2. Fallow	2.2.1. Fallow
	2.3. Plantation	2.3.1. Types of plantation, casuarina, coconut, tea etc.
3. Forest	3.1 evergreen/semi-evergreen	3.1.1. Dense / closed
		3.1.2. Open
	3.2. Deciduous	
	3.3. Degraded scrub land	
	3.4. Forest blank	3.4.1. Degraded forest
		3.4.2. Forest blank
3.5. Forest plantation	3.5.1. Types of plantatin eg. teak, sal etc.	
4. Wastelands	3.6. Mangrove	
	4.1. Salt affected land	
	4.2. Water logged land	
	4.3. Marshy / swampy land	
	4.4. Gullied / ravinous land	
	4.5. Land with or without scrub	
	4.6. Sandy area (coastal & desartic)	Minimum mappable unit IS 2.25 hectares on 1:50,000 scale
4.7. Barren rocky / stony waste / sheet rock areas		
5. Water bodies	5.1. River / stream	
	5.2 Lake/reservoir/tank/canal	
6. Others	6.1. Shifting cultivation	6.1.1. Current
		6.1.2. Old / abandoned
	6.2.grassland / grazing land	6.2.1. Grassland / grazing land
	6.3. Snow covered/glacial area	6.3.1. Snow covered / glacial area
	6.4. Mining area	6.4.1. Mining dumps

Note: Land use / Land cover categories at different levels and corresponding scales for mapping are as follows:

Level - I - categories - 1:1000,000 scale

Level - II - categories - 1:250,000 scale

Level - III - categories - 1:50,000 scale and 1:25,000 scale

(Sources: Description and classification of land use / land cover : NRSA - TR - LU & CD - 01 -90)

## Annexure - 3

### Sampling, Frequency & Method of Baseline Environment Monitoring

Attributes	Sampling		Measurement Method	Remarks
A. Air Environment	Network	Frequency		
Meteorological ▶ Wind speed ▶ Wind direction ▶ Maximum temperature ▶ Minimum temperature ▶ Relative humidity ▶ Rainfall ▶ Solar radiation ▶ Cloud cover ▶ Environmental Lapse Rate	1 site in the project area	1 hourly continuous	Mechanical/automatic weather station  Max / Min Thermometer Hygrometer  Rain gauge As per IMD specifications As per IMD specifications Mini Sonde/SODAR	IS 5182 Part 1-20 Site specific primary data is essential  Secondary data from IMD  CPCB guidelines
Pollutants ▶ SPM  ▶ RSPM  ▶ SO <sub>2</sub> ▶ NO <sub>x</sub>	Nos. of sampling location to be decided	24 hourly twice a week  @4 hourly Twice a week, One non monsoon season  8 hourly, twice a week	As per CPCB guidelines	Monitoring Network  ▶ Minimum one locations in upwind side, two sites in ownwind side / impact zone  ▶ All the sensitive receptors need to be covered for core zone and buffer zone

Attributes	Sampling		Measurement Method	Remarks
B. Noise	Network	Frequency		
▶ Hourly equivalent noise levels	Identified study area	Once in season	Noise level meter	IS:4954-1968 as adopted by CPCB
C. Water				
Parameters for water quality ▶ pH, temperature, turbidity, magnesium hardness, total alkalinity, chloride, sulphate, nitrate, fluoride, sodium, potassium, salinity ▶ Total nitrogen, total phosphorus, DO, BOD, COD ▶ Heavy metals ▶ Total coliforms, faecal coliforms ▶ Phyto plankton	▶ Set of grab samples for ground and surface water		Samples for water quality should be collected and analysed as per : ▶ IS : 2488 (Part 1-5) methods for sampling and testing of Industrial effluents ▶ Standard methods for examination of water and waste water analysis published by American Public Health Association.	
D. Land environment				
Soil ▶ Organic Matter ▶ Texture ▶ pH ▶ Electrical conductivity ▶ Permeability ▶ Water holding capacity ▶ Porosity	Sample from villages (soil samples be collected as per BIS specifications)	One season	Collected and analysed as per soil analysis reference	Analysis be done as per BIS specifications

Adopted from: EIA manual 2001, Ministry of Environment and forests, New Delhi

## Annexure - 4

### Criteria for Raw Water Used for Organized Community Water Supplies (surface and ground water) Primary Parameters

	Parameters	Range/Limiting Value		Note
		Use with only disinfection	Use after conventional treatment	
1.	pH	6.5 to 8.5	6.0 to 9.0	To ensure prevention of corrosion in distribution system and interference in chlorinating.
2.	Colour Pt. scale Hz Units	< 10	< 50	Color may not get totally removed during treatment
3.	Suspended Solids mg/l	< 10	< 50	High SS may increase the cost of treatment.
4.	Odour, dilution factor	< 3	< 10	May not be tackled during treatment.
5.	DO, (%saturation)	90-100	80-120	May imply higher chlorine demand.
6.	BOD, mg/l	< 3	< 5	Same as above.
7.	TKN, mg/l	< 1	< 3	Same as above.
8.	Ammonia, mg/l	< 0.05	< 1	Same as above.
9.	Faecal coliform MPN/100 ml	< 200	< 2000	Not more than 20% samples show greater than limit.
10.	EC, $\mu\text{mhos/cm}$	< 2000	< 2000	High conductivity implies dissolved high solids making water unpalatable.
11.	Chloride, mg/l	< 300	< 300	May cause physiological impact and unpalatable taste.
12.	Sulphates, mg/l	< 250	< 250	May cause digestive problems
13.	Phosphates, mg/l	< 0.7	< 1.0	May interfere with coagulation
14.	Nitrate, mg/l	< 50	< 50	May cause methemoglobinemia
15.	Fluoride, mg/l	< 1.0	< 1.5	Higher value shall cause fluorosis and lower value shall carries.
16.	Surfactants, mg/l	< 0.2	< 0.2	May impair treatability and cause foaming.

Additional Parameters for Periodic Monitoring (Seasonal - Only to be done when there are known natural or anthropogenic sources in the upstream catchment region likely or apprehended to contribute or other well founded apprehensions)

Parameters	Desirable	Acceptable	Note
Dissolved Iron mg/l	< 0.3	< 0.5	Affect taste and cause stains
Copper, mg/l	--	< 1.0	May cause live damage
Zinc, mg/l	--	< 5.0	Cause bitter stringent taste
Arsenic, mg/l	< 0.01	< 0.05 cancer	Cause hyperkeratosis & skin
Cadmium, mg/l	< 0.001	< 0.005	Toxic
Total Chromium, mg/l	< 0.05	< 0.05	Toxic
Lead, mg/l	< 0.05	< 0.05	Physiological abnormality
Selenium, mg/l	< 0.01	< 0.01 arsenic	Toxic symptoms similar to
Mercury, mg/l	< 0.005	< 0.0005	Carcinogenic and poisonous
Phenols, mg/l	< 0.001	< 0.001	Toxic and cause taste and odour problem
Cyanides, mg/l	< 0.05	< 0.05	Physiological abnormality
PAH, mg/l	< 0.0002	< 0.0002	Carcinogenic
Total Pesticides, mg/l	< 0.001	< 0.0025 carcinogenic	Trend to bioaccumulates &

(Source: Ecological Impact Assessment Series: EIAS/03/2002-03 Published by CPCB)

### Use based Classification of Surface Waters in India

Designated-Best-Use	Class of water	Criteria
Drinking Water Source without conventional treatment but after disinfection	A	<ol style="list-style-type: none"> <li>Total Coliforms Organism MPN/100ml shall be 50 or less</li> <li>pH between 6.5 and 8.5</li> <li>Dissolved Oxygen 6mg/l or more</li> <li>Biochemical Oxygen Demand 5 days 20°C 2mg/l or less</li> </ol>
Outdoor bathing (Organized)	B	<ol style="list-style-type: none"> <li>Total Coliforms Organism MPN/100ml shall be 500 or less</li> <li>pH between 6.5 and 8.5</li> <li>Dissolved Oxygen 5mg/l or more</li> <li>Biochemical Oxygen Demand 5 days 20°C 3mg/l or less</li> </ol>
Drinking water source after conventional treatment and disinfection	C	<ol style="list-style-type: none"> <li>Total Coliforms Organism MPN/100ml shall be 5000 or less</li> <li>pH between 6 to 9</li> <li>Dissolved Oxygen 4mg/l or more</li> <li>Biochemical Oxygen Demand 5 days 20°C 3mg/l or less</li> </ol>
Propagation of Wild life and Fisheries	D	<ol style="list-style-type: none"> <li>pH between 6.5 to 8.5</li> <li>Dissolved Oxygen 4mg/l or more</li> <li>Free Ammonia (as N) 1.2 mg/l or less</li> </ol>
Irrigation, Industrial Cooling, Controlled Waste	E	<ol style="list-style-type: none"> <li>pH between 6.0 to 8.5</li> <li>Electrical Conductivity at 25°C micro mhos/cm Max. 2250 disposal</li> <li>Sodium absorption Ratio Max. 26</li> <li>Boron Max. 2mg/l</li> </ol>

## Annexure - 5

# National Ambient Air Quality Standards

S. No	Pollutant	Time Weighted Average	Concentration in Ambient Air		
			Industrial, Residential, Rural and other areas	Ecologically sensitive area (notified by central government)	Methods of measurement
(1)	(2)	(3)	(4)	(5)	(6)
1	Sulphur dioxide (SO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	50 80	20 80	-Improved West & Gaeke -Ultraviolet fluorescence
2	Nitrogen Dioxide (NO <sub>2</sub> ), µg/m <sup>3</sup>	Annual* 24 hours**	40 80	30 80	-Modified Jacob & Hochheiser (Na-Arsenite) -Chemiluminescence
3	Particulate Matter (Size less than 10µm) or PM <sub>10</sub> µg/m <sup>3</sup>	Annual* 24 hours**	60 100	60 100	- Gravimetric - TOEM - Beta attenuation
4	Particulate Matter (Size less than 2.5µm) or PM <sub>2.5</sub> µg/m <sup>3</sup>	Annual* 24 hours**	40 60	40 60	- Gravimetric - TOEM - Beta attenuation
5	Ozone (O <sub>3</sub> ) µg/m <sup>3</sup>	8 hours** 1 hour**	100 180	100 180	- UV photometric - Chemiluminescence - Chemical method
6	Lead (Pb) µg/m <sup>3</sup>	Annual* 24 hours**	0.50 1.0	0.50 1.0	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper -ED-XRF using Teflon filter
7	Carbon Monoxide (CO) mg/ m <sup>3</sup>	8 hours** 1 hour**	02 04	02 04	-Non Dispersive Infra Red (NDIR) spectroscopy
8	Ammonia (NH <sub>3</sub> ) µg/m <sup>3</sup>	Annual* 24 hours**	100 400	100 400	- Chemiluminescence - Indophenol blue method
9	Benzene (C <sub>6</sub> H <sub>6</sub> ) µg/m <sup>3</sup>	Annual*	05	05	-Gas chromatography based continuous analyzer -Adsorption and Desorption followed by GC analysis

10	Benzo(a)Pyrene (BaP) - particulate phase only, ng/m <sup>3</sup>	Annual*	01	01	-Solvent extraction followed by HPLC/GC analysis
11	Arsenic (As) ng/m <sup>3</sup>	Annual*	06	06	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12	Nickel (Ni) ng/m <sup>3</sup>	Annual*	20	20	-AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

\* Annual arithmetic mean of minimum 104 measurements in a year at a particular site taken twice a week 24 hourly at uniform intervals

\*\* 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be complied with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

**Note:**

Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or continuous monitoring and further investigation

*(Source: National Ambient Air Quality Standards, CPCB Notification dated 18th November 2009)*



## Annexure - 6

### Noise Ambient Air Quality Standards

Area code	Category of area	Limits in db (A) Leq	
		Day time	Night time
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40

#### Note:

1. Day time shall mean from 6.00 a.m. to 10.00 p.m.
2. Night time shall mean from 10.00 p.m. to 6.00 a.m.
3. Silence zone is an area comprising not less than 100 meters around hospitals, educational institutions, courts, religious places or any other area, which is declared as such by the competent authority.
4. Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

\* dB(A) Leq denotes the time weighted average of the level of sound in decibels on scale A which is relatable to human hearing.

A "decibel" is a unit in which noise is measured.

"A", in dB(A)  $L_{eq}$ , denotes the frequency weighting in the measurement of noise and corresponds to frequency response characteristics of the human ear.

$L_{eq}$ : It is an energy mean of the noise level over a specified period.

(Source: Noise pollution (Regulation and control) Rules, 2000)

## Annexure 7

### List of Critically Polluted Industrial Cluster/Area Identified by CPCB

S. No.	Critically Polluted Industrial Area and CEPI	Industrial Clusters/Potential Impact Zones
1	Ankleshwar (Gujarat) <i>CEPI-88.50 (Ac_Wc_Lc)</i>	GIDC Ankleshwar and GIDC, Panoli
2	Vapi (Gujarat) <i>CEPI-88.09 (Ac_Wc_Lc)</i>	GIDC Vapi
3	Ghaziabad (Uttar Pradesh) <i>CEPI-87.37 (Ac_Wc_Lc)</i>	<p><b>Sub-cluster A</b></p> <ul style="list-style-type: none"> <li>• Mohan nagar Industrial area</li> <li>• Rajinder nagar Industrial area</li> <li>• Sahibabad Industrial area</li> </ul> <p><b>Sub-cluster B</b></p> <ul style="list-style-type: none"> <li>• Pandav nagar Industrial area</li> <li>• Kavi nagar Industrial area</li> <li>• Bulandshahar Road Industrial area</li> <li>• Amrit nagar</li> <li>• Aryanagar Industrial area</li> </ul> <p><b>Sub-cluster C</b></p> <ul style="list-style-type: none"> <li>• Merrut road Industrial area</li> </ul> <p><b>Sub-cluster D</b></p> <ul style="list-style-type: none"> <li>• Loni Industrial area</li> <li>• Loni Road Industrial area</li> <li>• Roop Nagar Industrial area</li> </ul> <p><b>Sub-cluster E</b></p> <ul style="list-style-type: none"> <li>• Hapur Road Industrial area</li> <li>• Dasna</li> <li>• Phikua</li> </ul> <p><b>Sub-cluster F (other scattered Industrial areas)</b></p> <ul style="list-style-type: none"> <li>• South side of GT road</li> <li>• Kavi Nagar</li> <li>• Tronica city</li> <li>• Anand Nagar</li> <li>• Jindal Nagar</li> <li>• Prakash Nagar</li> <li>• Rural Industrial estate</li> </ul>
4	Chandrapur (Maharashtra) <i>CEPI-83.88 (Ac_Wc_Lc)</i>	Chandrapur (MIDC Chandrapur, Tadali, Ghuggus, Ballapur)
5	Korba (Chhatisgarh) <i>CEPI-83.00 (Ac_Ws_Lc)</i>	<p>a) Industrial areas and their townships of NTPC, BALCO, CSEB (East) &amp; CSEB (West)</p> <p>b) Korba town</p>
6	Bhiwadi (Rajasthan) <i>CEPI-82.91 (Ac_Wc_Ls)</i>	<p>a) RIICO Industrial areas Phase I to IV</p> <p>b) Bhiwadi town</p> <p>c) Other surrounding industrial areas: Chopanki, Rampura Mundana, Khushkhera Phase I to III.</p>
7	Angul Talcher (Orissa) <i>CEPI-82.09 (Ac_Wc_Lc)</i>	<p>a) MCL Coal Mining Area, Angul – Talcher region</p> <p>b) Industrial Area (60 km x 45 km)</p> <p>Following blocks of Angul District:</p> <ul style="list-style-type: none"> <li>- Kohina block</li> <li>- Talcher block</li> <li>- Angul block</li> <li>- Chhendipada block</li> <li>- Banarpal block</li> </ul> <p>And Odapada block of Dhenkamal District</p>
8	Vellore (North Arcot) (Tamilnadu) <i>CEPI-81.79 (Ac_Wc_Lc)</i>	Ranipet, SIPCOST Industrial Complex
9	Singurauli (Uttar Pradesh) <i>CEPI-81.73 (Ac_Wc_Ls)</i>	<p>Sonebhadra (UP)</p> <ul style="list-style-type: none"> <li>• Dala-Tola</li> <li>• Obra</li> <li>• Renukoot</li> <li>• Anpara</li> <li>• Renusagar</li> <li>• Kakri</li> <li>• Dudhichuwa</li> <li>• Bina</li> <li>• Khadia</li> <li>• Shakti Nagar</li> <li>• Rihand Nagar</li> <li>• Bijpur</li> </ul> <p>Sigrauli (Madhya Pradesh) Vindhyachal Nagar and Jayant, Nigahi, Dudhichua, Amlohri &amp; Jhingurdah townships</p>

S. No.	Critically Polluted Industrial Area and CEPI	Industrial Clusters/Potential Impact Zones
10	Ludhiana (Punjab) CEPI-81.66 (Ac_Wc_Ls)	Ludhiana Municipal limits covering industrial clusters: <ul style="list-style-type: none"> <li>• Focal Point Along with NH_I_Tota Eight Phase</li> <li>• Industrial Area-B-From Sherpur chowk to Gill road &amp; Gill road to Miller Kotla road (left Side of Road)</li> <li>• Mixed Industrail Area – Right side of Gill road</li> <li>• Industrial area – C (near Jugiana Village)</li> <li>• Industrial Area A &amp; Extension: Area between old GT Road and Ludhiana by pass road</li> <li>• Industrial Estate : Near Dholwal chowk</li> <li>• Mixes Industrial Area (MIA) Miller gunj</li> <li>• MIA-By pass road</li> <li>• Bahdur Industrial Area</li> <li>• Tejpur industrial Complex.</li> </ul>
11	Nazafgarh drain basin, Delhi CEPI-79.54 (As_Wc_Lc)	Industrial areas : Anand Parvat, Naraina, Okhla and Wazirpur
12	NOIDA (Uttar Pradesh) CEPI-78.90 (Ac_Wc_Lc)	Territorial jurisdiction of : <ul style="list-style-type: none"> <li>• Noida Phase - 1</li> <li>• Noida Phase - 2</li> <li>• Noida Phase - 3</li> <li>• Surajpur Industrial Area</li> <li>• Greater Noida Industrial Area</li> <li>• Village-Chhaparaula</li> </ul>
13	Dhanbad (Jharkhand) CEPI-78.63 (Ac_Ws_Lc)	Four blocks of Dhanbad district: <ul style="list-style-type: none"> <li>• Sadar (Dhanbad Municipality)</li> <li>• Jharia (Jharia Municipality, Sindri Industrial Area)</li> <li>• Govindpur (Govindpur Industrial Estate)</li> <li>• Nirsa</li> </ul>
14	Dombivalli (Maharashtra) CEPI-78.41(Ac_Wc_Ls)	MIDC Phase-I, Phase-II
15	Kanpur (UttarPradesh) CEPI-78.09 (Ac_Wc_Ls)	<ul style="list-style-type: none"> <li>• Industrial areas:</li> <li>• Dada Nagar</li> <li>• Panki</li> <li>• Fazalganj</li> <li>• Vijay Nagar</li> <li>• Jajmau</li> </ul>
16	Cuddalore (Tamilnadu) CEPI-77.45 (As_Wc_Lc)	SIPCOT Industrial Complex, Phase I & II
17	Aurangabad (Maharashtra) CEPI-77.44 (Ac_Wc_Ls)	MIDC Chikhalthana, midc Waluj, MIDC Shendra, and Paithan Road industrial area
18	Faridabad (Haryana) CEPI-77.07 (Ac_Ws_Lc)	<ul style="list-style-type: none"> <li>• Sector 27 - A, B, C, D</li> <li>• DLF Phase – 1, Sector 31, 32</li> <li>• DLF Phase – 2, Sector 35</li> <li>• Sector 4, 6, 24, 25, 27, 31, 59</li> <li>• Industrial area Hatin</li> <li>• Industrial Model town Ship</li> </ul>
19	Agra (Uttar Pradesh) CEPI-76.48 (As_Wc_Ls)	Nunihal Industrail Estate, Rambag Nagar, UPSIDC Industrial Area, and Runukata Industrial Area
20	Manali (Tamilnadu) CEPI-76.32 (Ac_Ws_Ls)	Manali Industrial Area
21	Haldia (West Bengal) CEPI-75.43 (As_Wc_Ls)	5 km wide Strip (17.4 x 5.0 km) of industrial area on the southern side of the confluence point of Rivers Hugli and Rupnarayan, covering Haldia Municipa Area & Sutahata Block-I and II <ul style="list-style-type: none"> <li>• GIDC Odhav</li> <li>• GIDC Naroda</li> </ul>
22	Ahmedabad (Gujarat) CEPI-75.28 (Ac_Ws_Ls)	
23	Jodhpur (Rajasthan) CEPI-75.19 (As_Wc_Ls)	<ul style="list-style-type: none"> <li>• Industrial areas including Basni Areas (Phase-I &amp; II), Industrial Estate, Light &amp; Heavy industrial areas, industrial areas behind new Power House, Mandore, Bornada, Sangariya and Village Tanwda &amp; Salawas.</li> <li>• Jodhpur city</li> </ul>
24	Greater Coach (Kerala) CEPI-75.08 (As_Wc_Ls)	Eloor-Edayar Industrail Belt, Ambala Mogal Industrial areas
25	Mandi Gobind Garh (Punjab) CEPI-75.08 (Ac_Ws_Lc)	Mandi Govindgarh municipal limit and Khanna area
26	Howrah (West Bengal) CEPI-74.84 (As_Ws_Lc)	<ul style="list-style-type: none"> <li>a) Liluah-Bamangachhi Region, Howrah</li> <li>b) Jalah Industrial Complex-1, Howrah</li> </ul>
27	Vatva (Gujarat) CEPI-74.77 (Ac_Wc_Ls)	GIDC Vatva, Narol Industrial Area (Villages Piplaj, Shahwadi, Narol)

S. No.	Critically Polluted Industrial Area and CEPI	Industrial Clusters/Potential Impact Zones
28	Ib Valley (Orissa) CEPI-74.00 (Ac_Ws_Ls)	Ib Valley of Jharsuguda (Industrial and Mining area)
29	Varansi-Mirzapur (Uttar Pradesh) CEPI-73.79 (As_Wc_Ls)	<ul style="list-style-type: none"> <li>• Industrial Estate, Mirzapur</li> <li>• Chunar</li> <li>• Industrial Estate, Chandpur Varanasi</li> <li>• UPSIC, Industrial Estate, Phoolpur</li> <li>• Industrial Area, Ramnagar, Chandaull</li> </ul>
30	Navi Mumbai (Maharashtra) CEPI-73.77 (Ac_Ws_Ls)	TTC Industrial Area, MIDC, Navi Mumbai (including Blocks-D, C, EL, A, R, General, Kalva)
31	Pali (Rajasthan) CEPI-73.73 (As_Wc_Ls)	a) Existing industrial areas: Mandia Road, Puniyata Road, Sumerpur b) Pali town
32	Mangalore (Karnataka) CEPI-73.68 (Ac_Ws_Ls)	Baikampady Industrial Area
33	Jharsuguda (Orissa) CEPI-73.34 (Ac_Ws_Ls)	Ib Valley of Jharsuguda (Industrial and Mining area)
34	Coimbatore (Tamil Nadu) CEPI-72.38 (Ac_Ws_Ln)	SIDCO, Kurichi Industrial Clusters
35	Bhadravati (Karnataka) CEPI-72.33 (Ac_Ws_Ln)	KSSIDC Industrial Area Mysore Paper Mill & VISL Township Complex
36	Tarapur (Maharashtra) CEPI-72.01 (Ac_Ws_Ls)	MIDC Tarapur
37	Panipat (Haryana) CEPI-71.91 (As_Ws_sc)	Panipat Municipal limit and its industrial clusters
38	Indore (Madhya Pradesh) CEPI-71.26 (As_Ws_Ls)	Following 09 industrial areas: <ul style="list-style-type: none"> <li>• Sanwer Road</li> <li>• Shivaji Nagar</li> <li>• Pologround</li> <li>• Laxmibai Nagar</li> <li>• Scheme No. 71</li> <li>• Naviakha,</li> <li>• Pipliya</li> <li>• Palda</li> <li>• Rau</li> <li>• Indore city</li> <li>• Other surrounding industrial areas : Manglia, Rajoda, Barlal, Asrawad, Tejpur Gadwadi</li> </ul>
39	Bhavnagar (Gujarat) CEPI-70.99 (As_Ws_Ls)	GIDC Chitra, Bhavnagar
40	Vishakhapatnam (Andhra Pradesh) CEPI-70.82 (As_Ws_Ls)	Bowl area (the area between Yarada hill range in the south to Simhachalam hill range in the north and sea on the east and the present NH-5 in the West direction)
41	Junagarh (Gujarat) CEPI-70.82 (As_Ws_Ls)	Industrial Areas: <ul style="list-style-type: none"> <li>• Sabalpur</li> <li>• Jay Bhavani</li> <li>• Jay Bhuvneshwari</li> <li>• GIDC Junagarh (I&amp;II)</li> </ul>
42	Asansole (West Bengal) CEPI-70.20 (As_Ws_Ls)	Burnpur area surrounding IISCO
43	Patancheru- -Bollaram (Andhra Pradesh) CEPI-70.07 (As_Ws_Ls)	Industrial Area: <ul style="list-style-type: none"> <li>• Patancheru</li> <li>• Bollaram</li> </ul>

**Note:** Names of identified industrial clusters/ potential impact zones are approximate location based on rapid survey and assessment and may alter partially subject to the detailed field study and monitoring. Detailed mapping will be made available showing spatial boundaries of the identified industrial clusters including zone of influence/buffer zone, after in depth field study.

Aggregated Comprehensive Environmental Pollution Index (CEPI) scores of 70 and above are considered as critically polluted industrial clusters/ areas.

Source: Ecological Impact Assessment Series: EIAS/5/2009-10

Details of Critically Polluted Industrial Areas and Clusters/ Potential Impact Zone in terms of the Office Memorandum no. J-11013/5/2010-IA.II(I) dated 13.1.2010

## Annexure - 8

# Indian Standards on Wire Ropes and Wire Products

S No.	Title
Aerial ropeways for transportation of passengers - continuous movement monocable with automatic grips - code of practice for design and construction	
1804: 1982	Fibre cores for steel wire ropes
2265: 1978	Galvanized steel wire strand for signalling purposes
2315:1978	Thimbles for wire ropes
2361:1994	Bulldog grips - specification
2363: 1979 purposes	Drop forged sockets for wire ropes for general engineering
3121:1981	Rigging screws and stretching screws
3626:1978	Locked coil winding ropes:
Part 1: 1974	Socketing with zinc
Part 2: 1974	Socketing with white metal
5245	Methods for splicing of wire ropes
Part 1: 1969	Hand splicing of wire ropes
Part 2: 1971	Wire rope sling legs with ferrule-secured eye terminal
10891 Part 1: 1984	Steel wire ropes for aerial ropeways: part1 Haulage ropes
Continuous movement monocable ropeways with fixed grips intended for transportation of passengers - code of practice for construction	
6594:1977	Technical supply conditions for steel wire ropes and strands
10887: 1983	Steel wire rope for winches and ropeways used in forestry and agriculture
10891	Steel wire rope for winches and ropeways used in forestry and agriculture
Part1: 1984	Haulage ropes
Part2: 1986	Track ropes
3973: 1984	Code of practice for selection, installation and maintenance of wire ropes
Continuous to and fro movement bicable ropeways intended for transportation of passengers - code of practice for construction	

1804: 1996	Steel wire rope - fibre main core - specification
2266: 1989	Steel wire ropes for general engineering purposes specification
2363: 1981	Glossary of terms relating to wire ropes
5245 (part 1): 1969	Methods for splicing of wire ropes: part 1 hand splicing of wire ropes
1855:1977	Stranded wire ropes for winding and man riding haulages in mines
1856 :1977	Specifcation for steel wire ropes for haulage purposes
3626:2001	Locked coil winding ropes - specification
3937	Recommendations for socketing of wire ropes:
Part 1 : 1974	Sicketing with zinc
Part 2 : 1974	Socketing with white metal
Part 3 : 1994	Socketing with resins

## Annexure - 9

### Testing of Carrier

#### METHOD #1

Sometimes referred to as signature testing, actual data is used to determine what testing is required for fatigue testing. Determined by testing with independent certification the dynamic stress range and mean frequency of the frequencies produced by operation of a carrier on actual installations.

The following tests shall be performed on the same carrier so that the test carrier will receive a total of 5 million cycles.

#### Test #1

- Upper Limit - Maximum stress produced by a loaded carrier.

- Lower Limit - minimum stress produced by a loaded carrier.

Test for four million (4,000,000) cycles at recorded frequency between Upper Limit and Lower Limit.

#### Test #2

- Upper Limit - Maximum stress produced by an empty carrier.

- Lower Limit - minimum stress produced by an empty carrier.

Test for one million (1,000,000) cycles at developed frequency between Upper Limit and Lower Limit.

#### METHOD #2

Testing is accomplished by using values assigned or measured weights for the loads to be used in fatigue testing. Measure and record the following weights:

- Grip Weight, Maximum of specified sizes.

- Hanger Weight, Maximum of specified sizes.

- Chair/Cabin Weight, Maximum of specified sizes and extras, i.e. restraining bar, foot rest, bubble, etc.

- Passenger Weight, 170 pounds (77.1 kilograms) per passenger to maximum specified capacity of Chair/Cabin.

- Weight (dead plus live) = Grip Weight + Hanger Weight + Chair/Cabin Weight + Passenger Weight

- Weight (dead) = Grip Weight + Hanger Weight + Chair/Cabin Weight

The following tests shall be performed on the same carrier so that the test carrier will receive a total of 5 million cycles.

#### Test #1

- Upper Limit  $2.5 \times$  Weight (dead plus live)

- Lower Limit  $0.5 \times$  Weight (dead plus live)

Test for four million (4,000,000) cycles at approximately 200 cycles/minute between Upper Limit and Lower Limits.

#### Test #2

- Upper Limit  $2.5 \times$  Weight (dead)

- Lower Limit  $0.5 \times$  Weight (dead)

Test for one million (1,000,000) cycles at approximately 200 cycles/minute between Upper Limit and Lower Limits.



## Annexure - 10

### Safety Conditions

#### Column, including foundations and anchor bolts:

- ▶ Visual inspection for deterioration of the foundation or possible deterioration of the supporting ground
- ▶ Inspection of the grout between the tower base and the foundation to identify any deterioration in the condition of the grout and it's effective weatherproofing
- ▶ Testing of the anchor bolts and tower base plates or welds for corrosion and cracking using non-destructive testing or other appropriate test systems
- ▶ **Sheave assembly tower crossheads, rope lifting frame, and service platform, access ladder and rungs:**
  - ▶ Non-destructive testing to detect internal corrosion.
  - ▶ Crack detection on load critical welds.
  - ▶ Replacing, or where appropriate re-tensioning, of any bolts in the tower column, tower crossheads or frames
- ▶ **Chair, Hanger and Rope Grip assembly**
- ▶ **Ropes**
- ▶ Haul Rope
- ▶ Counterweight Tension Rope
- ▶ Guy Ropes or Stays
- ▶ **Rope Tensioning Equipment**
- ▶ **Communication and safety systems including emergency stop**
- ▶ **Drives**
- ▶ Main Drive
- ▶ Standby Drive
- ▶ Rescue Drive
- ▶ Integrity of power source for all drives
- ▶ **Sheave assemblies and rope guiding equipment**
- ▶ Line sheave assemblies, sheave bearings and liners
- ▶ **Bull wheels**
- ▶ Drive and return sheaves, bearings and liners
- ▶ Rope guiding equipment
- ▶ Alignment
- ▶ **Brakes**
- ▶ Service Brake
- ▶ Emergency Brake
- ▶ **Anti-rollback systems**
- ▶ Backstops and anti-rollback brakes
- ▶ **Loading and unloading stations and equipment**
- ▶ Safety Gates
- ▶ **Fire fighting equipment**
- ▶ Inspection and testing requirements in accordance with Australian Standards
- ▶ **Electrical systems and equipment**
- ▶ Earthing systems
- ▶ Control and monitoring devices
- ▶ **Emergency evacuation - procedures and equipment**
- ▶ **Corrosion protection**
- ▶ **Control of water condensation and drainage, and identification and elimination of water retention areas.**





**QUESTIONNAIRE**



## QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL (FOR AERIAL ROPEWAY PROJECTS)

**Note 1:** All information to be given in the form of Annexures should be properly numbered and form part of this proforma

**Note 2:** No abbreviations to be used – Not available or not applicable should be clearly mentioned

### I. General Information

#### 1.1 Name of the project :

(a) Name of the authorized signatory :

(b) Mailing Address :

E-mail :

Telephone :

Fax No. :

(c) Does the proposal relate to new project/  
expansion/modernization :

#### 1.2 Site Information

(a) Location of airport:

Village(s)	Tehsil	District	State

(b) Geographical information

• Latitude :

• Longitude :

• Total area envisaged for setting up of project (in ha) :

• Nature of terrain (hilly, valley, plains, coastal plains etc) :

• Seismic zone classification :

### 1.3 Environmental sensitivity details within 10 km from the boundary of the project for applicability of “General Condition (GC)” as per EIA notification dated 14.9.2006 and amendments as on date

S.No	Item	Name	Aerial Distance (in Km)
1	Protected areas notified under the wild life (Protection) Act, 1972		
2	Critically polluted areas as identified by the CPCB		
3	Eco-sensitive areas notified under section 3 of the E (P) Act 1986		
4	Inter-state boundaries and international boundaries		

### 1.4 Environmental sensitivity areas as mentioned at column 9(III) of EIA Notification 2006

S.No.	Areas	Name/ Identity	Aerial distance (within 15 km) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value		
2	Areas which are important or sensitive for ecological reasons – Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests		
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, resting, migration etc		
4	Inland, coastal, marine or underground waters		
5	State, National boundaries		
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas		
7	Defense installations		
8	Densely populated for built-up area		
9	Areas occupied by sensitive man-made land uses ( <i>hospitals, schools, places of worship, community facilities</i> )		
10	Areas containing important, high quality or scarce resources ( <i>ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals</i> )		
11	Areas already subjected to pollution or environmental damage ( <i>those where existing legal environmental standards are exceeded</i> )		
12	Areas susceptible to natural hazard which could cause the project to present environmental problems ( <i>earthquakes, subsidence, land slides, erosion, flooding or extreme or adverse climatic conditions</i> )		

\* 0.5 km from Railway lines/National / State Highway should be maintained

**Description of the flora/vegetation in the project area**

--

**Description of fauna (non-domesticated) in the project area**

--

**1.5 Baseline Data***Meteorological data*

--

*Ambient air quality data*

--

*Water quality data*

--

**Human Settlement**

	<b>With in the project site</b>	<b>With in 1 km from the project boundary</b>
Population*		
No. of villages		
Number of households village-wise		



**1.6 Current land use of the proposed project site Area(in ha) :**

<b>Level -I</b>
1. Built – up land
2. Agricultural land
3. Forest
4. Wastelands
5. Water bodies
6. Others
Total

**2.0 Alternate Routes/Alignments considered**

	<b>Alternate route 1</b>	<b>Alternate route 2</b>	<b>Alternate route 3</b>	<b>Alternate route 4</b>
Environmental Impact				
Reason for selecting the proposed Route/ Alignment:				

**3.0 Site Planning**

Does the site preparation require cutting of trees?

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, please furnish the following details:

1. How many trees are proposed to be cut?
2. Species of the above trees
3. Are there any protected/endangered species?

Yes \_\_\_\_\_ No \_\_\_\_\_

Yes \_\_\_\_\_ No \_\_\_\_\_

If yes, provide details

Does the project have any adverse effect on biodiversity?

If so, details of flora and fauna so affected: \_\_\_\_\_

**4.0. Project Details (A summary of project proposal shall be enclosed).**

- A. Length of New alignment proposed (kms)  
 B. Width of the new alignment (metres)  
 Total length of the alignment (kilometres)

**5.0 Raw Material required during construction**

S.No	Item Quantity (Tonnes)	Mode of Transport Source
Bricks		
Sand		
Cement		
Bitumen		
Diesel		
Others(Please specify)		

**6.0. Water required during construction (cu.m/day):****6.1. Water Requirement (cu.m / day)**

Sl. No.	Purpose	Average Demand	Peak Demand	Source	Type treated/ Untreated/Fresh/ Recycled	Remarks
1	Ropeway Development					
2	Dust Suppression					
3	Drinking					
4	Others (please Specify)					
	Total					

**6.2. Source of Raw Water Supply (Net)**

S.No	Source	Cum/hr	Cum/day
1	Sea		
2	River		
3	Ground water		
4	Rainwater harvesting		
5	Municipal water supply		
6	Others		

**6.3. Solid Waste:**

A. Solid waste generated during development/ operation of ropeway (Tonnes / day)

- |                            |  |
|----------------------------|--|
| 1. Plastic wastes          |  |
| 2. Domestic wastes         |  |
| 3. Others (please specify) |  |
| Total:                     |  |

**7.0 Green belt development:**

- |   |     |
|---|-----|
| A. Total area of project ( in ha)                               |     |
| B. Area already afforested ( for existing projects), in ha      |     |
| C. Area proposed to be afforested (in ha )                      |     |
| D. Width of green belt (minimum, in m.)<br>along with alignment |     |
| E. Trees planted and proposed                                   |     |
|   | NOs |
| 1. Planted  |     |
| 2. Proposed   |     |
| 3. List of species  |     |

**8.0 Rehabilitation & Resettlement Plan including vocational training and other avenues of employment:**

A. Population to be displaced:

S.No.	Name of Village	Population	Land outsets only / Homestead	Land+ Home stead	Ousteers only

- |   |  |
|---|--|
| B. Rehabilitation Plan for Ousteers.                  |  |
| C. Site where the people are proposed to be resettled |  |

D. Compensation package

E. Agency / Authority responsible for their resettlement

## 9.0 Environmental Management Plan

a. Details of Pollution Control Systems:

	<i>Existing</i>	<b>Proposed</b>
Air		
Water		
Noise		
Solid Waste		

b. Expenditure on environmental measures:

S.No		Capital cost		Annual recurring cost	
		Existing	Proposed	Existing	Proposed
1	Pollution control (provide break-up separately)				
2	Pollution monitoring (provide break-up separately)				
3	Fire fighting & emergency handling				
4	Green Belt				
5	Training in the area of environment & occupational health				
6	Others (specify)				

c. Details of organizational set up/cell for environmental management and monitoring:

d. Details of community welfare/peripheral development programmes envisaged/being undertaken by the project proponent:

**10. Compliance with environmental safeguards (for existing units)**

- a. Status of the compliance of conditions of Environmental Clearance issued by MoEF, if any enclosed Yes  No
- b. Status of compliance of 'Consent to Operate' issued by SPCB, if any, enclosed Yes  No
- c. Latest 'Environmental Statement' enclosed Yes  No

**11. Public Hearing**

- (a) Date of Advertisement
- (b) Newspapers in which the advertisement appeared
- (c) Date of public hearing (DD/MM/YYYY)
- (d) Public Hearing Panel chaired by & members present
- (e) No. of people attended the public hearing meeting and number of people from the lease area.
- (f) Summary/details of public hearing in tabular form.

Issues raised by the Public	Response/Commitment of Project Proponents	Suggestions made by the Public Hearing Panel

Date .....

Name and Signature of the Competent Officer/authority

E-mail:

Phone and Fax nos:

Given under the seal of organization on behalf of whom the applicant is signing

**Note:**

The project authorities are earnestly advised in their own interest to provide complete information on points, which they think are relevant to their proposal. Non-supply of required information may result in considerable delay in according environmental clearance.

All correspondence with MoEF shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project (refer notification No. SO. 3067 (E) dated 1<sup>st</sup> December 2009)

## Annexure-12

**LIST OF CO-ORDINATES - HARIDWAR ROPEWAY ALIGNMENT 1 (FINAL)**

(DDU Parking to Chandi Devi Temple)

LOCATION	ELEVATION (Meter)	LATITUDE (N)	LONGITUDE (E)
START POINT	283.735	29°57'13.176"	78°10'23.762"
TOWER-1	284.0634	29°57'12.250"	78°10'24.109"
TOWER-2	284.0003	29°57'11.016"	78°10'24.572"
TOWER-3	282.151	29°57'07.315"	78°10'25.961"
TOWER-4	281.128	29°57'02.685"	78°10'27.697"
TOWER-5	289.409	29°56'47.875"	78°10'33.252"
TOWER-6	317.342	29°56'41.089"	78°10'35.798"
TOWER-7	321.159	29°56'33.684"	78°10'38.575"
TOWER-8	328.83	29°56'28.284"	78°10'40.600"
TOWER-9	403.039	29°56'22.200"	78°10'42.881"
TOWER-10	404.725	29°56'21.969"	78°10'42.968"
TOWER-11	477.401	29°56'08.534"	78°10'48.005"
TOWER-12	481.518	29°56'08.228"	78°10'48.121"
TOWER-13	491.95	29°56'03.768"	78°10'49.793"
END POINTS	498.35	29°56'02.227"	78°10'50.370"