

EXECUTIVE SUMMARY

OF
Aerial Passenger Ropeway System between Dehradun
(Purkul Gaon) and Library Mussoorie (Mussoorie)
AT
Dehradun (Purkul Gaon) and Library Mussoorie (Mussoorie),
Dehradun, Uttarakhand

Total land area: 63500 sqm
Total Capacity- 2000 PPH; Horizontal Length - 5302 m
Schedule – 7(g) Category 'A'
Total Cost of the project: Rs. 285.20 Crores

Reference: TOR issued vide F. No. -F.No. 10-60/2020-IA-III dated 05.10.2020
Additional ToR :F.No. 10-60/2020-IA-III dated 18.01.2021

PROJECT PROPONENT

M/s MUSSOORIE SKYCAR COMPANY PRIVATE LIMITED

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March 2021

1. Executive Summary

1.1. Introduction

The proposed project titled “Aerial Passenger Ropeway System between Dehradun (Purkul Gaon) and Library Mussoorie (Mussoorie), Dehradun, Uttarakhand to be developed by M/s Mussoorie Sky Car Company Private Limited.

For the project, Environment Clearance was earlier granted vide letter no. 10-35/2007-IA.III dated 11th June 2009. But, due to some reasons the project was never commenced. Now, with a new planning, we are applying afresh for the development of Aerial Passenger Ropeway System between Dehradun (Purkul Gaon) and Library Mussoorie (Mussoorie).

The proposed ropeway system will add a more convenient transportation alternative for the people living in the area as well as for the tourists that will eventually accelerate tourism & socio-economic status in the area. It will help in reducing traffic load in Dehradun and on Mussoorie road which will indirectly curb pollution in the area. The proposed Ropeway alignment will be developed at Purkul, Purkul Gaon, Dehradun (Lower Terminal Point) to Mussoorie Library, Mussoorie (Upper Terminal Point). Covering a total land area of 63500 m² (6.35 ha), horizontal length of 5302 m and inclined length of 5402.61 m. There will be a continuous ropeway line from Lower Terminal Point to Upper Terminal Point.

The project is an Aerial Ropeway falls under item 7 (g) of the EIA notification, 2006 and is a designated Project as per Schedule and falls under category A, since the elevation of Upper Terminal Point is more than 1000 m i.e. 1996 m above mean sea level and it attracts the general condition. The proposed project falls in the notified Eco Sensitive area (ESA) of Doon Valley 06th January 2020 - S.O. 94(E).

The project was granted Terms of Reference vide letter no. F.No. 10-60/2020-IA-III dated 05.10.2020 for the development of a ropeway. Additional Terms of Reference were granted F.No. 10-60/2020-IA-III dated 18.01.2021 for the development of a ropeway of area of 63500 m².

1.1.1. About the Project

The proposed project Aerial Passenger Ropeway System will be developed from Dehradun (Purkul Gaon) and Mussoorie (Library), Dehradun, Uttarakhand by M/s Mussoorie Sky Car Company Private Limited. The project being an Aerial Ropeway

falls under the item 7 (g) of the EIA notification, 2006 and is a designated Project as per Schedule and falls under category A, since the elevation of Upper Terminal Point is more than 1000 m i.e. 1996 m above mean sea level and due to the applicability of the general condition. The proposed project falls in the notified Eco Sensitive area (ESA) of Doon Valley 06th January 2020-S.O.94(E). Hence, general conditions are applicable.

1.1.2. Location & Accessibility

The proposed project is Aerial Passenger Ropeway System between Purkul Gaon (Dehradun) and Library (Mussoorie), Dehradun, Uttarakhand. The latitude and longitude of the LTP & UTP are given below:

Station	Latitude	Longitude	Elevation
LTP	30°24'46.97" N	78° 04'01.80" E	958.2 m
UTP	30°27'36.76" N	78° 03'58.19" E	1996 m

The terminal points selected have good site approach and less nos. of trees present in the proposed station area and ropeway alignment is short.

1.2. Project Description

Resource Requirements

- **Land:** The land is available for proposed aerial passenger ropeway and land ownership is with the Government of Uttarakhand & Private Land. A concession agreement has been done between the Government of Uttarakhand and Mussoorie Sky Car Company Private Limited.
- **Water:** During peak days, total water requirement has been estimated as 45 KLD, out of which 15 KLD of fresh water will be sourced through Jal Sansthan and rest 30 KLD will be provided by proposed STP.

During normal days, total water requirement has been estimated as 33 KLD, out of which 13 KLD of fresh water will be sourced through Jal Sansthan and rest 20 KLD will be provided by proposed STPs.

- **Power** : The total power requirement of the unit will be 1650 KW which will be sourced from Uttarakhand Power Corporation Limited. DG sets of capacity 1x1500 kVA, 1x350 kVA, 1x225 kVA, 1x85 kVA; (Auxiliary-1x250 kVA) shall be used for the power backup.
- **Manpower:** The existing manpower for the unit is 120. After expansion the total Manpower will be 135.

Aerial Passenger Ropeway System between Purkul Gaon (Dehradun) and Library (Mussoorie),
District- Dehradun, Uttarakhand by M/s Mussoorie Sky Car Company Private Limited

- **Operational Activities:** Approx. 175 no. of staff will be employed for technical and administrative functions.
- **Pollution Sources:** Pollution sources from the project will be wastewater generation and Solid & Hazardous waste.

During Peak Days: Total quantity of waste water generation has been estimated to be 33 KLD that will be treated in STP of total capacity 40 KLD (20 KLD at each Terminal Point). 30 KLD treated water will be reused completely in the premises for flushing, gardening and miscellaneous purposes. It will be a Zero-Liquid Discharge Project.

During Normal Days: Total quantity of waste water generation has been estimated to be 22 KLD that will be treated in STP of total capacity 40 KLD (20 KLD at each Terminal Point). 20 KLD treated water will be reused completely in the premises for flushing, gardening and miscellaneous purposes. It will also be a Zero-Liquid Discharge Project.

Air Emissions: Although Ropeway operation is an environment friendly non-polluting transport system, the main source of pollution will be the ropeway machineries, DG sets and the dust emissions due to human traffic.

DG sets of 1x1500 kVA, 1x350 kVA, 1x225 kVA, 1x85 kVA are proposed for the backup power supply located. In addition, an auxiliary DG Set of 1x250kVA is also proposed. To avoid the emissions, stack height of 30 m above ground level along with wet scrubber for the DG set of capacity 1x1500 kVA and for the rest of the D.G. Sets, stack height of 4.5 m above the roof level of the terminal building will be provided.

The main sources of **noise generation** from the unit will be DG sets. Adequate engineering control will be taken to minimize the noise level from operation of DG Sets etc.

A total 381 kg/day of waste during peak days and 231 kg/day during normal days will be generated due to the proposed development.

STP sludge is the non- hazardous waste which will be generated from the project. Approx. 2.31 kg/day of sludge will be generated during peak days & approx. 1.54 kg/day will be generated during normal days. The STP sludge generated will be passed through filter press and the cake will be used as manure for landscaping/plantation. Unused sludge will be given to farmers/nursery.

Diesel/Used oil are the only Hazardous waste from the project, which will be given to authorised recyclers as per Hazardous waste Management, Handling &

Transboundary Movement Rules, 2016. 34 ltr/month used oil from DG sets will be generated.

1.3. Description of Environment

The baseline data is generated through field study within the impact zone (Core Zone and Buffer Zone i.e. 10 km from Project Boundary) for various components of the environment viz. Air, Noise, Water, Soil, Land, Traffic Ecology and Socioeconomic. The baseline environmental quality has been assessed for Post Monsoon Season October to December 2020 (by NABL accredited laboratory M/s Perfect Researchers Pvt Ltd, New Delhi) in a study area of 10 km radius from the project site. The baseline data obtained for Winter season is summarised below:

- **Land Use:** There will be change in land use from forest (0.97 Ha) & non-forest land (5.38 Ha) to ropeway alignment and the land cover will be changed from green area to ropeway alignment.
- **Soil Quality:** For Core zone: The pH ranges from 7.5-7.7. Amount of primary nutrients like Organic matter ranges from 1.9% - 2.2%, total nitrogen ranges from 84.0 mg/kg 92.4 mg/kg is in low range and available Potassium 32.5 mg/kg -51.7 mg/kg is in low range while the total Phosphorus ranges from 21.4 mg/kg - 31.0 mg/kg is in higher range in the fertility class of Soil. Thus it can be concluded that soil is low fertile in the core Zone.

For Buffer Zone: The soil samples collected from the buffer zone shows that the soil texture is Clay to clay loam, Color Brown, pH ranges from 7.1 to 7.6. Amount of primary nutrients like Organic matter 0.8 % to 1.6 %, the Available Nitrogen 54.6 mg/kg to 88.2 mg/kg is lower in range, the Available Phosphorus 16.4 mg/kg to 60.2 mg/kg is high in range, Available Potassium 4.0 mg/kg to 25.2 mg/kg is low in range. Therefore, Primary nutrient profile shows that soil is low fertile in the buffer zone due to the availability of low amounts of nitrogen, and available potassium.

- **Natural Hazard:** The area under study falls in Zone-IV , according to the Indian Standard Seismic Zoning Map.
- **Geology:** The geological framework of the area is rather complex. In the area, a large variety of rocks and rock complexes are developed in the central crystalline complex of Great Himalaya and the lesser as well as Sub-Himalaya. The area has witnessed granitic intrusions at different times, the oldest being 2500 Ma, followed successively by intrusions at 2200 – 2100 Ma, 1900 – 1600 Ma and 1100 Ma. The rocks show much lateral facies changes. Some of the rock complexes seen in one valley, are absent in the other valley. The terrain is very sensitive to mass wasting processes. It is

therefore important to understand the lithostratigraphy and structure of the Uttarakhand Himalaya in the context of land stability. The study area is located in Lesser Himalayan basin and Siwalik foreland basin of Garhwal Himalaya is interpreted as recent crustal uplift of Doon valley by various workers. Morphotectonic evidence provides an important tool in evaluating the present status of recent tectonic regimes of the region.

- **Hydrology:** The study area is drained by Ganga, Yamuna and their tributaries. The easterly flowing rivers join River Ganga and the westerly flowing rivers join River Yamuna. Ganga River enters the district near Rishikesh where Chandrabhaga River joins it. Song and Suswa are two main tributaries of the Ganges. Suswa flows SE, draining the eastern Doon along with its ephemeral tributaries like Bindal Rao, Rispana Rao etc. and joins River Song SE of Doiwala. Song River has its origin from the adjoining Tehri district. Initially it runs parallel to the Mussoorie Mountain chain in NW direction for a few kilometers and then takes a sudden turn in SE direction and joins Suswa River south of Doiwala. Yamuna River emerges from Yamunotri, which falls in district Uttarkashi.
- **Ambient Air Quality:** The mean value of PM_{10} ranges from (81.56-126.91 $\mu\text{g}/\text{m}^3$), $PM_{2.5}$ ranges from (37.02-58.26 $\mu\text{g}/\text{m}^3$), SO_2 ranges from (11.23-13.56 $\mu\text{g}/\text{m}^3$), NO_2 ranges from (26.56-39.05 $\mu\text{g}/\text{m}^3$) and CO ranges from (0.55-0.86 mg/m^3). which are within the limits of National Ambient Air Quality Standards (NAAQS) except for PM_{10} . As per the Air Quality Index by CPCB the air quality of the buffer zone is found to be Moderate to Satisfactory.
- **Ambient Noise levels:** The Ambient Noise quality at the core Zone i.e. at the UTP, LTP of the proposed project site are found to be within the standard limit. The Ambient Noise of the buffer zone for the night time for location N3 (Purkul Gaon), N4 (Brahman Gaon), N5 (Near Mussoorie Library), N6 (Tundhar Village), N7 (Salan Gaon) & N8 (Jaspur Village) is slightly higher than the night time standard due to vehicular activities on approach road & Dehradun-Mussoorie highway. Ambient Noise of the buffer zone for the day time for location N4 (Brahman Gaon), N5(Near Mussoorie Library), N6 (Tundhar Village) & N9 (Mussoorie- Mall Road) is slightly higher than the day time standards due to vehicular traffic on Dehradun-Mussoorie Highway, Dehradun-Purkul Road & approach roads.
- **Surface Water Quality:** The surface water quality of the Kyarkuli River) can be placed in Class "B" i.e. Outdoor bathing (Organised) as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The surface water quality of the Tundhar Village can be placed in Class "C" i.e. Drinking water source after conventional treatment and disinfection as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The surface water quality of the Nalota River can be placed in Class "D" i.e.

Propagation of Wildlife and Fisheries as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The Surface water quality of the Bhatta Village can be placed in Class “D” i.e. Propagation of Wildlife and Fisheries as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The surface water quality of the Bhitali River can be placed in Class “C” i.e. Drinking water source after conventional treatment and disinfection as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The surface water quality of the Kempty waterfall can be placed in Class “B” i.e. Outdoor bathing (Organised) as per CPCB surface water quality- Designated Best Use Water Quality Criteria. The surface water quality of the Khali gad can be concluded based on the results that the surface water quality of the collected sampling location can be placed in Class “C” i.e. Drinking water source after conventional treatment and disinfection as per CPCB surface water quality- Designated Best Use Water Quality Criteria.

- **Ground Water Quality:** For Core and Buffer zones all the values are found within the drinking water standards (IS:10500) and can be used for drinking purposes and other household activities.
- **Socioeconomic Environment:** No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase. Job opportunities for locals and those getting affected due to loss in their job in transportation (cabs) will be considered based upon the skill requirement. This will have a positive impact on the nearby people.

1.4. Anticipated Environmental Impacts & Mitigation Measures

Air environment

During the construction phase, impacts on ambient air would be mainly due to dust emissions and movement of vehicles. However, these impacts would be short term in nature and limited only to the construction period. Dust suppression systems (water spray) will be used. Construction materials shall be fully covered during transportation to the project site by road.

During the operational phase, To prevent emissions, DG set will be installed with appropriate stack in accordance with CPCB norms and to avoid emissions from process pollutants. Plantation will be done all along the roadside.

Water Environment

During the construction period, Total 17 KLD of water will be required during construction for domestic as well as construction purposes at both the terminals. 7 KLD waste water generated will be disposed off in a septic tank via soak pit.

During the Operation Phase: During peak days, total quantity of waste water generation has been estimated to be 33 KLD that will be treated in STP of total capacity 40 KLD (20 KLD at each Terminal Point). 30 KLD treated water will be reused completely in the premises for flushing, gardening and miscellaneous purposes. It will be a Zero-Liquid Discharge Project.

During normal days, total quantity of waste water generation has been estimated to be 22 KLD that will be treated in STP of total capacity 40 KLD (20 KLD at each Terminal Point). 20 KLD treated water will be reused completely in the premises for flushing, gardening and miscellaneous purposes. It will also be a Zero-Liquid Discharge Project.

The waste water from wet scrubber (for DG set of 1500 kVA) will be treated in STP at UTP.

Land Use and Soil quality

There will be change in land use from forest (0.97 Ha) & non-forest land (5.38 Ha) to ropeway alignment and the land cover will be changed from green area to ropeway alignment.

Out of total land of 63500 sqm, 9700 sqm of forest land will be used for the construction of station and line towers for installation of ropeway. For the same, guidelines of the Forest (Conservation) Act, 1980 will be followed.

-Rest 53800 sqm of land which will be utilised for the construction of LTP and UTP is owned by Uttarakhand Tourism Development Board.

Uttarakhand Tourism Development Board has further allotted to M/s Mussoorie Sky Car Company Private Limited for development of Ropeway system via public private partnership.

Noise Levels

DG set of capacity 1x1500 kVA, 1x350 kVA, 1x225 kVA, 1x85 kVA (along with auxiliary DG Set of 1x250 kVA) are proposed for backup power supply. Acoustically enclosed DG Sets with silent generators will be bought and installed at LTP & UTP. Regular maintenance of ropeway equipment will be done. Equipment generating noise will be provided with a noise shield.

Solid Waste

During construction phase: Approx. 30 kg/day of Municipal Solid waste will be generated from laborers which will be sent to solid waste/landfill sites.

During Operation Phase: A total of 381 kg/day of solid waste shall be generated (267 kg/day of biodegradable and 114 kg/day of recyclable waste). Biodegradable waste will be treated in Organic Waste Converter and converted to manure. 2 no. of Organic Waste Convertors will be installed each at LTP (for general waste) and UTP for treatment and disposal of biodegradable waste. Recyclable wastes like cardboard, paper etc. will be collected and given to approved recyclers. The proposed project will be a Plastic-free zone. The waste oil generated from D.G sets will be sent to authorize hazardous waste disposal authority.

Flora and fauna: The alignment of the proposed ropeway partly falls within a Forest land which needs to be diverted for the development of terminal stations & line towers. About 9700 sqm (0.97 Ha) of the area of forest land will be required to be diverted. On the site, only erection works are required. Cutting of trees is needed only at the pillar points. At other areas only pruning/cutting of branches alone is only required. The number of trees to be cut as per present assessment of approximately 71 number of trees and pruning of 20 no. of trees will be done as per the requirement. However trees belonging to endangered species can be protected by rearranging the pillar position. The pillar position will be selected considering that no traditional paths, elephant path, nallas etc come or get affected in the path.

For forest land less than 1 Hectare, the compensatory afforestation is done for 100 Trees per Hectare. The 100 trees are proposed to be planted in the Rikhauli village, Accordingly provision has been made in the estimate (Rs. 1.33 Lakh).The activity of cutting of trees will be carried out as per the Forest (Conservation) Act, 1980 and associated guidelines in this respect.

Socio-economic environment: No rehabilitation and resettlement are required. Employment opportunities will be generated for the local population during the construction/installation phase. Job opportunities for locals and those getting affected due to loss in their job in transportation (cabs) will be considered based upon the skill requirement. This will have a positive impact on the nearby people.

1.5. Analysis of Alternatives (Technology & Site)

Three Alternative routes were studied out of which Alternative route in red was selected.

1. **Alternate-1:** involves the alignment to pass over the habitation of Bhitargaon and Limestone quarry, passes through dense habitation between Bucher hill and Sifon code library point and also passes over LBS Academy and crossing roads.

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2. **Alternate-2:** involves dense forest, passes through deep gorge between Galogi and Bhatta.
3. **Alternate-3:** Between Purkul Gaon (LTP) & Library (Mussoorie).

Ultimately Alternate-3 was finalized by Mussoorie Sky Car Company Private Limited.

Characteristics of Selected Alignment:

Alternate-3: While considering the alignment, the following approach & methodology has been adopted for selecting the most favorable alignment. This was also discussed with the officials at site and following guidelines has been considered:

- Availability of adequate space for proposed UTP/LTP for the system as for parking space (LTP) & development of other infrastructure.
- From the point of view of easy land acquisition.
- Depending upon the places to be connected, it should have minimum possible infringement.
- The route selected should be feasible for selection of suitable ropeway system to be able to cater to the required traffic projections.
- Connectivity of stations with roads.
- Minimum rehabilitation
- Minimum involvement of tree cutting

1.6. Environmental Monitoring Program

The following monitoring programs are to be carried out at project in order to meet the above objectives:

- Ambient air and noise, water, soil quality
- Emission and discharge from the ropeway station
- Greenbelt
- Social parameters
- Inspection of Prevention and Control Measures

1.7. Additional Studies

Ropeways are liable to suffer from environmentally induced threats, risks and hazards as well as human -caused occurrences. Natural disasters include earthquakes, landslides, rock falls, storms, lightning etc. and human caused occurrences include fire, electrical faults, security threat, 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 material outside cabin, cabin derailment at station etc.

Natural Occurrence- The project site is located in seismic zone IV which indicates high damage risk zone. The Landslide Zonation map published by Uttarakhand State Disaster Management Authority is referred from the map, it can be inferred that the LTP area is in Safe Zone and the UTP area is in Moderate Zone.

Human Caused Occurrences- Fire can mainly be caused due to electric spark in the electrical room, fire in the surrounding forest area, fire in fuel storage places, etc. The ropeway will run on electricity & hence electrical current can pass through cable cars & wires due to inadequate insulation or accidentally. The technical failures can cause risks to people working in the area during the construction phase. Consequences of the discussed hazards may result in an accident. War, crisis & terrorists can cause panic among the public and staff.

General Safety measures include:

- **Back-up Generators-** In the event of a primary engine failure, secondary diesel generators are typically available to continue operation.
- **Secondary Bearing System-** The main bull wheels in each terminal may have a secondary set of bearings in the event of primary bearing failure.
- **Tire Conveyor Redundancy-** Both the accelerator and decelerator conveyors have secondary lines with separate power in the event of a primary failure.
- **Recovery concept-** If secondary power fails and on-line rescue is required, comprehensive evacuation guidelines are implemented and carried out by specially trained personnel. The form of the evacuation depends on lift type and site conditions.
- In order to enhance system reliability, besides the electric main drive unit (AC motor), two independent hydrostatic emergency drive units allow for operation of the system at a reduced capacity and in emergency cases for each section.
- A hydraulic emergency drive will be installed for each section in case of a power failure back to a station. The sections can be separated at every moment to allow independent movement of every section.
- The detachable system features friction sheaves at the incoming and outgoing sides of the stations. These sheaves transmit the speed of the rope via double V-belts to the conveyors which transport the carriers through the

stations. This configuration ensures positive control and synchronization of rope speed and carrier conveying speed in each station in both forward and reverse directions, irrespective of the drive selected.

- Key functions of the ropeway, such as rope speed and grip opening and closing operations, are monitored and controlled by electronic safety circuits in order to ensure smooth operation and maximum safety.

1.8. Project Benefits

The benefits due to the proposed project are given below:

- Passenger Ropeways with approved international code of practice, provide more safe transportation of materials.
- Ropeway provides a stable and consistent alternative to road & combination transport and thus, there will be reduced pollution.
- The project has been planned to be “PLASTIC-FREE ZONE” for conservation of forest area. Noise and air pollution will be reduced after the operation of ropeway.
- The project would require local people, who are accustomed to living under the existing conditions, for skilled / unskilled activities in the course of construction and operations of the project. The project will provide direct and indirect employment opportunities to the local people hence improving their status of living.

1.9. Environmental Cost Benefit Analysis

As per EIA Notification 2006, Environmental Cost Benefit Analysis has to be carried out if recommended at the Scoping Stage.

However, during the Scoping Stage, no such conditions are mentioned in the TOR letter.

1.10. Environment Management Plan

Air Quality Management Plan

- Although Ropeway operation is an environment friendly non-polluting transport system, the main source of pollution will be the ropeway machineries, DG sets and the dust emissions due to human traffic.
- DG sets of 1x1500 kVA, 1x350 kVA, 1x225 kVA, 1x85 kVA are proposed for the backup power supply located. In addition, an auxiliary DG Set of 1x250kVA is also proposed. To avoid the emissions, stack height of 30 m above ground level along with wet scrubber for the DG set of capacity 1x1500 kVA and for the rest of the D.G. Sets, stack height of 4.5 m above the roof level of the terminal building will be provided.

Noise Level Management Plan

- Acoustically enclosed DG Sets will be bought to reduce Noise emission. The system will be operated mainly on electricity provided by Grid. DG sets will be used as a stand-by only at the time of power failure. DG sets shall be installed on proper vibration pads to avoid vibration impacts.
- The normal ropeway operations are always lower than 50 dB (A) of noise level. Proper maintenance of the ropeway during the operational phase will be done to ensure low or no noise and environmental impacts.

Solid & Hazardous Waste Management plan

- Construction waste will be disposed of in the designated waste disposal site through SPCB approved vendors.
- 267 kg/day of organic waste will be generated which will be treated in an Organic Waste Converter converted into compost.
- 114 kg/day of recyclable waste will be given to the approved recycler.
- Used oil whenever generated will be sent to authorize hazardous waste disposal authority.
- STP sludge will be sent to filter press and cake will be used as manure for landscaping/plantation. Unused sludge will be given to farmers/nursery.

Wastewater & Effluent Management Plan

- **During peak days**, total quantity of waste water generation has been estimated to be 33 KLD that will be treated in STP of total capacity 40 KLD (20 KLD at each Terminal Point). 30 KLD treated water will be reused completely in the premises for flushing, gardening and miscellaneous purposes. It will be a Zero-Liquid Discharge Project.
- **During normal days**, total quantity of waste water generation has been estimated to be 22 KLD that will be treated in STP of total capacity 40 KLD

(20 KLD at each Terminal Point). 20 KLD treated water will be reused completely in the premises for flushing, gardening and miscellaneous purposes. It will also be a Zero-Liquid Discharge Project

Occupational Health & Safety management plan

- Measures shall be taken to identify the Electrical Environment Impacts (Hazards) arising during the land preparation for use, Ropeway operation, and the entire cycle activities of the project and proper mitigation measures shall be adopted.
- Proper Coordination with Local Municipal Fire Brigade, police, health surveillance (To treat the affected person in accident) shall be maintained. Proper Fire Management System shall be installed.
- Environment Management Plan shall be prepared with Emergency Procedures (Emergency Plan) to deal with localized fire and electrical hazards and hazards due to natural calamities at the entire cycle of the activities of the project.
- Provision of the communication systems to call for help and assistance from nearby complex bodies and other external authorities like district authority, fire services, police services, medical services, civil and defence services etc. shall be provided.
- Provision of Health and Welfare Facilities will be provided to the labourers and staff at the entire cycle activities of the project such as:
 - Provision of drinking water from an approved source.
 - Provision of urinals and accommodation as per the rules and their drainage and disposal treatment.
 - Provision of medical and first aid treatment.
 - Facilities for sitting, shelters, rest rooms and lunch rooms, crèches, canteen etc.
 - Provision of day working hours.

Socio Economic Environment management plan

- Approx. 175 no. of staff will be employed for technical and administrative functions.
- The un-skilled labor can be procured from the local villages/towns providing employment opportunities to the local populace. Job opportunities for locals will be considered.

Cost Summary for Environment Management

S.No.	Cost Summary	Cost (in Lakhs)	% of the project Cost
1	Project Cost	28520	100

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2	Capital cost for Environment Management Plan	97	0.34
3	Recurring cost for Environment Management Plan	13.9	0.048
4	Occupational Health and Safety	50	0.17
5	Public Health and Safety	5	0.017

1.11. Cost & EMP Implementation Budget

The total cost of the project is Rs. 285.2 Crores. The Capital cost for EMP Budget will be Rs. 97 Lacs and recurring cost will be Rs 13.9 Lacs/Year.