



**UTTARAKHAND STATE INFRASTRUCTURE
DEVELOPMENT CORPORATION LTD (USIDCL)**
(Government of Uttarakhand)

**Expansion and Strengthening of Runway and up
gradation of Associated Operational Infrastructure and
Terminal facilities at Naini-Saini Airport, Pithoragarh
(Uttarakhand) for ATR-42 type of aircraft**

**EXECUTIVE SUMMARY
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EXECUTIVE SUMMARY

1. INTRODUCTION

Transportation network of the country contributes important part towards the economic development of the country. Rapid economic growth in India has made air travel affordable. The State Government of Uttarakhand through Uttarakhand State Infrastructure Development Corporation Ltd., (USIDCL) proposes to develop/ upgrade the existing airport at Naini-Saini, Pithoragarh to Category 2C airport under Visual Flying Rules (VFR) conditions for operations of ATR-42 type of aircraft.

1.1. Objectives and Scope of the Study

The objective of the study is to safeguard the Environment due to up-gradation of infrastructure facilities during construction and operation phases of the project. RITES Ltd has been assigned the task of preparing the EIA report as per the approved Terms of Reference (ToR) given by Ministry of Environment and Forest (MoEF).

2. PROJECT DESCRIPTION

The proposed development will be at the existing Naini-Saini airport; situated about 4 km from the Pithoragarh town in the Pithoragarh district of Uttarakhand State. The district is bounded by China on the north, Nepal on the east, district Champawat & Almora on the south and the districts Bageswar and Chamoli on the west.

2.1. Need of the Project

The existing airport was constructed during 1991 for the administrative use. At present, there are no commercial operations/activities at this airport since the runway and existing infrastructure facilities are at poor condition. State Government of Uttarakhand decided to develop the airport for commercial activities.

2.2. Existing Facilities

The present Naini-Saini Airport of Pithoragarh has the following facilities:

- Airport was planned for operations of Dornier type aircraft
- Runway 14-32 - 1300m X 20m
- Apron - 50m X 30m
- Taxiway - 50m X 15m
- Terminal Building - 2 Floors RCC structure without any doors and windows
- ATC - Above the terminal building
- Fire station - Abandoned
- Residential Quarters - Abandoned
- Car Park Facility - for 20 no.s

Fire rescue facilities, airfield lighting, navigational/ communication aids power supply and water supply were not available at the existing airport. Security boundary wall/fencing also does not exist around the airport.

2.3. Proposed Facilities

The proposed project under phase-II envisages development/up gradation of the following facilities:

- Expansion and strengthening of runway for operation of ATR-42 type of aircraft
- Expansion and strengthening of taxiway
- Expansion and strengthening of apron for at least two ATR-42 type of aircraft
- Construction of stop way & Runway End Safety Area (RESA)
- Renovation/ upgrading of existing ATC/terminal building for 40 passengers (20 incoming and 20 departing passengers at a time)
- Renovation/upgrading of existing car parking, fire station and met station
- Peripheral service roads
- External electrification
- Boundary wall
- Site Development, Arboriculture, Landscaping etc.
- RCC Drain
- Security Tower
- Provision of Taxiway and Parking Space for Two Helicopters
- Provision of VIP Guest House
- Provision of Runway, Apron, Taxiway and Threshold edge lighting
- Development work for local area

2.4. Project Cost

The cost estimate for the proposed works out to ₹ 6491.98 lakhs. This estimate included only the works to be carried out by the contractor(s). Cost of land, cost of removal of obstructions & rehabilitation of affected population, Cost of obstruction lights and marking, cost of ATC & Meteorological equipment, environmental mitigation, cost of widening of approach road from the city, consultancy and other costs are excluded.

3. ENVIRONMENTAL BASELINE DATA

3.1. Land Environment

Field studies were carried out towards collection of baseline data with respect to physical environment viz. physiography, geology, soils, minerals, drainage, land use pattern and seismicity.

Physiography: The district is naturally landscaped with high Himalayan Mountains, snow capped peaks, passes, valleys, alpine meadows, forests, waterfalls, perennial rivers, glaciers and springs. Topographically the district is having rugged terrain with high cliffs and intersected by deep gorges. The altitude of the district varies from 1200 m to 4500 m above

MSL. The slope of the district varies from very steep slope to steep slope (>600m/km to 150-300m/km).

Geology and Minerals: The project area falls in lesser Himalayas (metamorphism mostly reversed) and the geologic period of upper proterozoic. The minerals available in the Pithoragarh district are Copper, Magnesite, Soapstone, Arsenic, Sulphur, Kyanite, Graphite, Slate and Limestone.

Soils: Different soils available in the district are skeletal soils, mountainous, sub-mountainous and snow fed soils etc. The soils within the 10 km radius from airport are sub mountainous soils. These soils are rich in humus content and generally dark brown or black in colour.

Land Use Pattern: Land cover of the 10-km radius study area with reference to the Airport has been derived using latest cloud free satellite imageries. From the data, agriculture occupies about 21%, forest occupies about 62%, built-up area occupies 3%, waste land occupies 10%, sparse vegetation is about 1.8% and roads occupies about 0.5%.

Seismicity: The state of Uttarakhand falls in a region of high to very high seismic hazard as per Global Seismic Hazard Assessment Program (GSHAP) data. As per the revised seismic zoning map of India, the project area falls in Zone - V of the classification (IS-1893: Part-I: 2002).

Drainage: The profile of the district is full of rugged and undulating terrains with the exceptions of the deep gorges, steep and narrow valleys carved out by the rivers and good number of other turbulent streams that drain out all over the district. In the project area streams are the main source for the drainage system.

3.2. Water Environment

The district is abundant in rivers most of which are originated within the district. The occurrence of springs is a common phenomenon in the district. The springs have been developed for drinking and irrigation in most places of the district.

Four samples were collected in the project area for water quality analysis, which includes two surface water samples and two bore well (ground water) samples. Water from these sources should be treated before using it for drinking purposes.

3.3. Ambient Environment

In order to assess the impact on existing ambient environment due to the project, it is necessary to have baseline status of ambient environmental parameters.

Meteorology: The monsoon season generally exhibits from the mid of June to mid of September. Winter season is from October to March and summer season is from April to mid June. Generally January month is the coldest month of the year whereas month of May is hottest month. Relative humidity will be above 50% throughout the year.

Air Quality: Air quality monitoring was carried out at 4 locations within/ nearby vicinity of the proposed project, for twice a week for one season. Seven major air pollutants viz. particulate matter (PM₁₀ & PM_{2.5}), Sulphur Dioxide (SO₂), Oxides of Nitrogen (NO_x), Carbon

Monoxide (CO), Lead (Pb) and Hydro Carbons (HC) representing the air quality was monitored. The air quality monitoring results indicate that all parameters were noted within the limits for residential areas except at Naini village where PM10 and PM2.5 are exceeded to permissible limit for first 24 hrs monitoring out of 48 hrs continuous monitoring.

Noise Environment: Noise levels were recorded on hourly basis for 24 hours in order to have an assessment of the Day and Night time noise levels. Leq for day and night at all locations exceeds the National Ambient Noise Standards for Residential Zone. The main source of noise in the project area is the traffic movement on the road.

3.4. Ecological Environment

The proposed project area for the airport and in its neighborhood within 10 km radius has no wild life sanctuary or national park. Uttarakhand state is rich in forest resources. Due to topographical variation and diverse climatic conditions a variety of forests are found in the state. There are 6 reserved forest blocks around the project area out of which Saurlekh block is the nearest at an aerial distance of about 1.75 km from project area.

Prominent trees present in the project area are chir, peepal pahari, meil, kharikya and naspate. Common fauna found in the project area are cattle, buffaloes, sheep, and goat. No rare and endangered species are found within the project area.

4. ENVIRONMENTAL IMPACTS

4.1. Impacts due to Project Location

Displacement of People: No displacement of people due to the proposed project is anticipated; however one school exists near to the boundary of the project which needs to be displaced or relocated.

Loss of land / Change in land use: No land acquisition is involved for the proposed project, since the required land is in possession of USIDC, and free of any kind of encumbrance. The proposed development will enhance the aesthetics due to development of a modern building and the surrounding horticulture/landscaping.

Loss of Infrastructure: One school exists near to the boundary wall of the airport which needs to be relocated. A bituminous road connecting Naini-Saini village is passing through the proposed extension of runway area at 32 end. This road is required to be closed.

Encroachment into Forest/ Wildlife Habitat Corridor: Loss of trees or shrubs is not anticipated due to the proposed project activities. The project area does not encroach into any Forest Land or Wildlife Habitat Corridor Land.

Loss of Historical, Cultural and Religious Monuments/Structures: No historical, religious or cultural monuments will be lost due to the project location or its activities.

Risk due to Earthquakes: The airport area falls in Zone V of the seismic zoning classification of India. The construction of airport will require use of appropriate design technology so that they can withstand the seismic forces. Necessary factor of safety and appropriate coefficient would be incorporated in designing the structures under the worst combination of forces.

4.2. Impacts due to Project Construction

Impact on Soil Quality/Erosion: The topsoil shall be disturbed due to various construction activities. Exposure of loose soil to rain water will increase turbidity in the run-off; however, this impact is limited to the possibility of excavated surfaces prevailing in the rainy season.

Health Risks and Cultural Effects: Health risk during construction phase, include disease hazards due to lack of sanitation, vector borne diseases and hazards due to local carriers. About 100 people are expected to be working during peak construction period at project site.

Water Use and Quality: The water quantity of 54.5 KLD will be required during the proposed construction period including drinking, toilets and construction activities, which shall be arranged by the contractor from nearby surface water source. Wastewater generation from workers toilets is assessed to about 3.6 KL every day.

Air Pollution: During the construction phase, PM is expected to be the main pollutant associated with construction activities. The proposed land is fairly flat, so extensive formation work is not expected during this phase. It is assumed that most of the excavated material shall be used within the project, with minimal cut and fill material to come from outside the site.

Noise Pollution: The impact of noise produced during the construction will be limited to a distance of about 75 meters at which, the noise level of various equipment will come down below 55 dB (A). The construction activities would not have a significant impact on existing environment out of 75m from the construction place. However, these impacts would be temporary in nature.

Impact due to Solid Waste Disposal: Inorganic solid waste generated shall be recycled for use in the base layers of paved area i.e. parking pavement and in road construction. The workers along with other supervisory staff are likely to generate about 20 kg of municipal waste every day, which need be disposed properly.

4.3. Impacts due to Project Operation

Air Pollution: During operation phase of the airport, the source of air pollution will be aircrafts operation and vehicular pollution due to passenger cars. Pollution load due to 20 cars is calculated by assuming passenger travelling on personal vehicle will be petrol car.

The combustion conditions and fuel consumption during the various phases of flight (taxi, take off/landing, cruise) will have different emission factors. Emissions during operation phase have been worked out using aircraft emission factors.

Noise Pollution: Source of noise at airport is due to the passenger car and aircraft movement. The impact on ambient levels due to vehicular traffic will be marginal limited to parking area of airport. The major source of noise from aircraft is the machinery noise from fan, compressor, turbine blades, engines and the primary jet. For estimation of noise contours around the airport, Integrated Noise Model (INM) version 7.0C is used. In the study, Leq and Maximum sound levels (Lmax) are used to assess the aircraft noise and depicted through noise contour.

Impact on Water Environment: After the completion of the project 14.5 KLD would be required for all the facilities like drinking, floor washing and horticulture purposes. The water demand during operation phase will be met from the Municipal water supply. Daily sewage flow works out to 9.9 KLD, which will be treated through packaged Sewage Treatment Plant (STP).

Airport Runoff and Drainage: For effective storm water drainage system, a RCC drainage network has been designed. The airport area is divided into 11 zones for early discharge of the storm water. Some part of the storm water from runway, terminal building, apron, and taxiway is being collected separately for rain water harvesting.

Impact on Solid Waste Disposal: Operation of airport generates solid waste from routine office activities and restaurant. The assumed rate of generation of solid waste will be 6 kg/day considering 100gm/person/day. Collection and removal of refuse from airport area are important for effective vector control, nuisance abatement, aesthetic improvement, fire protection and bird control.

4.4. Positive Impacts

Employment Opportunities: The construction phase of the project generates employment over a period of 18 months. In the post construction phase, the project will provide social benefits in terms of direct / indirect employment by way of better commercial development of the area due to increase in number of tourists.

Improvement in Aesthetics: The project will lead to improved aesthetics of the surroundings by way of providing a pleasing architectural design. The green belt that will be provided around the proposed terminal building would also enhance the aesthetics.

Better Tourism: Pithoragarh is the gateway for important tourist destinations. Increased air transportation facility would attract more tourists, which will work as a catalyst for economic growth of Pithoragarh.

5. SOCIO-ECONOMIC ASSESSMENT

An overview of the demographic and socio-economic characteristics of Pithoragarh district is considered to understand region, place and people in the right perspective.

5.1. Demographic Details of the Project Area

Administrative Structure: The state of Uttarakhand is spread over an area of 53,483 sq. kms and the population 8489349 (Census 2001). The state has 20th rank in terms of population size and 18th in terms of area. The population density per kilometer is 159.

Town, Villages and Amenities: The district has six tehsil with urban population 12.9% and rural population is 87.1%. The villages and towns have education, medical, drinking water facilities, post, telegraphs, market, pucca road and electricity.

Population: Total population of the district according to 2001 census is 4,62,289 persons, comprising of 227,615 males and 2,34,674 females. Out of the total population, 23% are SCs and 4.2% are STs. The urban population of the district is 12.9%.

Agriculture, Irrigation and Animal Husbandry / Livestock: The main kharif crops are paddy, jhangora, maize, madua, pulses and tomatoes and rabi crops includes wheat, barley, mesur, peas, linseed and mustard. Resin is extracted from pine trees and pine tar is obtained from highly resinous stump wood of rejected and fallen trees. Animal husbandry is an important source of supplementing income of the rural population. Some of the people spin and weaves the wool of their sheep.

River and Waterways: The important rivers that flow through the district are Saryu, Ramganga, Gawri, Kali, Dhauri and Kuti. In addition, there are many other streams and small rivers.

Industries: Copper, magnesite, arsenic, sulphur, kyanite, limestone and graphite are deposits found in the district.

Tourism: Askot, Berinag, Didihat, Munsihari and Pithoragarh are main tourist places. Other important places in the district are Punyagiri, Chandak, Thal Kedar, Dhawaj, Gangolihat, Shyamala Tal, Sukhidang, and Retha Sahib.

Education: According to Census 2001, literacy rate of the district is about 75.9%. A ratio of 8.51 primary schools, 2.99 junior secondary/middle, 1.85 metric level, 2.96 inter schools per 10 thousand in urban area of the district were found.

Communications: The district has road and pathways with a total length of 846 kms under PWD managed road. The ratio of road and area is about 95.53 kms per 1000 sq.km.

Languages and Religion: The language of the district is Hindi and the religions are Hindus, Muslims, Christians, Sikhs, Buddhists and Jains.

5.2. Socio-Economic Profile of the Project Area

Population Characteristics: The study area has 1263 household, population 5825 includes male 2815 and female 3010. The average family size is 4.5 and average sex ratio 1047.

Literacy: Education is an important socio-economic indicator, if a society has higher education level considered as a developed society. Literacy rate of the project area are given in chapter.

Employment: Basti village has the highest number of main workers; however Odmatha has the lowest numbers in the same category. Nain-Saini has highest number of marginal workers and Basti has no workers classified as marginal workers.

5.3. Project Affected Area & People

The project activities shall necessitate about 28 ha land. No one is to be affected due to the proposed project since the required land is already in possession by the district administration of Pithoragarh.

5.4. Public Consultations

The venue for the public consultation was near naini-saini village. The village is close to the existing airport, which is proposed to be upgraded. The response of the people was quite

positive. During consultation, people suggested for some schemes like job opportunities in the project works; road passage for Naini, Odmatha and Sujai villages; upgrading junior high school to high school at Naini-Saini; up gradation and shifting of foot road to single lane road from Pithoragarh to Nain-Saini and Jhajhar Deol villages; and provisions for a water lift for drinking water supply to the Odmatha village, etc.

5.5. Social Impact Analysis

Positive and negative impacts of the proposed project on the socio-economic conditions of project affected people have been examined.

Employment Opportunities: The project is likely to provide direct employment opportunities to 100 persons during construction period of 18 months and approximately 20 persons during operation and maintenance of the project at all levels.

Benefits to the Economy: Development of infrastructure and availability of safe and fastest mode of transport in the isolated hilly terrain of Pithoragarh. Project realization would contribute towards better economic activities in the region.

Recreation and Tourism Potential: The proposed project is likely to boost tourism and revenue generation in the area and opportunities of employment for local people.

Pressure on Existing Infrastructure: No pressure on the existing infrastructure is anticipated since no migrating workers are anticipated.

Cultural Conflicts: No cultural conflict due to the emigration of the outsiders is expected as most of its requirement shall be fulfilled by the local available man power.

Cost of Living and Inflation: No significant impacts are assumed on local markets, cost of living and inflation.

Sensitive Receptor: Maa Nainawati Public school, Naini-saini is located near the boundary of the existing airport. The increased events resulting in high level of noise at airport shall disturb the functioning of school and disturb the students in their study.

5.6. Corporate Social Responsibility Plan

Depending upon the needs of people and area of vicinity, following improvements in the infrastructures could be done. The plan may make the people living better and public opinion in favor of the project.

Infrastructure Development Support: Works like approach road to the village, water supply up gradation, etc. shall come under this head.

Water Lift: People of Odmatha village face lack of drinking water. The drinking water is available in plenty down to the village, which can be lifted to the village household level for drinking and other household purposes.

Development of Road: The villages around the runway and airport suffer due to the lack of proper road connectivity. Naini-Saini, Odmatha and Sujai villages require connecting road to move comfortably.

Education: Most of the villagers in naini-saini village have demanded up gradation of the existing school to the level of high school.

5.7. Cost Estimate for CSR

The CSR works has been estimated which comes out as ₹ 72.58 Lakhs which has been kept in the civil estimates. The item wise actual cost for the work shall be decided by the project proponent in consultation with the local people as per the needs and requirements.

6. ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management Plan (EMP) contains a description of proposed remedial measures and monitoring plan for the construction and operational period of the project.

6.1. Pre-Construction Stage

Water Conservation: For the proposed project rain water harvesting considered during design stage of the project which will be done by capturing runoff from roof areas of buildings (terminal building, ATC, fire building, guest house, electrical substation, etc), apron, taxiway and parking area.

Energy Conservation Measures: Energy conservation program will be implemented through measures taken both on energy demand and supply. Improvements in lighting efficiency have been provided in the building by adopting various measures.

Construction Material Management: The construction material storage site shall be regularly inspected for the presence of uncontrolled construction waste. Sufficient quantity of materials should be available before starting any activity. The contractor should test all the materials in the Government labs or Government approved labs in order to ensure the quality of materials before construction.

Borrow Area Management: About 5000 m³ of earth will be required from outside for filling. If we assume height / depth of cutting, 2 m at borrow area site then about 0.25 ha of land will be required to be restored / vegetated.

Removal of Obstacles: A bituminous road connecting Naini-Saini village is passing through the proposed extension of runway area at 32 end. This road is required to be closed. From the district administration it has been understood that alternate road connectivity to the village is being provided by the PWD.

Fire Fighting: The fire protection system will cover external as well as internal premises of the building. Category 4 level of fire protection is required to be provided to meet the requirement of design aircraft. A fire station of 546 sq. m is proposed to house the CFT, Ambulance and a Jeep.

6.2. Construction Stage

Air Pollution and Dust Control Measures: During construction, dust generated by movement of materials will have the impact on air quality. Temporary impacts on air quality from dust would be mitigated with standard construction practices, including

wetting of exposed soils, limiting vehicle operation on unpaved surfaces and limiting the extent and duration of exposed areas.

Noise Control Measures: construction activities are expected to produce noise levels at source in the range of 75-90 dB (A), which will decrease with increase in distance. Residents within 113m from the construction activity will be exposed to a noise higher than the permissible limit. The overall noise impacts during construction will be for short-term.

Temporary Workers Camp: Construction camps shall be provided with sanitary latrines and urinals. Sewerage drains shall be provided for the flow of used water outside the camp. A cooked food canteen on a moderate scale shall be provided for the benefit of workers.

Water Supply and Sanitation: During construction, the quantity of wastewater will be about 3.6 KL/day. Individual sewerage disposal system by way of septic tank followed by oxidation pond is proposed. An amount of ₹ 9.5 Lakhs will be required for these facilities.

Oil Spill Control/ Management: Various equipments and construction vehicles generate oil & grease, which are likely to spoil the natural environment. These oil spills may enter in the runoff, which ultimately contaminate the natural drains. Oil and grease removal trap will be provided in the storm water collection system.

Solid Waste Management: Total solid waste generation will be about 48 kg/ day, for which adequate collection, conveyance and disposal facilities shall be provided. The solid waste shall be disposed at the appropriate Government designated landfill in the nearby area.

Reuse/Recycling of Construction Waste: Material generated from demolishing structures and left over at the site will be disposed in low laying areas of airport within a lead of 1 km.

First Aid Health System: Health problems of the workers should be taken care by providing basic health care facilities at the construction camp. All necessary first aid and medical facilities will be provided to the workers. The provision and maintenance of medical facilities have to be borne by the contractor.

Training and Extension: The training and extension programmes need to be conducted for Engineers of USISCL. These programmes should also be extended for the local population for their active participation in the project implementation.

Soil Erosion Control: Careful planning for excavation, filling and dumping along with re-vegetation are required to mitigate the soil erosion. The cutting and filling area, on completion of the work shall be dressed well, compacted and covered with plantation.

Cultural Uplift Assistance: The project will serve as a platform for cultural exchanges. The project will bring diverse cultural events and will lead to cultural uplift of the area. A provision of ₹ 5 lakhs has been provided in the estimate to maintain the cultural heritage/events and promote awareness.

6.3. Operation Stage

Air Pollution Control: During Operation Phase, the major sources of air pollution are from DG sets, vehicular traffic and emissions from increased aircraft operation. Providing proper circulating place in the parking area and proper traffic management at the entry and exit

places can reduce pollutant release from the vehicles. During operation it is proposed to use Ground Power Unit (GPU) in place of Auxiliary Power Unit (APU). This will facilitate less exhaust gases at airport.

Noise Control Measures: Suggested noise reduction flight operational measures and noise reduction measures should be followed during parking at airports. When safety and weather permit, pilots should follow voluntary noise abatement guidelines. Efforts are being made to reduce aircraft noise during parking at airports by using Ground Power Units (GPUs) instead of APUs. Airport's authority should impose a mandatory noise abatement program, or to restrict access for older aircrafts which produces heavier noise.

Waste Water Treatment: Total quantity of domestic waste water generation will be 9.9 KL/day. The generated waste water is collected and treated through packaged sewage treatment plant of 15 KL/day. The treated waste water will be used for cleaning, flushing and gardening.

Solid Waste Disposal: The project is estimated to generate about 6 kg of solid waste every day. Solid waste generated during the operation phase would be paper, cardboard, glass, metal, plastic containers, compostable foods, restaurant oil and grease, batteries, fluorescent lights, wood pallets, tires and electronics. Most of them are recyclable materials.

Horticulture/Natural Grass Turfing: Landscaping of the areas within the premises of airport shall be taken up during construction period. Overall the project area shall be restored to the natural setting in an environmentally sound manner.

6.4. Emergency Management

On-Site Emergency Management Plan: It shall include investigation of vulnerable process and / or activities, knowledge of possible protective and remedial measures, designation of responsibility, drawing up a plan of action, establishment of liaisons with external authorities, and resources for handling emergency.

Off-Site Emergency Management Plan: It deals with those incidents, which might have the potential to harm the persons or affecting the surrounding community outside the boundary of the premises. The key features of a good off-site plan are its flexibility in its application to various emergencies. The responsibility for the off-site plan will be likely to rest either with the works management or with the local authority.

Accidental Spills: In case of oil spillage the affected soil/ other than paved area shall be removed and dumped at a safer location curtailing the contamination possibilities.

7. ENVIRONMENTAL MONITORING PLAN

In the proposed projects, environmental monitoring would be required during the construction and operational phases.

Water Quality: During construction and operation phase, two water samples shall be collected and the monitoring locations will be from nearest bore well and stream passing near to project site.

Sewage Treatment Plant: The project authority shall monitor the waste water generated and its treatment plant regularly during operation phase of the project. A budgetary provision of ₹ 7,00,000 is made for construction of sewage treatment plant.

Air and Noise Quality: To assess the effectiveness of air and noise pollution control, ambient air quality and noise levels shall be monitored during the construction phase (18 months) and operation phase (36 months).

Soils: Soil erosion rates, slope stability of land faces, effectiveness of soil conservation measures, changes in soil texture and structure should be monitored at frequent intervals.

Rainwater Harvesting: The Project Authority shall take necessary measures for monitoring of rainwater harvesting structures once in a year so that the total rainwater can be harvested effectively.

Ecological Monitoring: The project authority in coordination with the concerned ecology department of Uttarakhand shall monitor the status of ecology near airport at frequent intervals in order to maintain the ecological environment.

7.1. Establishment of Environmental Cell

The division shall have one Environmental Engineer/Officer and one Support staff to supervise and co-ordinate environmental concerns, monitoring and implementation of mitigation measures. Environmental officer will monitor the field in coordination with the Project Director. Cost of such a division has been estimated as ₹ 19.30 lakh

8. ENVIRONMENTAL COST

The environmental costs towards implementation of environmental management plan and mitigation measures during pre-construction phase, construction phase and operation phase of the proposed project is about ₹ 70.76 Lakhs.
