EXECUTIVE SUMMARY

OF

Dajongpara Stone Mine

For Public Hearing

At

Dajongpara, Bajengdoba

District - North Garo Hills

State – Meghalaya

Lease Area: 9.81 Ha

Applicant: Salchangbarth B. Marak

Address: Dajongpara, P.S: Bajengdoba

District: North Garo Hills, State: Meghalaya

Environmental Consultant

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NOIDA - 201301

EXECUTIVE SUMMARY

Introduction

Dajongpara Stone Mine's mining lease over 9.81 ha. located at Dajongpara, Bajengdoba area, District: North Garo Hills, of Meghalaya was granted by the Principal Chief Conservator of Forests & HoFF, Department of Forests and Environment, Government of Meghalaya in favour of Shri Salchangbarth B. Marak, vide Letter No. MFG.39/42/LOI/MMMCR/2016/1688 dated 18th May, 2022 (Annexure II). As per Letter No. MFG.39/42/NFLC/MINING/2016/GH/12396 dated 23rd December, 2021 issued by the Chief Conservator of Forests (T), Department of Forests and Environment, Government of Meghalaya, the proposed project is located in "non-forest" land (Annexure III). The Mining Plan was approved by the Divisional Mining Officer, East Garo Hills, Williamnagar vide Letter No. DMO-W/MP/83/2022/53 dated 22nd July, 2022 (Annexure IV). Besides the approval of the Mining Plan, the project proponent has obtained a Cluster Certificate from the Divisional Mining Officer, East Garo Hills, Williamnagar vide letter No. DMO-W/MP/15/2019/65 dated 18th August, 2022 (Annexure VI).

This particular project is considered to be of 'B' category due to the size of the mining lease (9.81 Ha). As per notification **S.O. 3977(E)** published on 14th August, 2018, the proposed project falls under "B2" category and as per the memorandum issued by MoEF&CC, Impact assessment Division vide **F. No. L-11011/175/2018-IA- II(M)** dated 12th Dec, 2018 it is required to submit Environmental Impact assessment Study report. Besides this, another project or mine with an area of 4.70 ha is lying within 500m from the applied mining lease area, so total area of two is less than 100 Ha, therefore an application is made by the project proponent before the concern authority, i.e., **SEIAA (State Environmental Impact Assessment Authority)** for the statutory clearance of the proposed boulder-stone mining project.

Features of the Project

Project Name	Dajongpara Stone Mine		
Location of mine	Dajongpara, Bajengdoba P.S., North Garo Hills District, Meghalaya		
Latitude & Longitude	Boundary Pillar no.	**Location (co-ordinates)**	
		Latitude	**Longitude**
	1	25°56'13.45"N	90°27'53.08"E
	2	25°56'12.68"N	90°27'54.10"E
	3	25°56'12.37"N	90°27'56.04"E
	4	25°56'23.80"N	90°27'57.50"E
	5	25°56'22.14"N	90°27'51.66"E
	6	25°56'15.58"N	90°27'40.55"E
	7	25°56'08.93"N	90°27'39.68"E
	8	25°56'01.76"N	90°27'45.73"E
	9	25°56'04.80"N	90°27'47.88"E
	10	25°56'09.55"N	90°27'42.19"E
	11	25°56'13.93"N	90°27'40.92"E
	12	25°56'17.50"N	90°27'46.97"E
	13	25°56'16.64"N	90°27'49.64"E
Topo-sheet number	78K/5		
Land use	Unused leased Area: 9.81 Ha		
Minerals of mine	Boulder stone		
Total Mineable reserves	95,69,060 Tonnes		
Life of mine	20 years		
Proposed production of mine	4,78,453 TPA (Average annual production) 4,78,565 TPA (Targeted Peak production in plan period)		
Method of mining	Opencast Mechanized mining		
No of working days	300days		
Water demand	Total water requirement is about 4.5 KLPD (Drinking + Dust Suppression + Greenbelt)		
Sources of water	Rongan Chi/ Rangkhati Nala (~ 1.6 Km East of the area) Bajeng River (~ 6 Km South-East of the area)		
Man power	52		
Nearest railway station	Mendipathar Railway Station. About 30 Km away from the applied area.		
Nearest airport	Lokapriya Gopinath Bordoloi International (LGBI) Airport~ 114 km away from the applied area.		

Location Map and Study Area Map of the 10 km radius around the project site is presented in Figures 1 and 2.

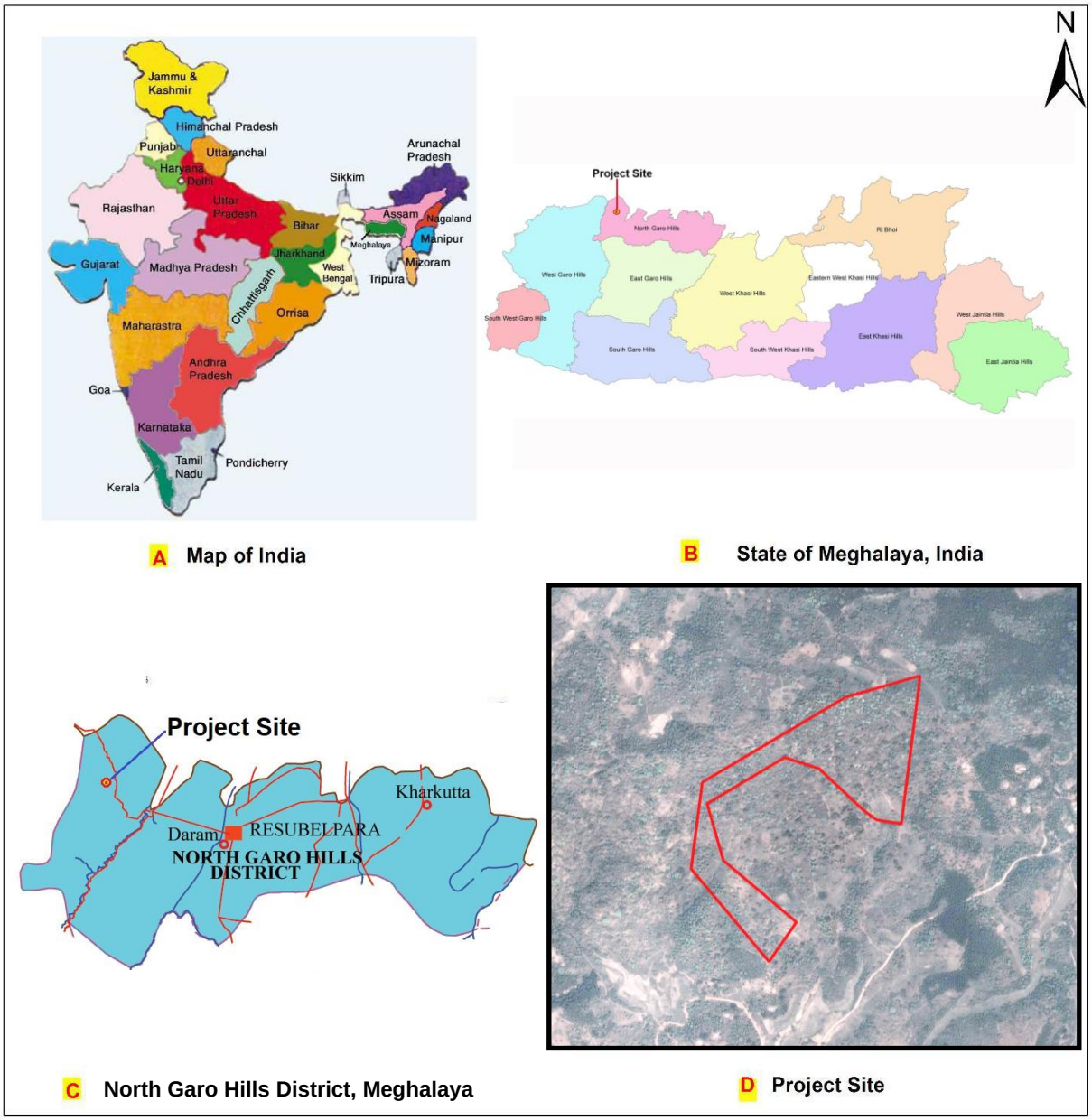

Figure 1: Location Map

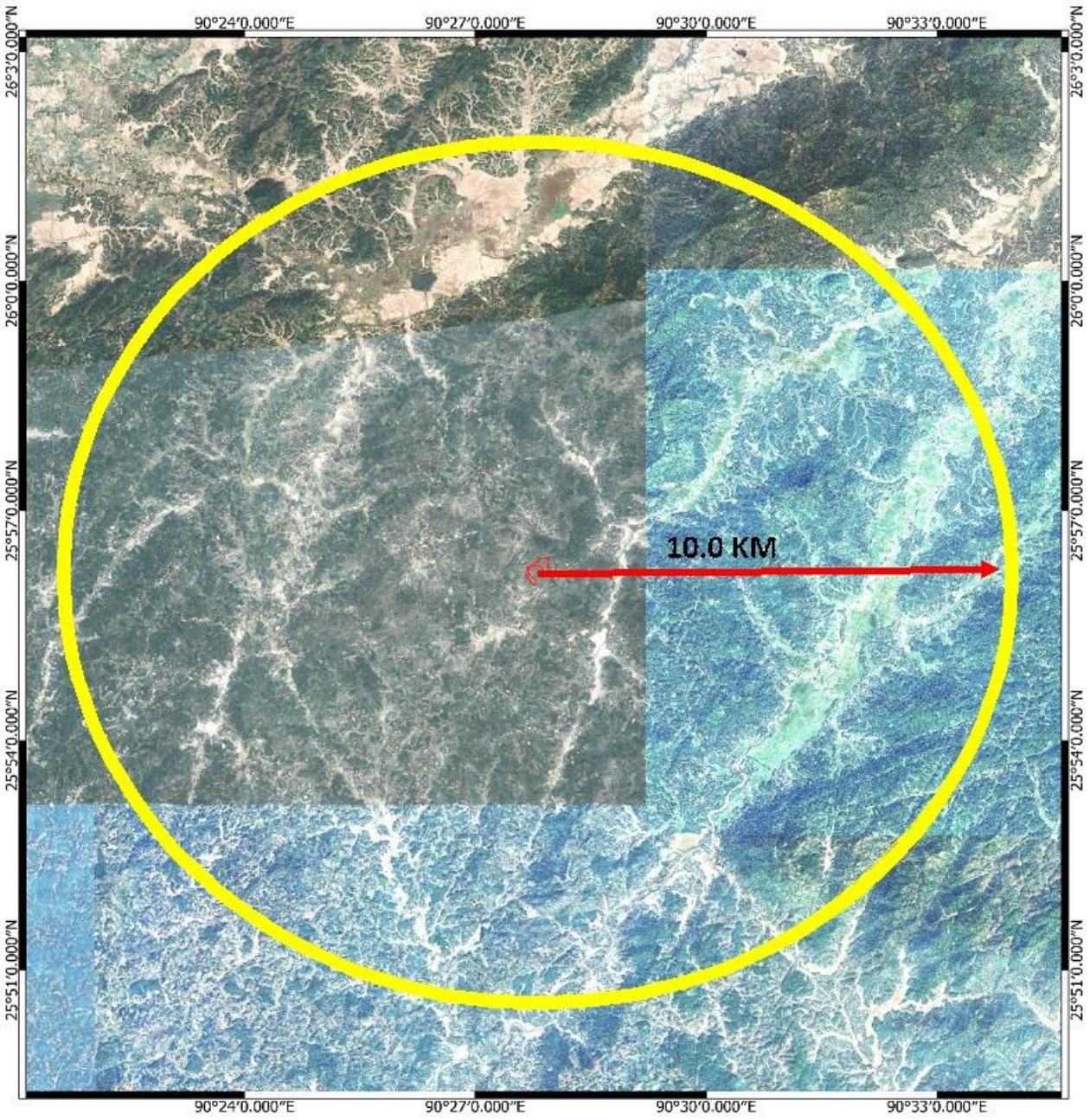

Figure 2: 10 km Radius Map around the Project Site

Basic Requirement for Proposed Project:

Details are presented below:

S. No	Requirement	Approx. quantity (No.)
1.	Wagon Drill Machine	2
2.	Hydraulic Excavators (Loading Equipment)	5
3.	Air Compressor	2
4.	Rock Breaker	2
5.	Tippers	10
6.	Water Tanker	2

Mining Method:

- Opencast mechanized mining will be carried out during the proposed plan period of 5 years in the area as the deposit is massive and compact in nature.
- The benching system 6mx6m in order to comply with the provisions of Metalliferous Mines Regulations, 1961. Bench slope angle for stabilization of the benches will be maintained at 45°.
- Wagon drill machine with 115 mm diameter will be deployed for drilling of deep holes. Breaking of stone will be done by Rock Breaker.
- For blasting of holes with burden and spacing of 3m x 4.2m in a staggered grid pattern would be adopted.
- Muffle blasting will be adopted as precautionary measure to control fly rocks. Excavation and handling of gritty soil will be done by excavator.

Description of the Environment:

The baseline environmental quality data for various components of environment, viz. Air, Noise, Water, and Soil were generated during March, 2023 to May, 2023 in the study area covering 10 km around the proposed Boulder stone mine. Other data on flora and fauna, land-use pattern, socio-economic etc. were also generated through field surveys and also collected from different State Govt. Departments.

Air Environment:

Ambient air quality was monitored at Project Site. Results indicate that concentrations of $PM_{2.5}$, PM_{10}, SO_2, NO_X are well within the prescribed standards.

Ambient Air Quality Monitoring Result

Location of Sampling: Project Site				
Sl. No.	**Test Parameters**	**Units**	**Result 98 Percentile**	**NAAQS**
1.	$PM_{2.5}$	$\mu g/m^3$	30.0	60
2.	PM_{10}	$\mu g/m^3$	65.6	100
3.	SO_2	$\mu g/m^3$	6.8	80
4.	NO_X	$\mu g/m^3$	14.1	80

Noise Environment

Leq noise level data has been measured during day-time as well as night time at the Project Site. Variation was noted during the day-time as well as night-time. The results are presented in Table below and are well below the permissible limits.

Ambient Noise Monitoring Result

Test Parameter	Units	Day Time	Night Time
L Max	dB (A)	43.5	37.2
L Min		34.2	32.9
L10		42.3	36.9
L50		40.1	34.1
L90		36.5	33.35
Leq		40.1	34.7
Limit (Industrial Zone)		75	70

Water Environment

The detailed analysis result of surface water quality in the study area is given in Table 3.14. The surface water standard "IS 2296: Class C" is mentioned alongside the surface water analysis result for comparison. The analytical results of surface water sample for various parameters reveal that all the parameters comply with "IS 2296: Class C" standards indicating their suitability for drinking and other purposes after conventional treatment followed by disinfection.

The drinking water quality standard "ISO: 10500:2012" is mentioned alongside the ground water analysis results for comparison. The analytical results of groundwater samples (Table 3.15) showed all the parameters are within the prescribed limits as per IS: 10500:2012 standards for drinking water.

Land Environment:

The break-up of the land use for the project is given below:

Sl. No.	Category	Existing Land Use area (ha)	Land Use after life of mine (ha)
1.	Mined out Land including road	0.00	0.00
2.	Mined out land including Reclamation	0.00	8.08
3.	Green Belt within Safety Barrier	0.00	1.73
4.	**Total area in use**	**0.00**	**9.81**
5.	**Balance unused area**	**9.81**	**0.00**
Total Lease area		**9.81**	**9.81**

Soil:

Parameters	Unit	Project Site
Soil colour	----	Reddish Brown
Texture	----	Loamy sand
pH	----	6.6
Electrical Conductivity	µmhos /cm	342
Moisture	%	6.3
Clay	%	13.0
Silt	%	16.9
Sand	%	70.1
Infiltration Rate	cm/hr	44
Bulk density	gm/cm3	1.51
Nitrogen as N	kg/ha as N	27.3
Phosphorus	kg/ha as P	0.88
Potassium as K	kg/ha as K	0.63
Organic Carbon	%	1.44

Flora & Fauna:

Different types of creepers, bushes, shrubs and trees are commonly found in the Project Site and its surroundings and scattered in nature. Flora found in the whole of the study area are representative of mainly Tropical Moist Deciduous/Semi- Deciduous Forest and Scrub Forest. In and around the Project Site, insects, lizards, dogs etc are noticed rarely. There are is no schedule I Species of Fauna found in both core as well as buffer zone.

Socio-economic Status:

The study has been conducted by primary survey and secondary data source from Census of India 2011. The results are discussed below:

Core Zone: There is no habitation in the core zone.

Buffer Zone: North Garo Hills District curved out of erstwhile East Garo Hills District in 2012. Demographic profile of the new delimitated district is computed by Census 2011. Thus, slight deviations from the actual population are possible. As per the Census, total area of the district is 1086 sq km and population is 1,55,991. The headquarter of the new district is Resubelpara. There are 525 inhabited revenue villages and out of them, 131 falls under Bajengdoba Block/Tehsil, 188 falls under Kharkutta Block/Tehsil and 206 falls under Resubelpara Block/Tehsil.

In the study area, i.e. the area falling within radius of 10 Km from the proposed ML, there are 20 inhabited villages falls under Bajegdoba Tehsil. Out of total population of 6909, the representation of schedule tribes is 98.23% and literacy percentage is 62.21.

The economy of the North Garo Hills district is basically agrarian and rural based. About 80% of the study area depend on agriculture for their livelihood directly. Rice is mostly grown food crop in the district, both in the plains and the hills.

Anticipated Environmental Impact & Mitigation Measures:

1. Land Environment: The proposed project will definitely change the land use. However, the area will be reclaimed by the following measures:

- ✓ Mining operations will be confined strictly within the demarcated area.
- ✓ To minimize the effect of mining, plantation will be done in a 7.5m wide greenbelt at 2.5m spacing along the boundary of the mine area. Details of yeas wise greenbelt development along with number of plants and required are given below:

Year	Area for greenbelt in sqm	No. of plants
1st	860	138
2nd	860	137
3rd	860	138
4th	860	138
5th	860	137
Total	**4300 (i.e. 0.43 ha)**	**688**

- ✓ The expected quantity of gritty soil generated during advancement during 5 years will be dumped strictly on the earmarked area in the western side of the working area with

suitable precaution. It is required for reclamation of the mined-out area.

- ✓ Regular sprinkling of water on haul roads, waste dumps and maintaining approach roads to suppress the dust.
- ✓ No effect on public buildings or monuments is envisaged as there are no public buildings/ monuments in the close vicinity of the mining lease area.

2. Water Environment: Total water requirement for the proposed project will be 4.5 KLD (for drinking, dust suppression and other use). Water for drinking and domestic use requirement will be 1 KLD and will be obtained from sources. The Bajeng river is flowing about 6 Km south-east of the area. The area is much above the high flood level (HFL) and there is no record of flooding of the area. Natural drainage pattern of the area will not be altered due to mining activity, mining operation will be conducted above groundwater table.

3. Air Environment: The air borne particulate matter is the main air pollutant contributed by opencast mining with drilling & blasting and subsequent excavation and transportation. Various emission sources are identified from the proposed mining operations. Therefore, following measures will be provided to mitigate dust

- ✓ Water sprinkling shall be done on haul road and operational area
- ✓ Wet drilling would be done
- ✓ Sharp drill bits will be used
- ✓ Workers will be given necessary protective gears i.e., dust masks, if required.

4. Noise Environment: Due to mining drilling, blasting and vehicular, noise pollution will be there. In order to reduce the noise pollution following measures will be adopted:

- ✓ Mining operations will be carried by using latest equipment.
- ✓ Regular, proper and timely maintenance of machinery.
- ✓ Plantation along the periphery of mining lease area.
- ✓ Providing protective gears such as ear plugs to the workers.

5. Biological Environment: Lease area is in a Non-Forest Land. The flora and fauna in the vicinity of the mine is restricted to common species. There will be no Schedule-I species found in study area. There will be no impact on flora and fauna due to the proposed project.

6. Socio- Economic environment: The project will enhance direct and indirect employment in the area. Therefore, overall economic development is much likely after the commencement of the project. The project will provide skill enhancement to the locals and will generate chance of indirect employment in the area**.**

7. Mine Waste: During plan period, gritty soil will have removed and will be dumped at western side of the working area with suitable precautions. Few quantities of the generated gritty soil would also be used for road maintenance and plantation programme. After exhaustion, it will be used to reclaim the quarry to the extent possible. To prevent dump failure/soil erosion, toe-wall with weep-holes and garland drains will be provided towards lower side of the dumps to check the wash off during the rainy season. During rainy season the rain water falling on the mine with silt, clay, wash off particles of the dump will be flown through the garland drain to thee settling tank into which the transported suspended particles will be precipitated and allow clear sump water to overflow to the storage tank. Dwarf species of plant would be cultivated on the heap of the dump to check the collapsing.

8. Impacts due to transportation: The entire mineral will be transported through tippers. Transportation shall be done by 10 no. of 10 MT trippers. During transportation overfilling of trucks and consequent spoilage of materials on the roads will be avoided by covering tarpaulin in the loaded trucks.

Environmental Monitoring Programme: The environmental monitoring is important to assess performance of pollution level within the project site and in the 10 Km radius study area on periodic basis. The sampling and analysis of environmental attributes including monitoring locations will be as per guidelines of the Central Pollution Control Board/State Pollution Control Board.

Risk Assessment & Disaster Management Plan: The applied lease area is small and the mining operation will be in mechanized method using Wagon Drill Machine, Hydraulic Excavators, Air Compressor, Rock Breaker, tippers etc involving drilling and blasting. The mining operation will not go to much deeper, hence chances of landslide or subsidence are rare. However, mining will be done under strict supervision hence the rate of operational risks is minimal.

Rehabilitation and Resettlement: There is no human habitation at the project site and the land is Non-Forest Land. Hence, there will be no rehabilitation and resettlement issue.

Project benefits: The proposed mining project has a significant positive impact on the socio-economic environment and it will help sustain the overall development of the area. The proposed project significantly contributes the economic development by providing direct employment to 52 people and indirect employment to many more people in the area.

Environmental Management Plan: Preparation of Environmental Management Plan (EMP) is required for formulation, implementation and monitoring of environmental protection measures during and after commissioning of the proposed mining project. The project cost is Rs. 43.00 lakhs and the EMP cost Rs. 6.36 lakhs (Annual recurring cost). Budget towards Corporate Environment Responsibility (CER) will be Rs.2.15 lakh as annual recurring cost.

Occupational Health and Safety:

Effective implementation of measures suggested for the protection of the workers against sickness, diseases and injury out of their employment will be ensured and a safe and healthy working environment which will facilitate optimal physical and mental health in relation to work will be maintained.