International Research Journal of Engineering and Technology (IRJET) e-ISSN: 2395-0056
Volume: 06 Issue: 05 | May 2019 www.irjet.net p-ISSN: 2395-0072

ENVIRONMENTAL IMPACT ASSESSMENT ON QUARRY

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Abstract - *Quarrying is an activity where stones are dug for the purpose of being used in building, making roads through cutting, digging or blasting. Quarrying is a huge supporter of local economic development: as the use of extracted material enhances trade, creating jobs for most people who depend on this for their livelihoods aside from other economic activities. Quarrying is a short-term activity with long term effects it comes along with the promises of wealth and jobs but it brings high environmental costs. The main aim of the study was to unearth impacts that quarrying activities has on health of the quarry workers and people living next to the quarries as well as physical environment. The general objective of the study was: to examine the effect of quarrying activities to the environment. Specifically, the study examined the effects of quarrying activities on the natural and human environments.*

The findings showed that regardless of the important role that quarrying activities played in the economic growth; it resulted into negative effects to the environment such as land degradation. This shows that most of the quarry companies do not adhere to the set environmental legislation such as the Occupational Safety and Health Act 2007. Results shows that the quarries produce a lot of dust and noise and this affects the quarry workers and people living close to them. The area was at kakkatore, pothanikkad village, ernakulam district .The area is uncultivable land before the location of the quarries, when the quarrying companies were established a lot of vegetation has been lost.. The vegetation has been affected due to dust accumulation which hinders growth.

Key Words*: *costal regulation zone1, environmental impact assessment[2], boundary pillars [3]

1. INTRODUCTION

Mineral resources of the nation reflects in terms of potential economic growth of the country at large. Our natural mineral wealth has been exploited considerably during the past 50 years. With increase in industrialization coupled with population growth, the demand for different minerals has increased and is likely to grow further in years to come. This has resulted in irreversible impacts on diminishing reserves, with simultaneous generation of solid wastes and effluents causing environmental degradation. It is therefore important to tackle the problem for control of pollution and mining of minerals in a cost- effective method causing least damage to the ecosystem. Quarrying is a process that undergoes different step. The first step of quarrying is prospecting an area to locate an ore. This involves physically going out into the field and searching for different types of minerals and fossils to give you an indication of where you might find an ore body. The company that intents to carry out the exploitation of the mineral then gets licenses from the ministry concerned .Next is the exploration of the area, which involves finding and determining the extent and value of the mineral-rich ore, through several different methods including hands-on fieldwork, remote sensing, and drilling.

1.1 BASELINE STUDIES

Quarry permit area is an agricultural land having rubber plantation and granite/charnockite exposed in major parts. The highest elevation in the area is 86m RL and lowest elevation is 70m RL. The surrounding land of the quarry hold rubber, coconut, mango and other mixed crops .There is no houses, rivers or irrigation canals within 50 meters of the quarrying area .There are no inter-state boundary or forest and do not comes under CRZ category (costal regulation zone).Area receives average rainfall of 2793mm from month of june to October. Nallah does not exist in the quarry

1.2 SITE INVESTIGATION

The area is uncultivable land consisting of stone ridges in all direction. Area of the permit is 0.9998Ha.The nearest landmark is kakkatore library located 1.5 km from site. The site is located 7 Km far from kothamangalam , 8 .5km from Muvattpuzha and 38 km from Ernakulam .Nearest railway station is Aluva located 35km from the quarry. The quarrying permit area is at a distance of 6 Km from Kothamangalam and 32 Km from Cochin Air port . There are 6 boundary pillars representing geological coordinates of the location.All the boundary pillars are connected together by fencing.Nearest house is 70m away from the boundary of quarry.Profile of the quarry is recorded by contour lines.Contour lines are drawn by joining similar RL.The highest elevation is 86m from the RL and lowest elevation is 70m RL .

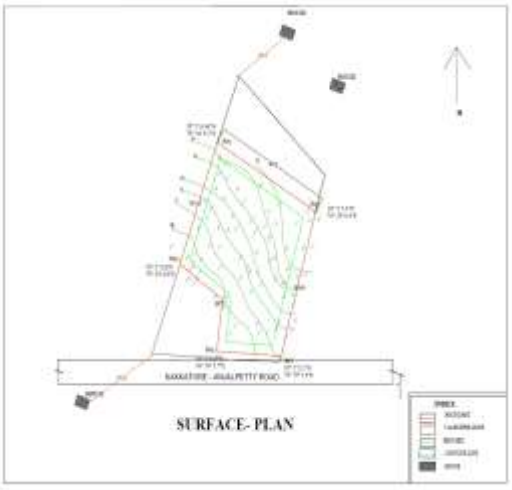

Fig -1.Surface Plan

A buffer of 7.5 meter should be left from the boundary for quarrying and this area is called as buffer zone. Buffer zone helps to reduce the sliding of nearby land and helps for cultivation in future. Benches will be cut at a slope of 45 degree, with width and depth of 5meter.

2. ENVIRONMENTAL IMPACTS ASSESSMENT ON AIR QUALITY

Quarrying activity contributes to pollution of air due to drilling blasting and movement of vehicles. The existing air quality in core zone is not likely to have considerable impact due to small scale quarrying. The environmental measures to control air pollution shall be undertaken so that pollution scenario shall be marginal and insignificant. Ambient air quality tested at the quarry and surroundings and test reports enclosed.

2.1 Impacts On Air Quality

Mining operations and stone transportation results in dust emissions. Mining activities causing dust generation are drilling, blasting ,loading and unloading. Exhaust gases will be produced from mining operations.

2.2 Control Measures

Provide thick green belt along the boundary of the mining area. Periodic sprinkling of water on haul road. Providing dust mask to workers .Controlled blasting techniques by avoiding overcharging of blast holes. Monitoring ambient air quality periodically. Transport of stones will be done in trucks covered with tarpaulin.

3. ENVIRONMENTAL IMPACTS ASSESSMENT ON WATER QUALITY

There are no perennial water courses or water bodies with in the permit area. The quarry is located at a hillock at higher elevation. In the surrounding of the quarry area ground water level is 20 m below the general surface. Charnockite is an inert material and hence there is no impact on ground water.

3.1 Impacts On Water Quality

Silt run off from mines may be deposited in nearby streams outside mining area. Discharge of domestic effluent may contaminate surface water stream. There will not be any contamination of ground water table since topsoil and stone does not contain any toxic material .

3.2 Control Measures

Construction of garland drains to divert surface run off from mining area to the settling pit. Construction of check dams/gully plugs at suitable places to prevent run off from broken up areas. Domestic sewage from site office will be discharged in septic tank followed by soak pits After the life of mine ,the mine pit is used as rain water reservoir which helps in ground water recharge .Periodic monitoring of mine water and ground water in nearby villages.

4. ENVIRONMENTAL IMPACTS ASSESSMENT ON NOISE QUALITY

The ambient noise levels will be higher due to drilling, blasting and hauling equipment and these probable noise levels within the permissible limits and will not cause much harm to the persons at working site

4.1 Impacts On Noise Level

Major source of noise is from mine machinery like excavators, tippers, compressors and warning alarms .Noise level will be higher due to activities like drilling, blasting, loading, unloading and transport. Fly rocks may be generated during blasting.

4.2 Control Measures

Periodic maintenance of machinery equipments Provision of ear plugs to workers exposed to high noise area. Controlled blasting using delay detonators. Proper training to persons to create awareness about adverse noise level effect. Mining will be conducted in day time only .Periodic medical checkup of all workers for noise related health problems.

5. CONCLUSION

Maximum possible area will be reclaimed and green belt will be provided. Environmental pollution will be controlled through adoption of suitable control measures. The state government will benefit from source of revenue generated through royalty and taxes. The water body in the mine area can be used for pisci-culture by near by habitants. Most of the mine area will be covered with thick plantation and water reservoir will be developed in lower part of the mined out pit. There is no resettlement and rehabilitation issues involved.

The quarry have overall positive impact due to direct and indirect employment opportunities.

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