

An Analytical Approach on Preparation of Environmental Impact Assessment (Eia) for National Highway Project (a Case Study) by using GIS

Monishareddy Kondapalli, Sessa Sai Ratnamala Bommareddy, SS.Asadi

Abstract: *The highway projects are a provision of any country. It is the most important part of developing countries like India. However, the activities associated have occurred with major environmental and social impact during different aspects of the project. The nature of these impacts could be either beneficial or adverse impacts depending upon the Physical, Biological and Socio-Economic environment. Environmental Impact Assessment (EIA) helps to accomplish sustainable projects and track down environmental degradation. The present paper studies about the importance of EIA in the sustainable development of National Highway (NH) NH-16 with a case study of buffer zone 2 kilometres along the road incorporating spatial data Geographic Information System (GIS). This study concentrates on the EIA of the project in the physical environment at the highway site. The parameters covered in the study are Air, Water, and Soil. Samples of water and soil were taken to analyse their present condition. Data was also collected from various Government offices. After analysing the different parameters and discussing the probable impacts suggestions are made regarding the mitigation measures that can be taken at different stages in order to reduce the environmental impacts.*

Index Terms: *Environmental impact assessment (EIA), Geographic Information System (GIS), National Highway (NH).*

I. INTRODUCTION

The highway projects are a provision of any country. It is the most important part of developing countries like India. Under the current lawful system, all streets require Environmental Clearance (EC) from the concerned expert. Aside from the environmental and social effects, roads and highways ventures lead to better versatility, bring financial success, makes offices for continuous traffic stream with upgraded security highlights. Street and interstate ventures in many nations today require an Environmental Impact Assessment (EIA) examine before they are agreed environmental freedom. Environmental impact of building construction project due to land use change and overlap the natural environment with the built and focuses on various parameters the city centre, nearest sensitive zones [1]. Characterized as the precise distinguishing proof and assessment of potential effects of proposed tasks potential effects of proposed tasks utilize fuzzy logic as a decision-

support approach to capturing evaluation knowledge because fuzzy involves scoping, studying baseline conditions, distinguishing potential impacts, anticipating huge impacts and assessing them incorporated into the EIA and choices to be considered [2]. The mix of environment into advancement arranging is the most essential apparatus in accomplishing feasible improvement. EIA has imperative task to carry out in tending to environmental issues encompassing undertaking improvement. Beneficial outcomes are expanded while antagonistic impacts are limited [3]. Environmental assessment for roads and highways reviewed about the EIA report on roads and highways identifying the various parameters, impacts land, water, noise, air, biodiversity and socio-economic on environment mitigation measurements and Environmental Management Plan (EMP) [4]. Assess the overall infrastructure of Chennai integrated with EIA [5].

Common asset advancement includes human intercession and control of the earth to accomplish some ideal objective. This is a procedure as old as humankind itself. However, the scale and unpredictability in asset advancement in which ecological issues show themselves has, since the late sixties, expanded from neighbourhood to worldwide and has brought about aggregate (open and administrative) mindfulness and activity. EIA idea advanced in this time of a key change in the state of mind about condition and improvement. Endeavours were made to supplant the financial development approach by the idea of reasonable advancement "that addresses the issues of the present without trading off the capacity of things to come ages to address their very own issues". One the fundamental premises for feasible advancement is the acknowledgment that condition and improvement are not totally unrelated but rather reciprocal and associated and really, over the long run, commonly fortifying. In characterizing manageable advancement and natural quality, the scale at which choices must be taken is essential too [6].

The appraisal of the conceivable effect that a proposed arrangement or venture may have on the earth, together comprising of the characteristic, social and financial viewpoints. The point of this paper is to propose a natural effect appraisal philosophy dependent on a coordinated fluffy AHP-ELECTRE approach with regards to urban modern arranging. In the proposed philosophy the criteria

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loads are produced by a fluffy AHP technique. The fluffy set hypothesis is an ideal method for demonstrating vulnerability or imprecision emerging from human mental marvels. The utilization of fluffy sets in depicting vulnerabilities and dubiousness in various ecological components disentangles the mind-boggling structure of EIA. A fluffy outranking philosophy, fluffy ELECTRE is utilized to evaluate the ecological effect produced by the six distinctive modern regions which were anticipated to shape the future mechanical structure of Istanbul metropolitan zone. At long last, a fluffy strength connection (FDR) approach is utilized to rank the choices from the most hazardous to the least. An affectability examination is likewise given. (.Kaya, 2011).

The Korean development industry has since quite a while ago given a steady and solid capacity to the development of the nation's economy since the 1970's. The Korean development movement keeps on succeeding these days as it is required to bounce back by 2.5% among 2015 and 2019. The legislature likewise keeps on having high monetary enthusiasm for all industry part extends identified with property interests in private, business and framework ventures. Nonetheless, investigators think about that the Korean economy is progressively being over subject to its development industry. Numerous private properties were planned, and generally still are, for single or youthful families. This may result in an unwelcome oversupply later on particularly with the maturing populace. South Korea, with effectively 13.80% of elder residents, is expecting an elder populace ascend to 24.50% in 2030. This implies soon there will be an extraordinary request on engineers with structure abilities for senior subjects. This paper calls for tending to this basic statistic issue through the procedure of building developments. The paper additionally recommends chipping away at a wide scope of new and innovative building models and gives a couple of suggestion to confront all the contemporary and not so distant future issues [8].

Waterways are the primary wellspring of surface water in the nation. Individuals of India have a wistful servitude with numerous heavenly waterways of the nation, for example, Ganga, Yamuna, Godavari, Krishna, Kaveri, Narmada and Brahmaputra, apparently, attributable to our long reliance on them as wellsprings of water for drinking, water system and mechanical purposes and their utility as waste courses. Streams likewise bolster route, fishery advancement, hydro-electric power age and spread of natural life condition. Productive and monetary misuse of these water assets is, hence, fundamental not just for rural and modern advancement of the nation however is additionally required for the very survival of the humanity. A methodical investigation of the waterway framework including stream morphology, seepage qualities, and so on is justified for its appropriate use. Keeping this in view here we have considered Morphometric Analysis, Drainage Density, Seepage Recurrence, Waste Surface, Estimation of Surface Run-off, Surface Water quality for legitimate estimation of surface water [9].

The arranging and the board of incorporated provincial and urban strong waste transfer is mind boggling, includes vulnerability, and requires judgment and differing aptitude.

Diverse strategies are made in the course of the most recent couple of decades to help with growing more effective waste transfer distribution framework. A large portion of the current models of waste the board, be that as it may, don't manage the spatial and transient components of waste transfer in an incorporated way. Spatial models for waste transfer designation are inherently static; and dynamic models for the plan of waste transfer frameworks by and large don't deal with spatial assignment of waste transfer offices. In perspective on this, it is proposed to create Multi-Criteria Decision Support System for ideal administration of strong waste. The wide target of this exploration work is to draw out a complete answer for the strong waste transfer issue and age of a model to expand the economy out of the waste, which would make a superior answer for urbanization issues through capable administration and reusing of strong waste. The explicit destinations are to plan and create DSS including information the executives module, information approval and investigation module, module that is fit for breaking down the produced information in to deferent classes, exchange station limit module, module that computes Site Sensitivity Index (SSI), and determination criteria for transfer site assessment [10].

C&D squander is a noteworthy waste stream, the wide proportion of waste extend from the result of growing development, upkeep, retrofitting and obliteration exercises in India. It is assessed that in India the development firm creates around 18 million tons of waste each year. This makes enormous challenges in regards to space for transfer, unapproved dumping, mixing with biodegradable waste, etc. By and by the development and obliteration (C&D) squander collection structure in India is directed decentralized by each sub-contracted association. This nonattendance of comprehensive methodology for C&D squander the board causes befuddling and now and again particular perspective concerning the distinctive measures for C&D squander. In this way dynamic waste administration ought to be authorized. Development partners have wide scope of best applications in C&D squander organization that can be executed, so they ought to be evaluated for their adequacy. This exploration ponders plans to help the development partners in settling on a choice on C&D squander the board. This paper draws out a study joined among by the development directors and operators in order to ascertain the adequacy of 24 standard practice measures in regards to C&D squander organization, perceiving the most appropriate sorts of development tasks to actualize these applications and furthermore the advantages and downsides of their execution in a development venture. After-effects of this investigation demonstrate that among the profoundly powerful best applications are: the use of industrialized systems and the agreement of providers dealing with the waste. Moreover, little compartments are giving in the work spaces is likewise another high esteemed application, albeit just 44% of respondents often apparatus this measure in their works [11].



The anticipated qualities on any exciting day speaking to crest load are found not to surpass more than 2-3 units in log scale, and all things considered they don't fundamentally modify the resultant encompassing air quality. Further notwithstanding for the memorable day top burden situation, considering the air contaminations discharged by the expanded traffic volumes by these four exercises in Buddha Purnima Project territory, the surrounding air quality as for SPM, SOX, and NOX is evaluated to be well inside the CPCB local location norms while for CO and HC in local locations there are no measures endorsed by CPCB. There will be minimal increment in CO and HC content in air which will anyway not be hurtful from wellbeing perspective. Pre-venture greatest anticipated GLC values for CO, NOX, HC and post venture most extreme anticipated GLC values are for CO. A superior choice for controlling the air contamination loads from expanded traffic volume is changing from oil to CNG for whole Hyderabad city as it indicated great outcomes in Delhi. As bikes are the most extreme benefactors for HC, Necklace Street and NTR marg might be considered, further for presentation of open travel framework with interchange fills for improving the air quality [12].

Any anthropogenic movement is required to cause some effect on the encompassing condition. The effects might be unfriendly or helpful. In any case, humankind for what it's worth grown today can't live without taking up these exercises for sustenance, security and different necessities. Thus, there is a need to fit formative exercises with the natural concerns. It is alluring to guarantee that the advancement alternatives under thought are reasonable. So as to accomplish the previously mentioned objective, a benchmark ecological investigation has been directed inside the examination territory and deciphered with the assistance of GIS tool. Present investigation is gone for anticipating the conceivable ecological effects because of modern activities and proposing natural protections to guarantee earth practical advancement [13].

In this paper studied about physical environmental conditions of National Highway - 16 (NH-16) in Vijayawada zone area. National Highway 16 (NH-16) is a major National Highway in India that runs along east coast of West Bengal, Odisha, Andhra Pradesh and Tamil Nadu. It was previously known as National Highway 5 (NH-5). NH-16 has a total Length of 1,711 kms and passes through the above states. It is also a part of Asian Highway 45 (AH-45).

II. RESEARCH SIGNIFICANCE

This paper studies about the National Highway-16 physical environmental conditions. To identify various parameters, impacts on environment of National Highways. Reduce adverse impacts on physical environment and recommended measurements. To guarantee the environmental contemplations, are unequivocally tended to and fused into the improvement and basic leadership process.

III. DESCRIPTION OF WORK

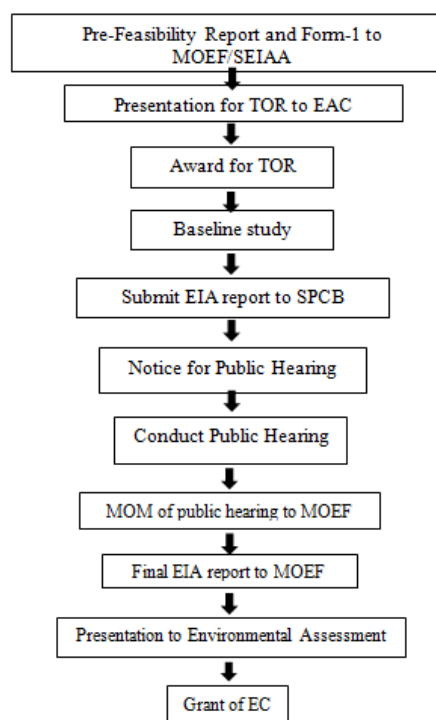
A. Location of Study Area:

Almost 60% of the NH16 running through our state. It is passing through Pendurthi, Anakapalli, Rajahmundry, Deverapalli, Gondugolanu, Vijayawada, and Nellore in our state. I have been selected 6 places in Vijayawada zone as a case study. A buffer zone of 2 kilometres was created along NH-16 incorporating spatial data Geo Information System (GIS) as shown in Flow chart 1.

B. Route Length in states:

- West Bengal - 188 kms
- Odisha – 457 kms
- Andhra Pradesh – 1028 kms
- Tamil Nadu – 53 kms

C. Environmental Clearance Processes



Flow chart 1: Environmental Clearance Processes

D. List of the selected stations in Vijayawada Zone Area:

Table 1: Selected Stations in Vijayawada Zone

S. No	Station	Latitude	Longitude
1	Benz Circle	16°29'52.17"N	80°39'14.35"E
2	Gurunanak colony	16°29'58.04"N	80°39'31.75"E
3	Autonagar	16°29'33.57"N	80°40'17.51"E

4	Police control Room	16°30'40.17"N	80°37'4.96"E
5	Governorpet	16°30'50.30"N	80°37'42.77"E
6	Yanamalaku duru	16°29'10.36"N	80°39'47.82"E

Geo information system as shown in Fig No 2. Created by using Google earth pro.



Fig No 1: Study area

IV. METHODOLOGY

A. Quality

a. Air Quality:

Ambient air Access the current air nature of the site to decide whether it falls under the passable normal dimensions as recommended by Central Pollution Control Board (CPCB). It should likewise be guaranteed that the advancement would not further break down the air quality. Air quality observing includes estimation of fixation dimensions of Respirable suspended particulate issue (RSPM), Sulphur dioxide (SO₂) and oxides of Nitrogen (NO_x) in the investigation region.

b. Noise quality:

Noise level study ought to be completed regarding the proposed venture so as to evaluate the foundation levels and to guarantee that the open-air clamour levels adjust to the models recommended by Central Pollution Control Board (CPCB) for mechanical, business, private and quiet zones. The CPCB Environmental Standards Noise (surrounding gauges).

c. Water quality:

Ensure water from all sources, for example, ground water, metropolitan water meets the water quality standards as endorsed in the Indian Standards for drinking, IS: 10500-1991 and CPWD determinations to meet the particulars recommended for development water.

d. Soil quality:

Endowed with a rich assortment of soil, it is the 34th biggest town in India (populace savvy), and the third biggest town in Andhra Pradesh. According to 2001 enumeration, the number of inhabitants in metropolitan city Vijayawada.

There are four kinds of soils in the Vijayawada region, "Dark cotton soils (58%), Sandy earth top soil's (23%), Red loamy soils and Sandy soils". The dark cotton soil is most broad and happens in Western part. The sandy earth top soil's framed along waterway. As per prescribed CPCB – Environmental Standards Soil Quality Standards.

B Impacts

a. Air Impacts:

Air contamination might be brought about by regions or point sources, for example, expressways. Vegetation cradles can limit the development of contamination levels in urban zones by going about as contamination sinks.

b. Noise Impacts:

The ineffective prototype of the engine in the vehicles and furthermore the nearby region of substantial traffic. The short separations among streets and civil structures increment the impact of contamination on the structures and existing.

C. Water Impacts:

Storm water spill over extent created from impenetrability of the formed site is transported into the accepting waters. The water extent contains build-up and other remainder that adverse effect water quality, route and Recreation. Water contamination sources incorporate barometrical testimony, vehicle liquid breaks, and mechanical gear squanders. Amid tempest occasions, these toxins are washed away and released to getting waters or get penetrated inside the groundwater causes water contamination.

d. Soil Impacts:

Two major classifications of erosion

Geological erosion: Soil-shaping just as soil evacuating, has added to the development of soils and their dissemination on the outside of the earth.

Man-made erosion: It incredibly quickens the normal disintegration process, incorporates the breakdown of soil totals and the builds expulsion of natural and mineral particles. This could be caused because of clearing, evaluating or generally modifying the land. Disintegration of soils that happen at building locales is man.

C. Monitoring

a. Ambient Air Quality Monitoring:

The monitoring of ambient air quality (AAQ) for the chose stations along the selected passageway was completed at a recurrence of week at each station from the long stretch of January to December 2018, by State Pollution Control Board was done by accepting at each station according to rules of Central Pollution Control Board and the necessities of MoEF.

Air Pollution Monitoring Stations were chosen with a thought of setting up connection between contamination levels and street geometrics, air contamination and land use along the street.



i. Methods for Monitoring:

- RSPM (PM₁₀) -Teflon Filter papers (west & gaeke) method by using code IS-5182, Part-IV.
- SO₂ and NO_x – Jacobs & Hochheiser method by using code IS-5182, Part-X.

In spite of the fact that the determination of area isn't in direct intrigue with the traffic areas, the total no. of stations has been conveyed all through the examination zone in order to get agent benchmark of any chosen stations just as street geometrics and traffic conditions over the investigation territory. The reason for existing is likewise to build up a benchmark, which can shape the reference for monitoring in the development and activity period. The accompanying table gives the criteria for determination of the observing stations. The Following Table2 gives the monthly average values of air quality.

ii. Monthly average values of ambient air quality:

From January 2018 to December 2018 study area of Vijayawada Zone as shown in Table 2.

Table 2: Monthly average values of Ambient Air Quality
Note: All values are expressed in µg/m³

Parameters	SO ₂	NO _x	RSPM (PM ₁₀)
Station-1	5.8	22.4	85.5
Station-2	4.5	26.8	81.3
Station-3	5.5	21.2	89.8
Station-4	5.2	24.4	80.3
Station-5	4.9	19.97	97.08
Station-6	4.3	21.2	66.4
Standards	20	40	60

The values of SO₂ and NO_x were observed within the standard limits 20 and 40 respectively.

iii Highest and Lowest values of stations SO₂ and NO_x:

From monthly averages values of air quality highest and lowest values of SO₂ and NO_x are as shown in Table 3.

Table 3: Highest and Lowest values of stations SO₂ and NO_x

	Highest Station	Lowest station
SO ₂	S-3 (5.22)	S-6 (4.3)
NO _x	S-2 (26.78)	S-5 (19.97)

iv. Annual average values of RSPM (PM₁₀):

Annual average value of air quality levels from 2011 to 2018 as shown in Table 4.

Table 4: Annual Average values of RSPM (PM₁₀)
Note: All values are expressed in µg/m³.

Year	Avg value RSPM (PM ₁₀)
2011	90
2012	97
2013	104
2014	96

2015	99
2016	95
2017	90
2018	82

b. Ambient Noise Quality Monitoring:

The monitoring of the ambient noise quality for the selected stations along the road corridor was carried out with the help of hand-held noise level meters in the monthly noise data January to December 2018.

At each station, noise monitoring has been carried out once during the entire study period over a period of twenty-four hours to obtain L_{eq} values at regular time intervals of 1 hour. In each hourly time interval L_{eq} values have been monitored from SPL readings taken at regular time intervals of every 15 minutes. For each station, day and night time L_{eq} values have then been monitored from the hourly L_{eq} values such that as per the national ambient noise standards. Day & night time L_{eq} has been monitored from the hourly L_{eq} values as per standards. The Following Table5 gives the values of noise quality.

i. Monthly Average Values of Noise Quality:

January to December 2018 conducted on selected stations

Table 5: Monthly Average Values of Noise Quality

Months	Observed Noise Levels in dB (A)		Noise Quality Standards in dB (A)	
	Day Avg dB (A)	Night Avg dB (A)	Day Avg dB (A)	Night Avg dB (A)
January	69	64	65	55
February	69	64	65	55
March	69	64	65	55
April	69	64	65	55
May	70	65	65	55
June	68	73	65	55
July	71	65	65	55
August	72	68	65	55
September	68	65	65	55
October	69	64	65	55
November	69	65	65	55
December	68	65	65	55

ii. Annual averages values of noise quality:

Annual Day and Night averages observed Noise Levels from 2014 to 2018 as shown in Table 6.

Note: Day time is monitored from 6 a.m. to 9 p.m.

Night time is monitored from 9 p.m. to 6 a.m.



Table 6: Annual Average Values of Noise Quality

Year	Observed Noise Levels in dB (A)	
	Day Avg dB (A)	Night Avg dB(A)
2014	70	65
2015	70	64
2016	70	65
2017	69	64
2018	69	60

C. Water Sampling Monitoring:

The water quality is acceptable and the major physical and chemical parameters are inside cut off points set by the

Bureau of Indian Standards for water quality complete hardness, Dissolved Oxygen, Total Dissolved Solids. Six samples of water tests observing stations were chosen dependent on their significance as wellspring of water system and water supply, estimate, future impacts and quantum of water accessible. The physical and synthetic parameters of the gathered examples were tried according to set up standard techniques and methods. The water tests from the chose stations were gathered to refresh the pattern on environmental quality. The water values of physio-chemical parameters of study area are shown in Table7

Table 7: Water Quality Values

Parameters	Units	S1	S2	S3	S4	S5	S6	ISO10500-1991
Colour	Hazan	C/L	C/L	C/L	C/L	C/L	C/L	5 – 10
Odour	-	U/O	U/O	U/O	U/O	U/O	U/O	Unobjectionable
pH	-	7.8	7.2	7.3	7.4	7.3	7.2	6.5-8.5
Temperature	°C	25	25	25	25	25	25	25
Electricity Conductivity @25°C	(uS/cm)	0.3	0.4	0.3	0.5	0.3	0.2	-
Turbidity	NTU	8.9	30.9	8.56	9.2	14.5	12.6	10
Acidity	mg/l	8	7	11	9	14	12	200
Alkalinity	mg/l	16	16	24	18	22	14	200
Total Hardness	mg/l	165	115	156	112	160	180	300
Chlorides	mg/l	9.99	10	7.98	8.3	16	10.2	250
Fluorides	mg/l	0.03	0.03	0.015	0.03	0.03	0.03	1-1.5
Dissolved oxygen	mg/l	0.2	0.3	0.2	0.4	0.2	0.3	5.0
Total Dissolved solids	mg/l	2.05	1.25	1.68	0.69	1.4	0.73	500
Total Suspended Solids	mg/l	3.2	4.2	3.12	4.11	3.8	4.72	200
Total solids	mg/l	5.25	5.4	4.8	5.2	4.9	5.2	500

d. Soil sampling monitoring:

In the study region, there are four kinds of soils black cotton soils, sandy dirt topsoil, red loamy soils and sandy soils. The black cotton soil is most broad and happens in Western part. The sandy mud soils framed along waterway. Tests of soil have been gathered and are being tried for the physical and synthetic properties. The dirt was monitored to be blackish in shading. The surface of

the dirt was for the most part sandy soil. 6 samples tests are gathered from the selected station of study zone. The nature of soil tests was gathered from each station to prefer the standard on environmental quality. The following table gives the criteria for selection of the monitoring stations.

The values of physio-chemical analysis of soil quality in study area are shown in Table 8.

Table 8: Soil quality values

Parameter	Units	S1	S2	S3	S4	S5	S6
Colour	-	Red	Reddish Black	Black	Blackish Brown	Black	Reddish Black
Type of Soil	-	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline	Alkaline
Soil Texture	-	Red loams	Red Loams	Clay Loams	Loams	Clay loams	Red Loams
Gravel	%	1.04	0.67	1.86	0.14	0.28	1.77
Sand	%	93.43	91.08	90.76	93.22	94.19	90.81
Slit & Clay	%	5.53	80.25	7.38	6.64	5.53	7.42
Bulk Density	gm/cc	1.765	1.870	1.80	1.790	1.747	1.820
Moisture Content	%	9.70	9.90	9.50	9.70	9.70	10.0
Depth	M	0 - 1.0	0-1.0	0-1.0	0-1.0	0-1.0	0-1.0



V. RESULTS

A. Ambient air quality:

i. Month-wise among stations:

January 2018 to December 2018 as showed in Fig NO 3

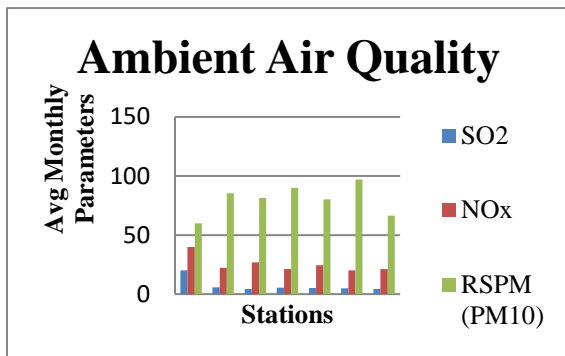


Fig No 3: Monthly Average Values Ambient Air Quality

ii. Annual Average value of RSPM (PM₁₀):

From 2011 to 2018 values are shown in Fig No 4.

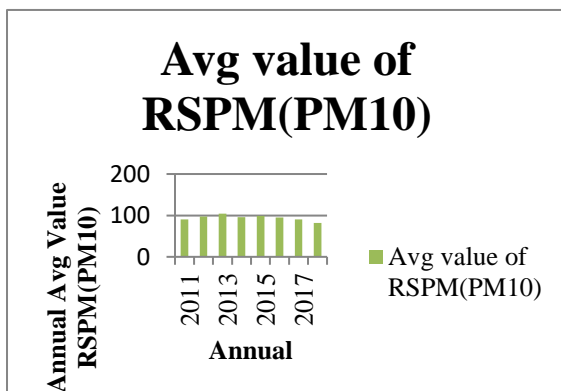


Fig No2: Annual Average Value of RSPM (PM₁₀)

Highest Annual Average Value recorded in 2013.

Lowest Annual Average Value recorded in 2018.

Note: All values are expressed in $\mu\text{g}/\text{m}^3$

B. Ambient Noise Quality:

i. Monthly Average Values of Ambient Noise Quality:

January to December 2018 values are mentioned in Fig No 5.

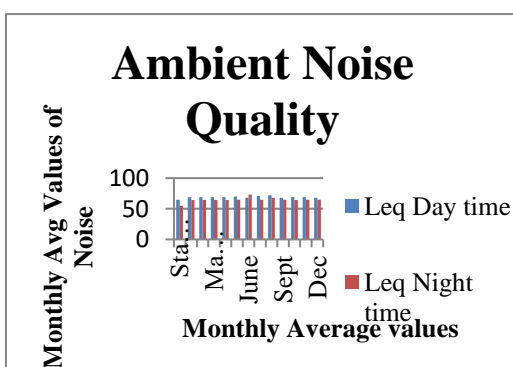


Fig No3: Monthly Average Values of Ambient Noise Quality

Day time:

- Highest in August.
- Lowest in between January to April.

Night time:

- Highest in June.
- Lowest in between January to April.

ii. Annual Average values for Ambient Noise:

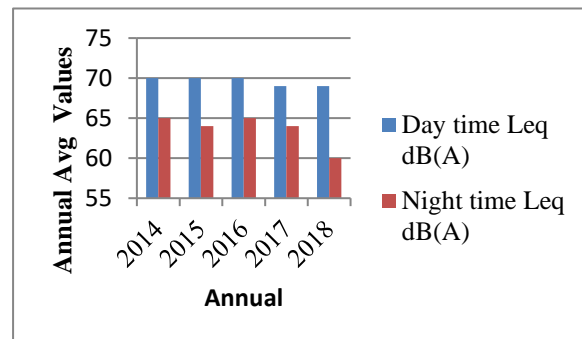


Fig No4: Annual Average Values of Ambient Noise Quality

Annual average values are shown in Fig No 6.

Note: Day time is monitored from 6 a.m. to 9 p.m.
Night time is monitored from 9 p.m. to 6 a.m.

Form the annual average values noise quality improves annually.

VI. CONCLUSION

Mitigation measures for Air, Noise, Water and Soil.

A. Air Pollution Mitigation:

- Pollution control Checkpoints must be done intermittently
- On-Road-Inspection must be improved the situation dark smoke creating apparatus.
- Promotion of utilization of cleaner Fuel, (for example, biodiesel) and Fuel quality enhancement ought to be finished.
- Inspection must be improved the situation utilization of covering sheet to which are being built along the street side.
- High speed builds criminal residue made from unpaved territories.
- Reducing the speed of vehicle 20 kmph can lessen discharge by vast degree.
- Speed dumps are ordinarily used to guarantee speed decrease.

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B. Noise Pollution Mitigation:

- To build solely for the purpose of reducing noise by barrier blocks because of their greater height and width.
- Trees with substantial foliage planted on the two sides of carriage way help somewhat suppress the commotion gave; the foliage stretches out for an impressive separation of 30m or above.
- Thick belt of more than 30m valuable for cutting of the commotion from street traffic.
- Strong verdant trees might be planted to avoid noise.
- Shrubs and creeps may likewise be planted for extra Protection of tree trunks.
- As minimal hard clearing and grass as conceivable might be utilized. Prohibited horn sign boards are provided in silent zones.

C. Water Mitigation:

- Estimated spill over to be caught per unit of the catchment.
- No wastewater from regions liable to oil, oil and different poisons ought to be associated with the framework.
- For spill over from streets are important to anticipate danger of pollution.
- Appropriate measures for disinfection and maintaining quality.

D. Soil Mitigation:

- Preserved trees are the ones that are uprooted and replantation.
- Fast growing grasses are used on shoulder of the road and dividers.
- Permanent planting that are foliage and roots of plants provide dust control and reduce soil erosion.
- Maintenance activities shall be performed as needed to ensure that the vegetation.

- Slower growing species would generally be appropriate in situations where sustained environment benefits.
- Slower growing species would generally be appropriate in situations where sustained environment benefits.
- Lowest level of support is typically conceivable in territory treated with local types of trees.

Based on the EIA contemplate and reviews led for the case study, it very well concluded be securely accompanying that related potential unfavourable environmental impacts can be relieved to a worthy accepted by sufficient usage of the measures as expressed in the EIA Report. Satisfactory arrangements will be put forth in the defence concentrate to cover the environmental assuagement and checking necessities. The purpose of case study will enhance environmental conditions and adverse impact. As far as air and noise quality, the case study will bring significant enhancement to suitable presentation levels to pollution.

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