

Evaluation of Post Impacts of Second International Airport in Sri Lanka with reference to the Environmental Impact Assessment Process

Osada Vishvajith Peiris

Lecturer, Department of Town & Country Planning, University of Moratuwa, Katubedda, Moratuwa – 10400, Sri Lanka

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Corresponding Author

Email: vishtcp[at]gmail.com

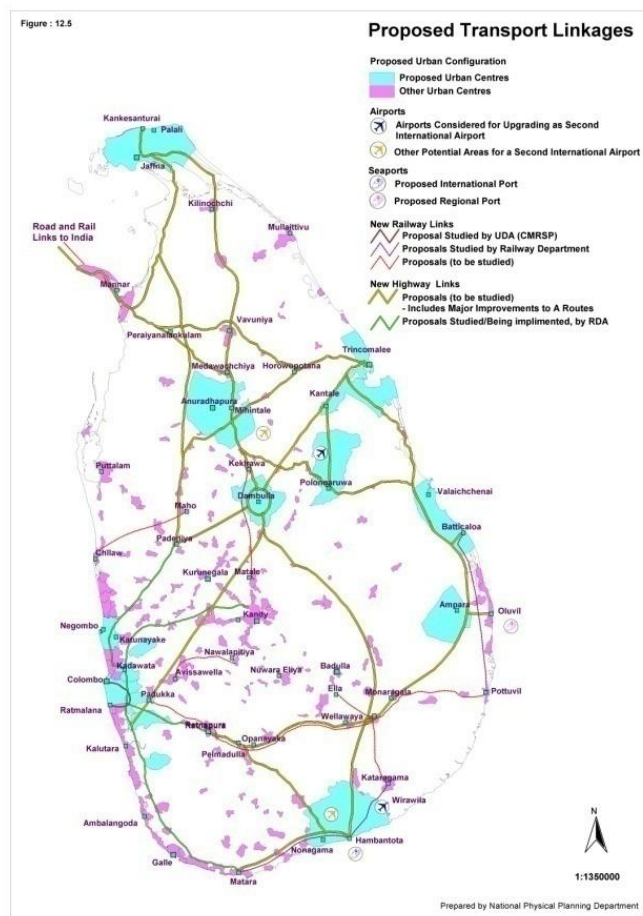
ABSTRACT

International airports are known to be critical infrastructure for any country to boost its economy. This is no different to developing countries where economic goals influenced by employment generation and investment promotion are largely expected through international airport projects. Sri Lanka is a developing country in South Asia with a potential of economic development due to its strategic location in Indian Ocean. Mattala Rajapakse International Airport (MRIA) has been constructed in Southern Province of Sri Lanka in 2012 as the second international airport of the country but failed to achieve its objectives and created a financial loss to the government. Conflicts with wildlife are one of the main causes of its operation and this study evaluates the possible limitations in the Environmental Impact Assessment (EIA) process which could be resulted in the outcome. This study evaluates the completed EIA study and identified the possible limitations in relation to wildlife impacts during the EIA reporting. The recommendations for the improvement of EIA process in order to avoid such financial losses are given in the conclusion.

1. Introduction

International airports are known to be critical infrastructure for any country to boost its economy. With the globalization, airports play a vital role in linking international trade and develop tourism industry where local economies could thrive through employment generation and investment promotion. With the end of 30-year long civil war, Sri Lanka – an island in the Indian Ocean – started to reap the potentials of its strategic location in South Asia. Close proximity to international trade routes and rich bio diversity of the country has shown enormous potentials to be developed in port and aviation sector. In this context, development of the second international airport named Mattala Rajapakse International Airport (MRIA) has been one of the key strategies of 10-year horizon plan of Sri Lankan government policy (Rajapakse, 2005). Mattala, a town located in Southern Province has been identified as the location for MRJA upon comprehensive EIA study in 2008. The location details of the second international airport are shown in map 1. The objectives of MRJA are as follows:

- To be a catalyst for the new development of Southern Development especially related to port development.
- To provide a boom in tourism development through linking major tourism zones in Sri Lanka.
- To develop the neighboring lagging regions with national and international trade links through infrastructure and investor attraction.
- To reduce the pressure on existing airport in Colombo as its limits of expansion due to surrounded Negombo lagoon and Indian Ocean.

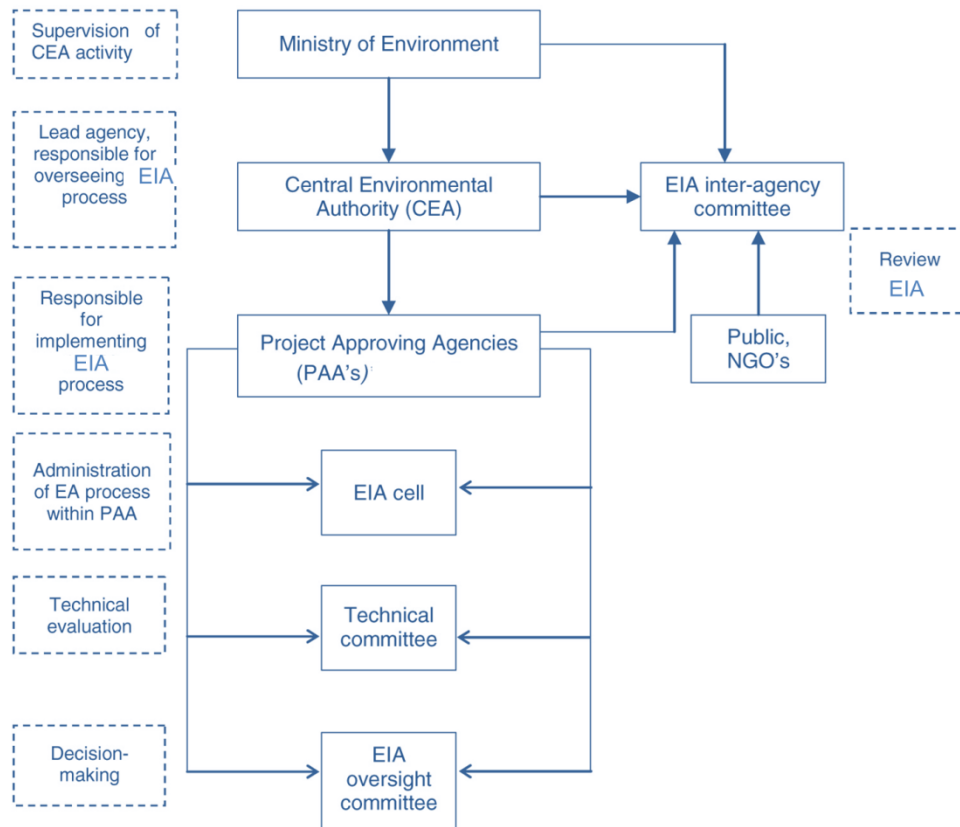


Map 1: Second International Proposal under Government Policy Plan (Source: National Physical Planning Department, 2007)

Environmental Impact Assessment (EIA) is one of the tools used to assess the environmental and other impacts of a development project which has been enacted under National Environmental Act (NEA) No. 47 of 1980. EIA regulations have been integrated to various acts in Sri Lanka to regulate the impacts of many development projects. Central Environmental

Authority (CEA), agency established under NEA has a critical role in administering EIA process in Sri Lanka. In general, EIA is used for the location of prescribed projects under different ministries, highly polluting industries and special projects in environmentally sensitive areas. Key activities administering EIA process is illustrated in Figure 1.

Figure 1: Administrative arrangement of EIA Process



Source: Samarakoon, M. & Rowan, J.S. (2008)

EIA has been carried out for MRIA project in 2008-09 period and locations identified for MRIA has been in close proximity to environmentally sensitive wetlands. The first proposed site for MRIA was at Weerawila (rejected after the EIA Process) that located closer to Bundala Wetland (First Ramsar wetland in Sri Lanka) and then moved into Mattala which is 15 km away from Wirawila to construct MRIA (AAA, 2009). Mattala has been approved as the location of MRIA in the EIA process and location details and its site clearance image is as shown in Map 2 and Figure 2 respectively. Mattala MRIA site is approximately 30km away from Hambantota Harbor. The negative impacts to the livelihood in the area were comparatively low as the project location selected was a complete shrub forest. The close proximity to national parks and wetland eco systems were considered as potentials to attract more tourists annually for the eco-tourism and adventure tourism needs.

The basic information of MRIA project is as per the table 1.

Table 1: Basic Information of MRIA (Source: AAA, EIA Report, 2009)

Project Commenced Date	November 2009
Date of Completion	February 2012
Total Land Area used (Phase I)	800 ha. (Direct Project Zone)
Total Land Area used (Phase II)	1200 ha. (Wildlife Conservation Area)
Project Proponent	Airport & Aviation Services (Sri Lanka) Ltd - AASL
Investment	US \$ 200 million
Project Approved by (EIA)	Central Environmental Authority (CEA)
Current Status (2014)	Operational from January 2013

Map 2: Surrounding Environment of MRIA is rich in Bio diversity & National Parks (Source: Urban Development Authority – Greater Hambantota Development Plan)

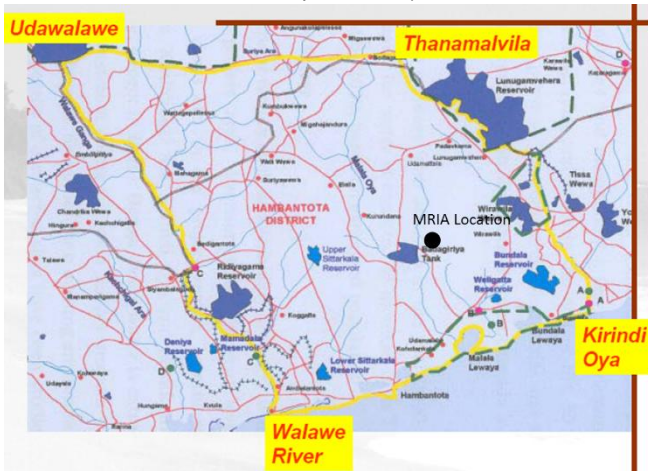


Figure 2: Image of the clearance work of MRIA Runway (Source: www.slpa.lk)



2. Post Impacts upon Commissioning of the Airport

Based on the site visits during construction in 2010 and evaluation of the EIA report of the project, it is conclusive that qualitative analysis used in EIA was not considered the scientific aspects behind wildlife behavior. Also proposed management plans were not effectively implemented upon commissioning. The project is not achieved its objective and there are number of environmental issues arose upon implementation of the project. The issues faced by the airport project (within a span of less than 02 years) can be listed as follows.

1. Unable to meet the demand for people to visit as per the related infrastructure has not been developed parallel to the airport.
2. Conflicts with wild elephant attacks to airport surrounding and nearby villages.
3. Critical hits with flying birds' impacts to moving flights.
4. Attraction of wildlife to the airport premises for water sources.

Some of the photographic evidence for the negative impacts related to wildlife is shown in figure 3, 4 and 5.

Figure 3: Strikes of birds on UL 114 Flight of Sri Lankan Airlines on 25th March 2013 (www.lankaqossip.org)

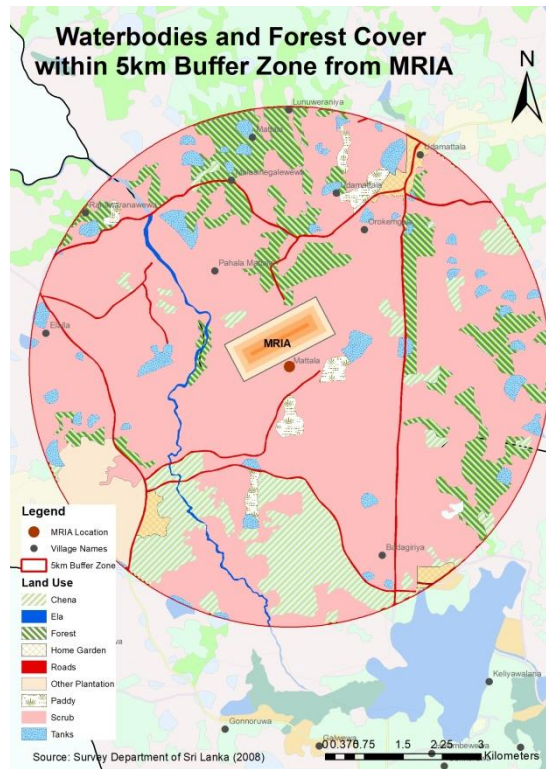


Figure 4 and 5: Movement of birds and elephants on access route of MRIA (www.sundaytimes.lk, www.lakhot.info)



The surrounding environment of MRIA is a popular destination for migratory birds and bird flow is not reduced as expected on operation of airport due to numerous water resources and nesting grounds around the airport zone (Map

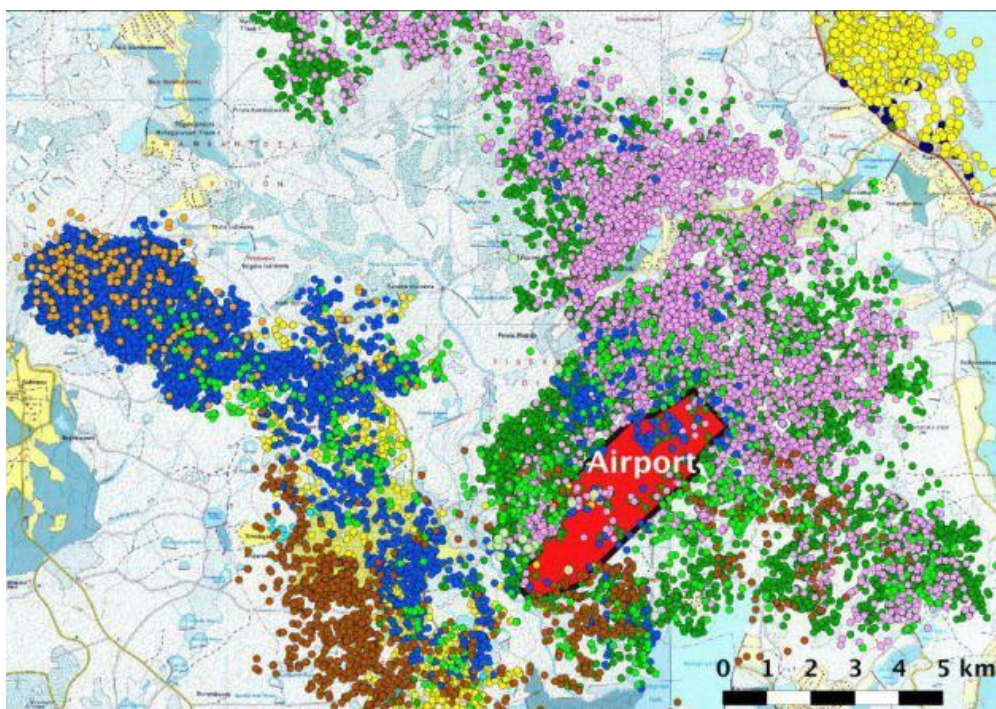
3). Many aircraft carriers have been seen this as a threat to the planes as well as to the passengers on the flights. In this context, many international airlines have declined to travel to MRIA and affected the operations of the airport.



Map 3: Availability of Water Resources and Forest Cover around MRIA (Compiled by Author)

The next major issue was with the elephant movement around MRIA. It is known to be the location proposed as an elephant corridor originally between Udawalawe, Lunugamvehera, Weerawila and Bundala national parks. Government of Sri Lanka carried out strategies to move away elephants from the airport site to the away locations. But it was

a failure as per the experts couldn't understand the ranging pattern of elephants (Rodrigo, 2011). The lack of scientific effort into the analysis of EIA has been an evident fact based on the post development monitoring study of elephants conducted by researches upon commissioning of the airport.



Map 4: The map showing elephant movements in area. The differently colored dots indicate different elephants radio collared from different herds (<http://window2nature.wordpress.com/2013/03/18/airport-in-elephant-teritory-opens-today/>)

Map 4 explains the severity of elephant conflict on airport location. It is also known that male elephant those who were taken to various national parks away from airport have been

returned in few months period to the same territory. Research expert on elephants, Dr. P. Fernando has undertaken the study and stated that elephant are similar to humans who are

attached with their homes. Elephants with comparatively higher instinct levels can easily return back to the original location which exactly has happened in and around MRIA.

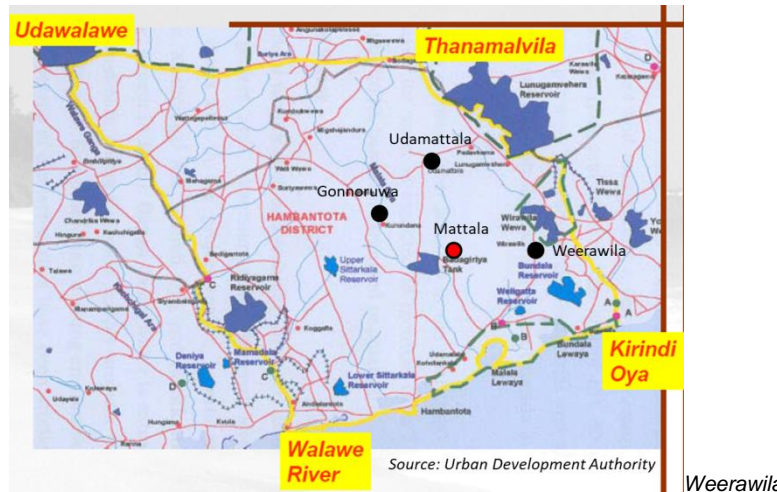
These are clear evidences to show lack of scientific inputs given in the planning and implementation stage of airport project which resulted huge financial and ecological loss to the whole region. Today it is known as a “white elephant” project of the government (de Silva, 2014). This reveals the need of extensive planning upfront for any project implemented near to the environmentally sensitive areas.

3. Qualitative Assessment of Impacts through EIA

EIA study has been identified four (04) alternative locations for the international airport and conducted a qualitative assessment of impacts due to following reasons.

- All the parameters cannot be placed on a common platform.
- Weightage factor gives wide variations and lead to uncertainties.
- Quantification of parameters outweigh the reliability of the final outcome

The alternative sites are depicted in the map 4 which includes the original planned location at Weerawila.



Map 4: Alternative site locations for second international airport as per the EIA Study

Qualitative assessment criterion used four (04) rankings ranging between negligible impact, low impact, moderate impact and high impact. This has been justified in the EIA by ranging from highly theoretical quantification techniques to more practical ranking methods. Since the evident conflicts with wildlife and bird strikes were common upon post

implementation, it is important to see the ranking values given for each indicator in the EIA report. The evaluation of alternatives is shown in Table 2 and the rejection of alternatives to select Mattala as the most preferred location is shown in Table 3.

Primary factors affecting airport selection	Weerawila	Udamattala	Gonnoruwa	Mattala
Surrounding area & land use	High	Low	High	Low
Atmospheric conditions	Negligible	Negligible	Negligible	Negligible
Obstacles (airfield requirements)	Negligible	High	Negligible	Low
Ground access	Negligible	Moderate	Moderate	Moderate
Topography	Negligible	Moderate	High	Moderate
Environment (Wildlife)	Moderate	Moderate	Moderate	Moderate
Social considerations	High	Moderate	Moderate	Low
Aerospace Management and Air Traffic Control	Low	High	Low	Low
Hazards (wildlife/bird strikes)	Moderate	Low	Low	Low
Proximity to demand centers	Negligible	Negligible	Negligible	Negligible
Infrastructure and utilities	Negligible	Moderate	Moderate	Moderate
Land availability	High	Moderate	High	Moderate

Table 2: Qualitative Ranking Method used to evaluate the alternatives of MRIA geographic location decision

Primary factors affecting airport selection	Weerawila	Udamattala	Gonnoruwa	Mattala
Surrounding area & land use			X	
Atmospheric conditions				
Obstacles (airfield requirements)		X		
Ground access				
Topography			X	
Environment (Wildlife)				
Social considerations	X			
Aerospace Management and Air Traffic Control		X		
Hazards (wildlife/bird strikes)				
Proximity to demand centers				
Infrastructure and utilities				
Land availability	X		X	

Source: EIA Report, Mattala Airport (2009)

Table 3: Reasons for rejection of alternative locations to select Mattala as the preferred location for second international airport

Table 2 and 3 clearly show that qualitative assessment would not justify for a location decision of a project with such magnitude. Also the EIA study has been lacked scientific inputs to assess the impact on environment (wildlife) aspect and hazards (wildlife/ bird strikes) aspect.

4. Conclusion and Recommendations

MRIA project has been criticized by professionals and general public as it viewed mainly from the political and economic point of view which resulted in unforeseen issues on the environment as well as the functions of airport. But the EIA process could have identified the impacts in the pre planning stage in terms of improvement of scientific inputs. The key scientific inputs that failed to address in the planning and operational stage of MRIA can be stated in Table 4.

Table 4: Required Scientific Inputs for minimizing the Negative Impacts and thereby improve the Functional Efficiency of MRIA Project

No.	Stage of Project	Area of which required further scientific input
01	Planning Stage	• EIA required further analysis of wildlife behavior through professional study (observations itself cannot be taken as a proper scientific input)
		• EIA analysis should follow quantitative techniques to justify the location decision (Qualitative Ranking Method was used in the analysis which was not effective)
		• Scientific analysis was missing in the impact analysis to the water resources and noise impacts.
		• Cost benefit analysis could have done by using the valuation techniques to foresee biodiversity loss, habitat fragmentation vs. economic benefits.
		• Disregard of zoning plan of the area and ecological services of national parks and wetlands in and around
02	Operational Stage	• Lack of inputs from professional bodies like Department of Wildlife Conservation (DWC) and Forestry Department (FD)
		• Use of manual efforts to remove birds, elephants rather than changing the behavioral patterns
		• Wildlife management plan and MRIA implementation mechanism was so rigid which created new issues like attraction of wildlife into MRIA water sources, etc.
		• With the lack of economic benefits due to insufficient passenger movement, environmental management plan was stagnated. (Lack of financial inputs for the management plan)
		• Conflicts between land use plan and proposed mitigatory measures for environmental impacts by MRIA

The major drawback of all above facts is the inefficiency of EIA process and lack of management plan for the operational issues of the project. Also the EIA reporting seemed to me as a project justification document rather than to identify the key issues and clear cut mechanism for the mitigation and continuous monitoring aspects. MRIA project shows the need

of elaborated scientific research on bio physical aspects with top priority.

As the project has been already implemented, the management of negative implications should be the prime focus of implementation agencies. The following steps are

recommended to follow in order to minimize the negative effects at MRIA.

- Continuous monitoring of elephants and provide them additional corridors to move freely while managing the aircraft movement with minimum noise levels and carefully planned day & night operations.
- Observe the movement of birds seasonally and introduce alternative food and nesting sources to divert the through movements of birds cut across aircraft pathways.
- Introduce sustainable materials for the building construction and maintain natural lighting and ventilation to reduce the lighting usage and excessive water usage in the airport premises.
- Waste water and solid waste recycling should follow the best possible technology to perform zero discharge levels and so on wildlife attraction will be significantly low.

But the most important fact is to perform accurate scientific research during the planning stage of the project to avoid the fore stated issues as well as to save unnecessary financial and resources wastage in mitigation. Though it consumes more time and money, the unplanned projects in such nature could create irreversible damages to nature as well as to the investments. The proposed scientific inputs should be as follows.

- Independent risk assessment and solid monitoring and evaluation plan should be the major output for EIA reporting process. This task require various professionals specialized in various professions and output should be a win-win situation for both economy and wildlife conservation parameters.
- EIA process should include objective study of the most suitable location of project after doing the comparative analysis of different alternative locations. This is vital for environmentally sensitive areas such as Mattala where every alternative location has its own eco system services.
- The cost benefit analysis should include "natural capital" as a different section. Cost of natural capital may not be easy to calculate, but the best way to

evaluate the cost to the environment is through environmental capital valuation in the EIA process.

- Coordination and integration of different institutions is the key for success of such project. In this case, DWC and FD had fragmented interests which created loop holes in the comprehensive study of environmental impacts.

Finally, it is recommended to prioritize on the ecological impact assessment component of any EIA report to evaluate the real situation of impact area (Samarakoon & Rowan, 2007). For the unforeseen and possible management options, the best source so far is the EIA reporting. The following points under the EIA study should be strengthened with scientific basis for every individual project.

- **Selection of Alternatives**

- ✓ Consideration of "No Project" alternative via valuing eco system services and socio economic benefits of existing bio diversity
- ✓ Number of alternatives and variation of ecological inputs

- **Consideration of Impacts**

- ✓ Impacts of each & every stage of the project on critical elements of eco system (elephants and bird movement in this case)
- ✓ Objective assessment of bio diversity data under selected alternative (most cases are finished off with comparative study of impacts on alternatives)

- **Methodology for Assessment of Impacts**

- ✓ Quantification of data through reliable analysis
- ✓ Rational weightage of impacts under alternative analysis
- ✓ Prediction of impacts with possible land use changes during project operation

- **Monitoring & Evaluation Mechanism**

- ✓ Management plan for critical impacts on every ecological system
- ✓ Provision of considerations of SEA (Strategic Environmental Assessment) wherever necessary

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