

**Item No.1:-**

**BEFORE THE NATIONAL GREEN TRIBUNAL  
SOUTHERN ZONE, CHENNAI**

*(Through Video Conference)*

**Original Application No. 157 of 2020 (SZ)**

IN THE MATTER OF:

**People for Cattle in India (PFCI)**

Represented by its Founder

Mr. G. Arun Prasanna

Office at 8/22, Ragaviah Road,

T. Nagar, Chennai - 600 017.

...Applicant(s)

*Versus*

**Additional Principal Chief Conservator of Forests**

Coimbatore Circle,

Kurinji, Mettupalayam Road,

Coimbatore - 641 043 and Ors.

... Respondent(s)

**For Applicant(s):**

Mr. Kaushik N Sharma.

**For Respondent(s):**

Dr. D. Shanmuganathan for R1 to R3, R6 & R7.

Mr. G.M. Syed Nurullah Sheriff for R4 & R5.

Mr. K. Muthamil Raja for R8 to R11.

**Date of Judgment: 17<sup>th</sup> May 2022.**

**CORAM:**

**HON'BLE Mr. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER**

**HON'BLE Dr. SATYAGOPAL KORLAPATI, EXPERT MEMBER**

**ORDER**

Judgment pronounced through Video Conference. The original application is disposed of with directions vide separate Judgment.

Pending interlocutory application, if any, shall stand disposed of.

Sd/-

**Justice K. Ramakrishnan, JM**

Sd/-

**Dr. Satyagopal Korlapati, EM**

**O.A.No.157/2020 (SZ),  
17<sup>th</sup> May 2022. Mn.**

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Office at 8/22, Ragaviah Road,

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...Applicant(s)

*Versus*

- 1. Additional Principal Chief Conservator of Forests**  
Coimbatore Circle,  
Kurinji, Mettupalayam Road,  
Coimbatore - 641 043.
- 2. Principal Chief Conservator of Forests/ Chief Wildlife Warden (Chennai)**  
No.1, Jeenis Road,  
PanagalMaaligai Saidapet,  
Chennai - 600 015.
- 3. Additional Chief Secretary**  
Environment and Forest Department  
Government of Tamil Nadu  
Secretariat, Chennai - 600 009.
- 4. Secretary**  
Ministry of Environment, Forests and Climate Change  
Government of India  
Indira Paryavaran Bhawan  
Jorbagh Road, New Delhi - 110 003.
- 5. Regional Deputy Director (SR)**  
Wildlife Crime Control Bureau  
C2A, Rajaji Bhavan,  
Besant Nagar Chennai - 600 090.
- 6. District Collector**  
Coimbatore  
Collectorate Building,  
Coimbatore - 641 018.

**7. District Forest Officer**

Coimbatore Division  
Avinasilingam Home Science College Post  
Mettupalayam Road Coimbatore - 641 043.

**8. Secretary**

Ministry of Railways  
Government of India  
Room No.209, Rail Bhawan, Raisina Rd CP,  
New Delhi - 110001.

**9. General Manager**

Southern Railway  
Government of India  
Southern Railway Headquarters Office  
Park Town, Chennai - 600 003.

**10. Divisional Railway Manager**

Office of DRM Complex  
Southern Railway, Salem - 636 005.

*(Respondents No.8 to 10 were impleaded  
as per order in I.A. No.201/2021 dated 13.12.2021.)*

**11. Divisional Railway Manager**

Office of DRM Complex  
Southern Railway, Palakkad Division  
Olavakkode, Palakkad 678 002.

*(Respondent No.11 Suo Motu impleaded  
As per order the Tribunal dt. 13.12.2021)*

... Respondent(s)

**For Applicant(s):**

Mr. Kaushik N Sharma.

**For Respondent(s):**

Dr. D. Shanmuganathan for R1 to R3, R6 & R7.

Mr. G.M. Syed Nurullah Sheriff for R4 & R5.

Mr. K. Muthamil Raja for R8 to R11.

**Judgment Reserved on: 31<sup>st</sup> March 2022.**

**Judgment Pronounced on: 17<sup>th</sup> May 2022.**

**CORAM:**

**HON'BLE Mr. JUSTICE K. RAMAKRISHNAN, JUDICIAL MEMBER**

**HON'BLE Dr. SATYAGOPAL KORLAPATI, EXPERT MEMBER**

Whether the Judgment is allowed to be published on the Internet – Yes/No

Whether the Judgment is to be published in the All India NGT Reporter – Yes/No

## J U D G M E N T

*Delivered by Justice K. Ramakrishnan, Judicial Member*

1. The above case has been filed by the applicant trust which is said to be actively involved in protecting and preserving environment and wildlife on the basis of the newspaper report published in The Hindu dated 02.07.2020 under the caption “**Elephant shot dead near Mettupalayam**”. The same news was published in Dinamalar Daily dated 09.07.2020 about the incident in respect of death of elephant in forest area as seen in the State of Kerala.
2. The applicant also mentioned in the application that as early as in December 2018, he had sent a letter to the Principal Chief Conservator of Forest seeking to take action against people threatening to shoot and kill elephants in Thadagam Valley near Coimbatore, evidenced by Annexure – A2 and A3. Apart from the incident reported in the newspaper mentioned above, large scale incidents are happening resulting in death of elephant due to man-animal conflict.
3. In an article published in The Hindu dated 02.07.2020, titled ‘Elephant shot dead near Mettupalayam’, it was reported that a female wild elephant aged around 35, was gunned down by two siblings who were farmers, near Mettupalayam in Coimbatore Forest Division limits,

evidenced by Annexure – A4. A letter was sent to the Coimbatore Forest Division regarding the incident of killing of elephants by people residing near the forest area by e-mail dated 03.07.2020 evidenced by Annexure – A5. He received a reply dated 10.07.2020 from the 1<sup>st</sup> Respondent stating that with regard to the issue pertaining to the killing of female elephant in Mettupalayam appropriate actions have been initiated against the persons concerned.

4. The Applicant further alleged that the respondents have moved away from the enforcement centric paradigms of wildlife conservations and that the potential of education, advocacy and outreach to achieve the larger interest of conservation. In the reply, they have mentioned that the problem is quite complex and requires the concerted action of all stakeholders for a sustainable solution and the reply was produced as Annexure – A6.
5. It is further alleged in the application that the death of the elephant was solely due to the callous attitude of the respondents who, despite the request by the applicant to protect the elephants from the individuals who have been threatening to shoot elephants of not taking action in this regard. The number of elephants are dwindling at an alarming rate in India mainly due to the deaths of elephants due to human-animal conflict and also due to a lack of treatment and care in respect of injured elephants, which only contribute to the falling numbers of elephants.
6. The Applicant also mentioned in the application that in the newspaper viz., The Hindu daily dated 28.11.2021, it was reported that 2 elephants died while crossing the Railway line in Madukkarai hit by the Mangalore

Chennai Express Train. All these things are happening due to not providing necessary safeguards at the relevant places where there is a possibility of elephant passage in human habitats.

7. So, the applicant filed this application seeking the following reliefs:-

*“a. Direct the Respondents to evolve an emergency response plan for attending to the elephants which are injured or killed due to the conflict between humans and elephants.*

*b. To form a monitoring committee consisting of veterinarians and wildlife experts to consistently monitor human-elephant conflicts and also ensure that the Respondents prevent such human-elephant conflict.*

*c. Pass any such order as this Honourable Tribunal may deem fit and proper in the interest of protection of the environment and justice.”*

8. Later, Respondents No.8 to 10 were impleaded as per order in I.A. No.201 of 2021 (SZ) and the 11<sup>th</sup> Respondent was also Suo Motu impleaded by this Tribunal as per order on the same day.

9. On the basis of the submissions made by the learned Special Government Pleader for the State Departments that since in respect of the incident mentioned in the newspaper viz., The Hindu daily dated 02.07.2020 under the caption “Elephant shot dead near Mettupalayam”, a Special Committee has been constituted by the Principal Chief Conservator of Forest (Wildlife) and Chief Wildlife Warden, Tamil Nadu, this Tribunal did not appoint any committee to go into the question.

10. The Forest Department was directed to file a statement regarding the steps taken to meet the situation of man-animal conflict in the State of Tamil Nadu and how the “Project Elephant” is being implemented and monitored by the officials of the Forest Department which is intended for protecting the life of elephants.

11. The 7<sup>th</sup> Respondent filed a counter contending that during a farmers grievances meeting, the farmers association president and members who participated in the meeting which was conducted by the District Collector, Coimbatore in his office represented that few elephants are causing extensive damage to crops and properties in the fringe villages of Coimbatore and Periyanaickenpalayam Ranges. One of these elephants even killed a forest staff who was engaged in driving back the elephants into the forests. Frequent damages to the crops and properties coupled with loss of life created a constant fear among the public in these areas. Since the livelihood of the farmers was affected, the farmers were in a desperate mood. Lot of agitation and demonstrations were organized by them demanding the removal of the problematic elephants identified by them. Out of agony and self pity the farmer's leader uttered those words. This cannot be considered to be a crime. Even in Acts, there are no provisions for initiating a criminal or legal action against the farmers. They admitted the fact of death of two elephants by shooting on 02.07.2020. In respect of the incident, a case was registered under Section 9 of the Wildlife (Protection) Act, 1972 and persons were arrested and remanded to the judicial custody. The gun was also seized and a complaint has been lodged with the police to take appropriate action under Arms Act, 1959, since the gun was an illicit one. To the letter sent by the applicant, a reply has been sent regarding the steps taken from their side to avoid such things from happening in future. The Forest Department is taking all earnest attempts to protect wildlife including elephants to avoid man-animal conflict by taking several steps and also organizing awareness programmes among the people in respect of the same. Many elephants were rescued and rehabilitated. Injured elephants

were treated and saved. Constant patrolling is done to prevent crimes. Anti-poaching watchers, anti-depredation squads, Rapid Response Teams are employed for monitoring the movements of elephants. Whenever, movement of elephants into the villages happened, the farmers and other public are warned suitably to be safe and the strayed elephants are carefully guided back to the forests and disasters are being averted. There was no lethargic attitude on the part of the Forest Department in taking steps to protect elephants and other wild animals. There is already a Rapid Response Team (RRT) formed by the department and functioning since 2017 and their main responsibility is to attend man-animal conflict as soon as they receive the information. Apart from this, Anti-depredation watchers / anti poaching watchers also support the Forest Department personnel in the following works carried out to mitigate man-animal conflict,

- a) Driving back the elephants in to forests
- b) Rescue of the elephants and relocation.
- c) Treating the elephants which are sick and injured.
- d) Monitoring the movements of elephants inside as well as outside the forests.
- e) Supply of water to the elephants by cleaning and refilling of the water troughs periodically.
- f) Early warning about movements of elephants inside as well as outside the forests.
- g) Creation of awareness among the farmers and public.

12. It is further contended that dedicated Forest Veterinary officers along with supporting staff are employed by department as well as borrowed from veterinary department on deputation to assist forest department in the above operation especially rescue, treatment, rehabilitation etc. The special committee consisting of elephant experts, veterinarians, NGOs under chairmanship of Additional Principal Chief Conservator of Forests with a District Forest Officer as convenor was formed by Principal Chief Conservator of Forests and Chief Wildlife Warden vide their proceedings No.WL4/15008/2020 dated 02.07.2020 for carrying the following tasks.

*"i. The scientific investigation of cause of death of elephants*

*ii. To study the individual incidents with reference to location and circumstances of the death that has occurred.*

*iii. The evaluation of deaths with reference to habitation, diseases, other natural causes and any other reasons other than natural causes."*

So, they prayed for passing appropriate orders, accepting their contentions, as most of the grievances were dealt with by the department itself.

13. They also produced the report of the Principal Chief Conservator of Forest and Chief Wildlife Warden regarding the steps taken by them in respect of death of mother elephant shot dead in Mettupalayam, Coimbatore. A committee comprising of (i) Mr. Ajay Desai, Expert on elephants, Bangalore, (ii) Mr. Siva Ganesan, Expert on elephants, Chennai, (iii) Dr. Arivalagan, Environmentalist, Indo-American Society, Chennai, (iv) Dr. Kalaivanan, Veterinarian, Animal Husbandry Department, Theni, (v) Dr. A. Pradeep, Veterinarian, Vandalur Zoo,

Chennai, (vi) Mr. Boominathan, Wildlife Biologist, WWF, Coimbatore, (vii) Dr. Nitin Seka, Coordinator, WWF, Coimbatore and (viii) Dr. Sreekumar, Veterinarian, TANVAS was formed under the chairmanship of the Principal Chief Conservator of Forest and Chief Wildlife Warden, Chennai. The committee met virtually on 07.07.2020 and 17.08.2020 and deliberated on the matters. The committee has collected details on death of elephants from the District Forest Officer, Coimbatore vide Ref. No.1025/2020/P dated 16.07.2020 and gave the report which reads as follows:-

*“(i) The Committee is compiled an interim report that is under examination Further investigation is in progress.*

*(ii) The Committee had collected new guideline and Standard Operating Procedure for details on the Forensic and post-mortem report preparation along with a host of health details and elephants populations and managerial parameters*

*(iii) Proposal to Government and approval of setting up 4 modern Rescue and Rehabilitation Centres for immediate response to wild animal trauma Setting up committee of experts on Veterinary and wildlife health monitory and management and setting up a committee on captive welfare*

*(iv) Issued SOP and Guidelines for the collection of forensic samples Training in Crime scene management and forensic tests*

*(v) New Protocol for rehabilitation of elephants following the which the elephant Rivaldo was successfully rehabilitated.*

*(vi) New directions for post-mortem examinations and sample collections and transportation to different labs for tests.*

*(vii) Involving nationally reputed labs and institution in animal health case such as CMB, Hyderabad. WII, Dehradun and management.”*

**14.** They also produced various documents collected in respect of a crime registered with regard to the incident.

15. The 4<sup>th</sup> Respondent filed a reply affidavit contending that the Indian Elephant was declared as a National Heritage Animal of India in 2010 and is also a Schedule- I species under the Wildlife (Protection) Act, 1972. The Act itself provides for the protection of wild as well as captive animals with a view to ensuring the ecological and environmental security of the country. The 'Project Elephant' was launched by the Government of India in 1992 as a Centrally Sponsored Scheme for management and protection of wild as well as captive elephants, their habitats and corridors and address the issue of human- elephant conflict. Vide letter dated 19.07.2021, they had requested comments or Action Taken Report from the Principal Chief Conservator of Forests and Chief Wildlife Warden, State of Tamil Nadu, but they are awaiting reply in this regard. As per the 13<sup>th</sup> meeting of the Steering Committee held on 17.12.2014, the Working Group that was constituted to study the "Feasibility and Implementation of Recommendation of Task Force Report, Gajah" proposed comprehensive "Guidelines for Management of Human Elephant Conflict", which was duly approved by the competent authority. The copy of the letter along with the above said Guidelines has been produced as Annexure- II. In compliance with the directions given by Hon'ble Supreme Court in W.P. (C) No. 2751 2015 in the matter of *Vidya Athreya Vs. Union of India*, the Ministry and the Standing Committee of National Board for Wildlife is examining the various issues relating to human- wildlife conflict including issues like securing of elephant corridors to minimize human-elephant conflict, mitigation measures for reducing animal deaths on roads/ highways and deaths due to electrocution. The State is the primary authority in dealing the crimes related to wildlife and the Chief Wildlife Warden or forest officer or

police officer (not below the rank of sub-inspector) are empowered under Section 50 of the Act to lawfully stop or detain any person, whom they see doing any act for which a license or permit is required under provisions of the Act, for the purpose of requiring such person to produce the license or permit. If such person fails to produce the same, he may be arrested without warrant unless he furnishes his name and address, and otherwise satisfies the officer that he will duly answer summons or other proceedings which may be taken against him. Any information received by the Ministry regarding death of elephant is immediately forwarded to the concerned State Forest Department for investigating the matter and taking further action against the violator on the basis of such investigation. The matter in dispute in this case is a matter under investigation conducted by the State Forest Officials or other enforcement agencies. The State Forest Department has already taken the matter for appropriate action and a case has been registered in respect of the incident and persons were arrested and remanded to the custody. The Ministry has taking all the necessary steps for protection and conservation of elephants and their corridors. Apart from this, the Ministry is also engaged in providing technical, financial and legal assistance to all the Elephant range States in the country, this includes facilitating the States in preparing map of human-elephant conflict hotspots in order to discover conflicting zones to mitigate the strategy. They prayed for accepting their contentions and passing appropriate directions which they may comply with and also sought for permission to file further statement, if any, required.

16. Respondents No.8 to 11 have filed counter affidavit contending that Palakkad - Podanur electrified broad gauge double line railway track of Southern Railway passes through the reserved forest in the Western Ghat between Kanjikode and Madukarai railway stations. Conflict in Line B started mostly after 2000 when human habitation thrived in the area and paddy cultivation was taken up by the villagers. The track between Km 486 to 534 is being separated by twin single line. The Podanur-Palakkad down line is 'A' line laid during the year 1861 and Palakkad - Podanur UP line is 'B' line which was newly constructed in 1974 comes in the Ghat section both in Kerala & Tamil Nadu States. The length of 'A' line is 48.26 km and 'B' line is 52.56 km with 8 stations. Both the Tracks between PGT and PTJ are completely electrified. The traffic is Mixed type with both Freight and Passenger trains on both lines. On an average daily 5-6 freight trains operate between 06:00 p.m. and 06:00 a.m. in both (Up and Down) directions. The B line has been diverted, in some places to ease the vertical gradient and hence, 3 KM excess track length in B line. The ruling gradient in A line is 1 in 62 (Falling towards Palakkad) and 1 in 100 (Rising towards Podannur). Due to a gradient of 1 in 62 (rising in UP direction) on the A line, Up loaded freight trains are routed on the B line which has a gradient of 1 in 100 while Downloaded freight runs on the A line. Since, the conflict is more in B line as compared to A line, it was suggested for shifting of few passenger trains operating at night from Line B to Line A and any future developments for additional trains shall be planned to be directed in Line A and any new trains towards Line B shall be avoided. The number of trains between 18.00 and 06.00 hrs are as under:

	UP	DN
WEEKLY	19	14
BI-WEEKLY	6	5
TRI-WEEKLY	1	1
DAILY	12	12
EX-ONEDAY	1	
TOTAL	39	32

17. They have also given the details of the trains that are being run using these lines and also given the line capacity utilization on this section which is already 105%. On the basis of the directions given by this Tribunal, in the meeting of the Central Project Elephant Monitoring Committee (CPEMC) held on 28<sup>th</sup> July 2021, it was decided to constitute a committee to review the steps taken by the Railways and Forest Department to contain the mortality of elephants on railway track in Kerala and Tamil Nadu. The Committee conducted the site visit on 4<sup>th</sup> September 2021. The various suggestions deliberated during the meeting are taken note of by the Railways and necessary measures are being taken. The following are the remedial measures discussed in the meeting which reads as follows:-

"A. Restricted Train Speeds in Identified Stretches:

*The Palakkad Division and State Forest Department of Palghat and Coimbatore District reviews the elephant crossing passages during their regular review meeting. The review is done on a regular basis apart from specific reviews based on movement of elephant inside forest ranges and sighting/crossing of elephant near railway track as reported. The following sections are identified as elephant passages and Permanent Speed Restriction (PSR) of 45 kmph imposed from dusk to dawn (18.00 hrs to 06.00 hrs).*

**“A” Line:**

Sl. No	BLOCK SECTION	DIRECTION	KM	OHE MAST	SR
1	MDKI-ETMD	DN	497/102-499/121	497/6-499/4	*45
2	ETMD-KJKD		505/000-515/000	504/30 -515/2	*45
3	KJKD - PGT		525/100-527/600	525/4-527/20	*45
4	ETMD - MDKI	UP	499/121-497/102	499/4-497/6	*45
5	KJKD - ETMD	UP	515/000-505/000	515/2-504/30	*45
6	PGT - KJKD		527/600-525/100	527/20-525/4	

**“B” Line**

Sl No	BLOCK SECTION	DIRECTION	KM	OHE MAST	SR
1	ETMD – WRA	DN	*505/000-520/637	504/37-520/31	*45
2	ETMD – MDKI		497/106-499/107	497/3-499/3	*45
3	WRA - MDKI		*525/100-527/600	525/3-527/19	*45
4	ETMD – MDKI	UP	499/107-497/106	499/3-497/3	*45
5	PGT-ETMD	UP	*520/637-505/000	520/31-505/0	*45
6	PGT - KJKD		*527/600-525/100	527/19-525/3	

The Respondents 8 to 11/ Southern Railways submits that it was reviewed in the recent Survey committee as nominated by CPEMC and the no other additional locations as to what is already identified above was found required and it was recommended to continue the existing speed restrictions of 45kmph in the night hours and 65 kmph during daytime (S.No.9 Of General/Overall Recommendations of the Committee, Committee Report, Project Elephant Division, MoEFCC). The railways are also keeping a regular check on the speed of the trains passing in the section by doing footplate inspection. The loco inspectors are also doing additional checks on train speed in addition to their regular inspection schedule. Whistle board and speed indicators: Railways have installed Whistle boards at strategic points to alert loco pilots to blow horns in such locations to pre warn the elephants on the movement of trains. Similarly speed restriction indicators have also been installed by Railways for loco pilots to maintain the speed restriction on the railway tracks. Additional some signage boards are identified in KJKD-KTKU B line and between KM 518/09-520 B line in Kerala and replacement of few faded boards in Tamil Nadu area between WRA-MDKI A line.

**B. Vegetation/Vista clearance:**

The growth of vegetation along the railway tracks reduces the visibility for loco drivers in curved track areas and also form a pseudo refuge for elephants beside the railway track. Hence, the identified stretches for elephant track crossings are given due importance for clearing the vegetation on regular interval. The recent committee Suggested vista clearance of 10-15m on both sides of the railway tracks. Regular clearance of vegetation along the Railway tracks is being done by railways to facilitate clear sighting of elephants crossing across the railway tracks. Since 2019-20, widening of vegetation clearance zone up to 15m has been done to further improve visibility. Railways have provided Special Imprest to field engineers for regular clearing of vegetation.

Railways is also widening the earth cuttings along the track for 15-25m up to the railway extreme land available width to allow benefiting in two aspects. First, it gives greater visibility for loco drivers if any elephant is available near to railway track and can take timely action to stop the trains. Second, it helps elephants to walk parallel but away from the track easily instead of taking manoeuvre involving crossing the track. Earth work for widening of cutting has been done between Km 513/500-519/400, Km 500/00 -505/00 on 'B' Line. Agency is available for widening of railway cuttings for 2.5 kms track line between Km 510-512/500 for which work is now under progress. Cess widening including provision of ramps at three more locations between Kanjikode and Madukarai is in progress. At some locations due to limited railway line, the widening of forest area is also required for which the stretches have been jointly identified during recent field inspection with state forest department Tamil Nadu and Kerala on 24.12.2021 and 28.12.2021 and advised.

In addition to above, railways are doing joint inspection along with state forest at supervisor level to identify areas where tree pruning/cutting will aid in increasing the visibility of the track, especially in curved track area. Recently, 82 trees in A line and 31 trees in B line has been requested do DFO/PGT for cutting/pruning in Kerala area.

C) Construction of underpasses/overpasses across the Railway Tracks to allow elephants to cross the track:

The committee suggested creating two underpasses at 505 A/600 and 506 B/900 in Line B in Tamil Nadu side for which Funding from Railways needed to be explored. It is informed that during Inter Ministerial meeting held, it was decided that the State Forest Department of Tamil Nadu shall provide the budget for the construction of the two underpasses and Railways shall execute the construction work. The railways has prepared and submitted the revised estimate with complete cost (Rs 7.08 crore) to PCCF, T.Nadu on 03.12.2021 to deposit the fund to take up the work. In addition to it, Railway has also proposed the work of construction of two underpasses at the above location to be included in sanctioned work list.

The proposal is currently in Railway Board for competent authority approval and work shall be taken up after that.

It is mentioned that Joint field inspection was conducted with DFO/CBE and DFO/PGT on 24.12.2021 and 28.12.2021 to inspect the proposed underpass locations and to identify any additional suitable locations for underpass/overpass. It was recommended that the proposed 2 underpass locations at KM 505A/400-500 and 506/900-506A/00 in B line is suitable and sufficient and no other additional under pass location was identified. Also, it was seen that no location is feasible for providing overpasses for elephant movement across the forest on either side.

It was also observed that elephants, generally single adult elephant, are regularly crossing the railway area through the waterway bridges in summer season when water is not flowing available in the section which was evident from

their footprints and dung present. Bridge No. MK 7- 1\*5.57m, MK 11- 1\*4.57m, MK6 -1\*12.20m were inspected and found elephants footprints. It will be useful if funnelling with electrical hanging solar fencing is done on either side of the bridges to guide elephants to cross regularly through underneath of these bridges. The length and location of funnelling by hanging solar electrical fencing is to be advised by State Forest Dept after studying the movement of elephants in the particular area.

However, Ramps have been constructed at suitable locations at KM 506A/100, 506/400, 506A/300 in Ettimadai-Walayar section in Tamil Nadu at high bank location for passage of elephants without getting entrapped near railway track area. Few more elephant ramps of 20m wide track length has been jointly identified along with State Forest Department to be constructed in the elephant corridor area. 2 more ramps has been identified in Tamil Nadu side in B line at KM 507/11-15 and 505A/300 and at Km 510/29-27 and 511/200 in B line in Kerala side. It is also provide solar lights at a suitable distance before such ramps for improved visibility to Loco Drivers and stop trains at suitable distance after sighting any elephant crossing in that ramp locations. Similarly, more ramps has been identified to provide in Kerala side for easy movement of elephant across the track.

#### D) Communication:

Whatsapp groups have been created for transmission of information on movement of elephants across the railways tracks. Forest Tamil Nadu during the recent meeting held with Chief Wildlife Warden Tamil Nadu, committed to provide additional trackers up to 25 nos in addition to existing 9 nos. The same was discussed during meeting with CWW/TN on 30.11.2021 and CCF/PGT on 07.12.2021 and it was agreed by both Forest departments to provide digital walkie talkie instruments GSM enabled to patrolling forest staffs to share the information to Railway control. It was also suggested to have a dedicated control setup of Forest at Coimbatore and Palakkad to have direct point of contact for transmission of information. The state forest department has taken a good initiative by providing a 24\*7 control room facility at Forest Range Office, Madukarai for communicating on real time basis with Railways.

#### E) Solar fencing:

Solar fencing has been mostly laid all across the track in Kerala area along the track but is being damaged by Elephants frequently but has been very effective many times in preventing movement closer to the railway track. The committee suggested that the vulnerable stretch of fencing in Kerala side is 4.5km and jointly incurring the cost by Railways and Kerala FD may be explored. It is mentioned that 1.5km of track is being provided with solar fencing by Railways along the track for which tender is under finalization. It was mentioned by DFO Palakkad that 5km of hanging solar fencing shall be provided by forest department for which tender process is in progress.

Similarly, Solar fencing is also planned to be erected in Tamil Nadu side. Few locations were identified for providing solar fencing along the railway track along with DFO CBE. It was observed that due to natural terrain per se in Tamil Nadu side, due to presence of many waterway bridges of sufficient vertical clearance, elephants are using them to cross underneath. It was suggested to provide hanging solar fencing near these bridges to restrict their movement towards the track embankment and funnel towards bridges by providing hanging solar fencing, The approval and advice of State Forest department is awaited before any funnelling arrangement is executed. Similarly, hanging solar fencing is feasible to be provided on RH side of A line track between KM 506/400 to 508/100 to prevent entry of elephant on the LH side of track which is a small Reserve forest Solakarai. The same needs approval of State Forest Dept.

At Km 505/400-600 in B line and 506/06-506/12 in A line has been provided with electrical fencing in pot area by public just after the reserve forest area ends on both sides of the track. The State Forest dept was advised to take necessary action in prevention of electrical fencing in identified elephant crossing locations as the same can be detrimental to elephant. Suitable suggestions from Court is also required in this aspect.

F) Solar lighting:

Solar lights have been provided by Railways at both ends of the cuttings between Kanjikode and Walayar Railway line passing through two cuttings- at Km 510/900 511/200 and 512/200-400 to warn away elephants from both ends of the cuttings and pre warn them of the presence of railway tracks. The solar lights also help in improving the visibility of loco pilots at night. The same is planned to be erected in Tamil Nadu side also at strategic locations as identified at Km 506/900 - 500 at the earth cutting area in A line.

G) Anti-depredation watchers:

It was suggested by the committee that Five more anti depredation watchers may be engaged in Tamil Nadu side. It was committed during the meeting with CWW.T.Nadu that additional 25 watchers is planned to deploy on railway track during night hours in night time. The same was pointed out to CCF, Palakkad to deploy additional elephant watchers during night hours. Railways insisted that the watchers so deployed should be properly trained by Railways to walk on track and should have specific uniform with retro reflective jackets and GPS based devices to communicate locations to Control Room.

H) Modern Technology:

Intrusion Detection System: The system is planned on trial basis in Alipurduar Division of NF Railway. Palakkad division of southern Railway is in close coordination and shall be planned based on the trial conducted after commissioning in NF Railway.

Lidar Technology: Railways is in consultation with Pramura Software Pvt Ltd. to develop modern technological solution to give prior warning to loco drivers regarding elephant movement near to track. The preliminary discussion was held

*through online video conferencing on 13.01.2022 to discuss the problem at hand and the requirements of railways to get feasible solutions which can be based on either LIDAR technology equipped with thermal or infrared sensors to sense and further communicate to the nearest Station Master.*

*Audio Alarm system: An audio alarm system has been developed by Signal Department of Palakkad Division which is commissioned on 28.12.2022 at KM510/800-900 B line in block sections at unmanned locations and directly controlled by nearest station to give sounds of honey bee and/or tiger roaring sounds to warn away elephant entering into critical railway locations. The asset is solar powered and will be powered on after sunset till sunrise. As decided, the location is being monitored for its effectiveness and shall be reciprocated in other locations based on its efficiency and with any modification, if required."*

**18.** According to them, remediation measures already taken by them will considerably reduce the elephant death in future and that will not recur and they prayed for passing appropriate orders in this regard.

**19.** As per order dated 13.12.2021, this Tribunal had directed Respondents No.8 to 11 to consider the question as to whether any sensors can be provided at such hotspots where the elephants are likely to pass through, so as to alert the loco pilots about the movement of the elephants and the other wild animals, so that they can exercise extra caution to avoid collision of animals by the trains.

**20.** As per order dated 15.02.2022, this Tribunal had directed the Railway Department to file a report as to whether using onboard sensor technological advancements for obstacle detections, now available, alerts can be given to the railway pilots, so that they can reduce the speed as soon as they detect/spot an animal from a distance, as such a technology can be utilised considering the advances in Artificial Intelligence and Sensing Technologies. The Railway Department was also directed to come with a report as to whether this is feasible and if so what is the time

required to implement the same at least in places where such incidents are recurring and this can be utilised for the purpose of avoiding man-animal conflict including rail transport accidents etc. wherever there is presence of road/rail lines in the elephant corridors and passage of elephants and other animals is impacted and in some cases leading to fatal accidents.

21. When the matter was taken up on 24.02.2022, this Tribunal had considered the report filed by the Principal Chief Conservator of Forest dated 10.02.2022, e-filed on 11.02.2022 and extracted in Para (4) of the order which reads as follows:-

**“Report on mitigation measures to meet that situation of man animal conflict including death accord due to accidents by train with reference to Hon'ble National Green Tribunal, Chennai in O.A.No.157 of 2020 (SZ)**

*It is submitted that, Coimbatore forest division prone to Human elephant conflicts and its degree of occurrence has increased considerably in the recent past. The recent study conducted by the forest department shows that, elephant population is around 350-380 with a density of 0.5/Km<sup>2</sup>. The estimated elephant population may vary with season ranging from 25G 300 in the off-season (September-December) and its increases up to 650-700 in the peak-season (January August). Elephants are seasonal migrants, moving from Nilgiris and Sathyamangalam to Walayar reserved forests of Kerala through Coimbatore forest division. In particular, places like Walayar, Bolampatty, Anaikatti reserve forests, Gopinari reserve forests, Hulical, Jaccanari slopes and Nilgiris Eastern Slope reserve forests, Sholakkarai, Singapathy and Iruttupallam blocks are their favourite retreats during rainy season. As he result of disturbance in corridors, human occupied animal migratory paths, changes in land use pattern and agricultural practices, anthropological pressure and linear infrastructure developments causes severe impacts in Elephant behaviour leads to human animal negative interactions.*

*It is submitted that the abstract of Human Animal conflict between 2015 and 2020 in Coimbatore Forest Division is given below:*

*Human Death caused due to Human Animal Conflict-91*

*Human Injury cases reported - 57*

*Crop Damage cases received - 2008*

*Damage of livestock cases received - 18*

*Property damage cases received - 205*

Total Compensation paid last 5 years between 2015-2020 - Rs,5,15,25,459.

It is submitted that Reserve Forests of Coimbatore Forest Division shares boundary for a length of 350 Kms with farmlands and residential areas. About 90 villages are found to be vulnerable to elephant incursion results, increased Man animal conflict gradually. In that 45 villages are severely affected by Human-Elephant conflict.

It is submitted that Man-Elephant conflicts have been managed by mitigation methods like construction of Elephant proof trenches, erection of solar fences and driving away elephants by making noises and using crackers by the Forest Department staff to minimize the conflict. Presently the Human Elephant Conflict Management strategy has been improved further by forming Boundary Night Patrolling Team (BNPT) Squad. To mitigate the Human Elephant conflict effectively, there are 3 BNPT teams are functioning namely Alpha, Beta and Gamma, in all seven ranges stationed at 12 different locations in Coimbatore forest Division and the details given below:

S.No	Name of the Team	Head of Team	Stations SubTeam	Range	No. of ADWs
1	Alpha Team	FRO	Mullangadu	Bolampatty	4
2		Bolampatty Range	Narasimpuram	Bolampatty	4
3			Thombalipalayam	Madukkarai	4
4	Beta Team	FRO	Maruthamalai	Coimbatore	6
5		Periyanaickenpalayam	Varapalayam	Coimbatore	6
6			Gopinari	Periyanaickenpalayam	6
7			Nackienpalayam	Periyanaickenpalayam	6
8			Tholampalayam	Periyanaickenpalayam	6
9	Gamma Team	FRO	Vellingadu	Karamadai	6
10		Mettupalayam	Samayapuram	Mettupalayam	5
11			Odanthurai Depo	Mettupalayam	6
12			Ammanpudur	Sirumugai	5
				<b>Total</b>	<b>64</b>

It is submitted that the each BNPT sub team consist of Anti depredation watchers (ADWs) as mentioned above and headed by a Forester / Forest Guard. The BNPT squad will watch over the Elephant movement Outside the Reserve Forest during nighttime, prevent the straying out of Elephant Outside Reserve Forest, drive the strayed-out Animal back into the Reserve Forest, protect the life of wild animals, protect the life / Property of public, prevent damage to the Crops and properties of farmers, communicate the day to day wild elephant stray incidences to team leaders, ser sitise the farmers about the behavior of wild animals and safe farming methods, fire protection activities, support forest staffs and APWs in Forest Protection whenever needed and conduct awareness programs.

It is submitted that WhatsApp groups are functioning for each Boundary Night Patrolling team (Alpha, Beta, Gamma - WhatsApp groups). These groups share information of strayed animals like animal along with details about GPS

location, from where they strayed out, name of the RF and place, and where it was driven in with a detailed description of the animal i.e., whether it is Single Male / Male group / Single Female / Group Female / Female. Further Community Information Network (CIN) namely Thadam (Path) for every Range with WhatsApp groups are functioning with 250 members each for easy communication among Farmers, line dept such as Revenue, Police, Forest dept officials, stake holders such as Temples and Educational Institutions. Transparency is maintained by the department by reporting to the press and Media about each incident of Elephant straying which is communicated through the Forest Media group thereby alerting them and creating awareness. Further a toll free telephone number 180042545456 is functioning 24x7 to receive calls regarding man animal conflicts and will be attended by the concerned BNPT sub teams or by the concerned forest field staff.

With reference to elephant deaths occurred due to accidents by train, it is submitted that in Tamil Nadu side, the railway tracks (two tracks "A" and "B" lines) from Coimbatore (Pothanur) to Palakkad are passing through Boluvampatti Block I reserve forests, Madukkarai Range of Coimbatore Forest Division. The Two tracks separates at 504 kms and track A enters the Reserve Forest between 506-507 kms and the distance is about 1.8 km and exit the reserve forests at 508 kms. Track B enters the Reserve Forest at 505 A kms and exit at 506 A and 507 kms, for distance of 2.8 kms. The elephant habitat of about 200 Ha lies between track A & B. Hence, the elephant cross track A & B frequently and are subject to risk of train hits. The Elephants are also crossing the railway tracks inside & outside forest for their regular foraging and their attempts to raid agricultural crops raised by farmers.

It is submitted that 11 elephants died due to collision with trains from 2008 to till date in Coimbatore Forest Division. The statistics regarding the elephant deaths are as follows.

- During 2008 (4.2.2008), four elephants were killed by train accident between Pothanur - Palakkad railway line (outside the forest area) at 492/9, "B" line 1,06 km outside the RF.
- During 2009 (17.07.2009) one male elephant was killed by speeding train between Ettimadai-Walayar railway stations (outside the forest area) at 505/22, "A" line 0.47 km outside the RF.
- During 2016, (20.6.2016) one female elephant was killed due to train collision near Dharmalingeshwarar Town temple near Ettimadai Station (outside the forest area) at 497/100, "A" line 0.25 km outside the RF.
- During 2016 (29.7.2016), one female elephant was killed due to the train accident in track B, inside the RF at 506/6
- During 2021
  1. 15.3.2021 one male elephant was injured due to the train accident near Kerala. Tamilnadu border area that is 0.51 km outside the forest area in B line at 507/1. This elephant died on 18.3.2021.

2. 26.11.2021 three elephants (One Female elephant, One makhna male elephant & one juvenile female elephant) were killed due to train collision near Solarkarai in A line at 506/300 about 220m outside the RF.

It is submitted that out of 6 incidences as mentioned above, 5 incidences of elephant death due to train hit occurred outside the forest area and only one incidence occurred inside the Reserved Forests.

The various measures already taken by Tamil Nadu Forest Department to Mitigate Elephant death due to train hit in Madukkarai Range, Coimbatore Forest Division are furnished below.

I. A maor Ramp structure has been created in track B on either side at 506/4 km in the year 2016. Subsequently two more minor ramps have also been created across the B track, one at 506A/1 and another at 506 A4. These structures have been made to facilitate the elephants and other wild animals to cross the railway track, with ease in order to avoid train hits.

II. Five track watchers / Four Anti-depredation watchers are engaged round the clock to monitor the animal movement in Railway lines "A & B" from 2016. As soon as they sight an elephant in the railway track, the location of the animal will be communicated to the railway authorities who in turn will alert the Loco pilots immediately to minimize the train speed and blow horn continuously while crossing such locations.

III. A watch tower was constructed near the deep curve at 506/6 km in "B" line during 2016-17 to facilitate, the monitoring the movement of elephants along the railway track.

IV. A percolation pond was formed in 2016 and Forest pond in 2017 in such a locations inside the Reserved Forests for providing water to wild animals so as to minimize the movement of animals across "B" line in search of water.

V. An UV based early warning alarm and message alert system were established for 500 M length either side of the track between 506/4 and 506/9 on pilot basis during 2017. However, this system was not successful and not functioning

VI. A whatsApp group (Railway & Forests) comprising the personnel of Kerala and Tamil Nadu State Forest Department and Railway department has been created to share the elephant and wild animals movement along the railway tracks. If any elephants or other wild animals found near the "A" and "B\* lines, the staff will immediately post the details in the whatsApp group. The loco pilots will be alerted by the Railway officials. The field staff also will move to the spot immediately and drive the animal away from the tracks.

It is submitted that Joint coordination meetings between Forest and Railway departments have been conducted on 27.07.2009 and 10.01.2011 at Chennai, 16.03.2012 & 18.06.2013 at Palaghat, 11.07.2016 at Coimbatore and 12.07.2016 at Palaghat, 20.07.2016 at Coimbatore. As the result of above coordination meetings the following mitigating measures taken by Railway Department.

a) Speed restriction of 45 km / Hour is imposed in the vulnerable section of "A" line and "B" line from 6.00 pm to 6.00 am. Speed restriction of 65 km / Hour is imposed during day time for passenger train and 25km to 35km for goods train

b) Signage board erected at suitable locations to sensitise train drivers and also to blow horn continuously.

c) Vista clearances on either side of the tracks have been carried out periodically by Railways department to improve the visibility to loco pilots.

It is submitted that as per order of the Hon'ble National Green Tribunal, Principal Bench, New Delhi (O.A. Case No.141/2021) a expert committee from Project Elephant, MoEF&CC, Project Elephant Division, Ministry of Environment, Forest Department and Climate change visited on 4th and 5th September 2021 to review the steps taken by the railways and forest department and suggested further mitigation measures.

It is submitted that pursuant to death of 3 elephants due to collision with Mangalore -Chennai Express on 26.11.2021 in "A" line near Bolampatti Block 1 RF, Solakarai Beat, Madukkarai Range, Coimbatore Forest Division, the Principal Chief Conservator of Forests and Chief Wildlife Warden had inspected the said area on 29.11.2021 and convened a joint meeting was on 30.11.2021 with Senior Railway officials of Palaghat Railway division. During this meeting various mitigation measures such as improving the visibility of railway track, ensuring speed restriction of trains, erecting more number of reflective signage boards, providing earthen ramps wherever desirable, under process at 505/A/600 and 506/B/900 in "B" line, Hotline communication, Sensitization programme for loco pilots and forest field staff, installation of solar lights at animals crossing line, conducting periodical inter departmental meeting at different levels, periodical joint inspection etc., were discussed. Accordingly, the following mitigation measures have been taken by the Forest department

1. Engaging additional Track Watchers for monitoring the track

Earlier, there were 5 track watchers engaged for monitoring of animal movement near the track. In addition to that, 4 Anti Depredation watchers (ADWs) were also deployed on track to support the track watchers. Since the animal movement has to be monitored 24x7 and in both A (1.78 km) and B (2.8 Km) line continuously, the manpower engaged was not sufficient. Hence as instructed by Chief Wildlife Warden on 29.11.2021 during the field inspection and as suggested by the expert committee of MoEFCC after their field visit during September 2021. New track watchers of 10 Nos have been engaged for monitoring the elephant movements in the track. At present, there are 15 Track Watchers and 4 ADWs in the track for monitoring the animal movement along the track in Madukkarai Range

2. Equipping the track watchers

The Track watchers are provided with Long-range torch lights, field dress, shoes, Jackets for supporting them in performing the duty effectively.

3. Improvement of the existing watch tower

The existing watch tower near B track is renovated, painted and the charging facility is made prompt in the watch tower. Extra solar panels and batteries are installed for providing 12 hours of automatic lighting in the watch tower. It is also used for recharging the torch lights and other equipments.

#### 4. Data collection of elephant movement

A regular record is currently maintained to monitor the elephant movement in Soolakarai beat especially in the areas along the track. The individual animals and herds are identified and monitored continuously. Every sighting of the animal along the track is recorded in a dedicated register. The regular movement of the animal is recorded for mapping its behaviour and migratory pattern. This will enable in efficient monitoring in future,

#### 5. Train schedule Timetable provided to track watchers

The train schedules and the timetable of the passenger and express trains run between Walayar to Pothanur are received from the Railway department and provided to the track watchers for monitoring the train movement and informing the Railway authorities in advance if any animal movement is found near the track on the particular time

#### 6. 24x7 Communication Facility at Forest Range Office, Madukkarai

As requested by the Railway authorities during joint meeting convened by Chief Wildlife Warden on 30.11.2021, to create a dedicated 24x7 landline facility for communication regarding the track and animal movements. In response, a dedicated communication facility is created at the Forest Range Office, Madukkarai with 24x7 staff arrangement and it is functioning as control room for Forest department in Tamilnadu side.

#### 7. Special Team for monitoring

Monitoring the track during night time under the supervision of special team of Foresters and Forest Guards is set up for effective perambulation and immediate communication between Railways and the Forest department in case of emergency.

#### 8. Awareness programme

A multi-stakeholders awareness program on Human Elephant Conflicts was conducted on 30.12.2021, in association with NGOs, viz., Nature Conservation Society and Zoo outreach at Coimbatore wherein the railway officials have also participated

#### 9. Proposals submitted for mitigation

A comprehensive proposal of Rs.550.00 lakhs for installation of six new surveillance towers, construction of four new watch towers, improvement of existing watch tower, purchase of thermal sensor drones, thermal imager, providing two new four wheelers for immediately attending emergency situations along the track, transit sheds, new water troughs to restrict animal movement away from track and walkie talkie setup for communication has been prepared in the lines of minutes of joint meeting held on 30.11.2021 and recommendations of expert team of MoEFCC visited during September, 2021 for mitigation of

elephants death due to train hits between Walayar and Madukkarai and submitted for approval and funds,

10. Joint inspection of Railway and Forest Department

As per the decision taken in the joint meeting held on 30.11.2021, two joint inspections were conducted on 24.12.2021 and 27.1.2022 by Forest and Railway department in A line and B line using inspection trolleys and spots were identified for new ramps, under passes, solar lights, signage boards. The important measures such as, Ensuring speed restrictions in the vulnerable sector, Vista clearance including pruning of trees, removal of bushes, smoothing and widening of existing ramps, erecting solar lamps for improved visibility of the loco-drivers, regular removal of poly bags, food and garbage materials along the track by Railways were discussed and being followed

Further, the Principal Chief Conservator of Forest & Chief Wildlife Warden has inspected the railway tracks passing through Madukkarai Forest range again on 06.02.2022 in the presence Conservator of Forest & Field Director, Mudrumalai Tiger Reserve, the then District Forest Officer, present District Forest Officer, Coimbatore, Forest Range Officer, Madukkarai Range and field staff, both in 'A' & 'B' tracks by walk for 7 Kms and examined the discharge of duties by field staff and track watchers, the locations selected for construction of proposed 4 Watch towers, interacted with the farmers near the tracks and non-functional stone quarry inside the forests and instructions given for removal is poly bags & garbage in the tracks by railways, data collection on elephant movement across the tracks, monitoring the speed of the trains and various suggestions for effective monitoring etc., to prevent collusion of elephants by train.

It is submitted that the key measure to avoid train collision elephant deaths is speed restrictions on train in the vulnerable section of both "A" line and "B" line. In addition to strict adherence of speed restrictions, measures such as clearance of vegetation on the sides of railway tracks, signage boards to loco drivers, ramps and underpasses, widening of deep cutting areas along the track, keeping the track free from plastic, food and garbage and solar lights have to be implemented efficiently by the Railways department apart from measures taken by Forest Department, to ensure the prevention of elephant deaths due to accidents by train."

**22.** The Railway Department also filed the report in the form of an affidavit dated Nil, e-filed on 24.02.2022 and extracted in Para (5) of the order which reads as follows:-

"AFFIDAVIT

I, Jatin Kumar, S/o Shri Chander Sain, Hindu aged about 30 years working as Divisional Engineer/East in the office of Divisional Railway

Manager, Works Branch, Southern Railway, Palakkad Division, Palakkad - 678 002 do hereby solemnly affirm and sincerely states as follows:

1. I am the Respondent herein and I am authorised to file this report on behalf of Respondents 8 to 11 since I am well acquainted with the facts of the case.

2. I humbly submit that as per the direction of this Hon'ble Tribunal the following action plan is taken by Railway to prevent elephant deaths due to hitting of trains in ghat section of Southern Railway, Palakkad division.

Intrusion Deduction system:

This system has been planned on trial basis in Alipurduar division of Northeast Frontier Railway. The work is now under tender finalization stage for a cost of Rs 2.56 crore. The work consists of supply, installation and commissioning of Remote DAS unit along with communication interface to monitor elephant movement/train tracking/ Asset Monitoring on Railway Track for the distance of 30 km consisting of optical unit to cover both side of equipment. The scope of work also consists of supply installation and commissioning of Central DAS server along with Geo Location application server and interface unit at nearest Level Crossing gate. Palakkad division of Southern Railway is in close coordination with North Frontier railway and planning to introduce in this location based on the trial conducted after commissioning in North Frontier railway. The functioning of this system is based on the Distributed Acoustic Sensitising system. The working principle of the work is as below:

- OFC Distributed Acoustics Sensing based on Rayleigh scattering phenomenon Real time monitoring via one single core of a fiber optic cable. Laser pulses from Remote OFC DAS unit will be sent continuously and reflected pulses will be received from various points along the fiber cable and analyzed Vibration / external sound waves hitting the OFC cable cause changes in the reflected pulses

- Reference signature is captured for on ideal condition when there is no external vibration In case of elephant intrusion, signature is captured for classification and analysis Real-time trace are compared with reference signature, analysis is done and then alarm is generated

- One unit can monitor 40 km to 60km of track depending upon the health of OFC

- Remote OFC DAS unit shall be connected to central server over Ethernet Link (IP / 4G )

- OFC Route Survey shall be done with GPS for localization of event.

The system shall detect and locate moving elephants up to 5m from the fibre optical cable. The objective of the system shall be to identify elephant movement close to track in advance and convey the information to the nearest manned control which can be either the nearest level crossing gate or the Station. With the receiving of movement or elephant with its geo location, the

same can be conveyed to the loco pilot of the next train before its departure from the signal of the nearest Level crossing gate or Station home signal to observe special restricted speed cautions or to stop and proceed the train at the identified elephant crossing locations after careful observations. The same can also be used to plan train movement in advance in either B or A line as per the feasibility. The system will also be modeled to examine and analyze the train speed running in the particular location. The information received shall be further shared to the Forest control room also in advance to take appropriate action. Southern Railways Palghat Division has already laid optical fibres on the sides of the track for the purpose of signal communication. The work shall be implemented as soon as the railway is commissioned after its successful trial.

Southern Railways Palghat Division has already laid optical fibres on the sides of the track for the purpose of signal communication. The work shall be implemented as soon as the work in NER railway is commissioned after its successful trial.

Audio alarm system:

An audio alarm system has been developed by signal department of Southern Railway which was commissioned on 28.12.21 at KM 513/800-900 "B" line at unnamed locations and directly controlled by nearest station to give honey bee/tiger roaring sounds to ward away elephant entering the vulnerable area. This system is solar powered and function automatically after sunset till sunrise. Effective functioning of this alarm system is being monitored and shall be installed in other locations depending on its efficiency with any modification if required.

LIDAR Technology.

Railway is in consultation with Pramura software Pvt. Ltd., to develop modern Technological solutions to give prior warning to Loco drivers regarding elephant movement near to the Railway track. The preliminary discussion was held through online video conferencing on 13.01.2022 to discuss the problem at hand and the requirements of Railway to get feasible solutions which can be based on either LIDAR technology equipped with thermal or infra-red sensors to sense and further communicate to the nearest Station Masters.

3. It is therefore prayed that this Hon'ble Tribunal may be pleased to record this report and pass suitable orders thus render Justice."

23. Again, the matter was taken up on 15.03.2022, and on that day, this Tribunal had considered the affidavit submitted by the Divisional Railway Manager, Works Branch, Southern Railways, Palakkad Division dated 11.03.2022, e-filed on 12.03.2022 and extracted in Para (3) of the order which reads as follows:-

### "AFFIDAVIT

I, Jatin Kumar, S/o Shri Chander Sain, Hindu aged about 30 years working as Divisional Engineer/East in the office of Divisional Railway Manager, Works Branch, Southern Railway, Palakkad Division, Palakkad - 678 002 do hereby solemnly affirm and sincerely states as follows:

1. I am the Respondent herein and I am authorised to file this report on behalf of Respondents 8 to 11 since I am well acquainted with the facts of the case

2 I humbly submit that as per the direction of this Hon'ble Tribunal dated 24.02.2022 the following action plan is taken by Railway to prevent elephant deaths due to hitting of trains in ghat section of Southern Railway Palakkad division

Artificial intelligence and Sensing technologies.

Intrusion Deduction system. This system has been planned on trial basis in Alipurduar division of Northeast Frontier Railway The work is now under tender finalization stage for a cost of Rs 2.56 crore The work consists of supply, installation and commissioning of Remote DAS unit along with communication interface to monitor elephant movement/train tracking Asset Monitoring on Railway Track for the distance of 30 km consisting of optical unit 10 cover both side of equipment. The scope of work also consists of supply installation and commissioning of Central. DAS server along with Geo Location application server and interface unit at nearest Level Crossing gate Palakkad division of Southern Railway is in close coordination with North Frontier railway and planning to introduce in this location based on the trial conducted after commissioning in North Frontier railway The functioning of this system is based on the Distributed Acoustic Sensing system. The working principle of the work is as below

- OFC Distributed Acoustics Sensing based on Rayleigh scattering phenomenon
  - Real time monitoring via one single core of a fiber optic cable
  - Laser pulses from Remote OFC DAS unit will be sent continuously and reflected pulses will be received from various points along the fiber cable and analyzed
  - Vibration/external sound waves hitting the OFC cable cause changes in the reflected pulses
  - Reference signature is captured for on ideal condition when there is no external vibration
  - In case of elephant intrusion signature is captured for classification and analysis
  - Real-time trace are compared with reference signature, analysis is done and then alarm is generated

• One unit can monitor 40 km to 60km of track depending upon the health of OFC Remote OFC DAS unit shall be connected to central server over Ethernet Link (IP 4G)

• OFC Route Survey shall be done with GPS for localization of event

The system shall detect and locate moving elephants up to 5m from the fibre optical cable e objective of the system shall be to identify elephant movement close to track in advance and convey the information to the nearest manned control which can be either the nearest level crossing gate or the Station With the receiving of movement of elephant with its geo location, the same can be conveyed to the loco pilot of the next train before its departure from the signal of the nearest Level crossing gate or Station home signal to observe special restricted speed cautions or to stop and proceed the train at the identified elephant crossing locations after careful Observations The same can also be used to plan train movement in advance in either B or A line as per the feasibility The system will also be modeled to examine and analyze the train speed running in the particular location. The information received shall be further shared to the Forest control room also in advance to take appropriate action Southern Railways Palghat Division has already laid optical fibres on the sides of the track for the purpose of signal communication. The work shall be implemented as soon as the work in NER railway is commissioned after its successful trial

Status:

Southern Railways Palghat Division has already laid optical fibres on the sides of the track for the purpose of signal communication. The work shall be implemented as soon as the work in NER railway is commissioned after its successful trial Currently the work is in tender stage in Alipurduar Division of NER railway Audio alarm system: An audio alarm system has been developed by signal department of Southern Railway which was commissioned on 28 12 21 at KM 513/800-900 "B" line at unnamed locations and directly controlled by nearest station to give honey bee/tiger roaring sounds to ward away elephant entering the vulnerable area. This system is solar powered and function automatically after sunset till sunrise Effective functioning of this alarm system is being monitored and shall be installed in other locations depending on its efficiency with any modification if required

Status:

Waiting for confirmation of DFO PGT if the system is found effective the system is found effective railways shall provide the same arrangements in other locations as well as per the request of State forest Department Kerala and Tamil Nadu

LIDAR Technology

Railway is in consultation with Pramura software Pvt. Ltd. to develop modern Technological solutions to give prior warning to Loco drivers regarding elephant movement near to the Railway track The preliminary discussion was held through online video conferencing on 13 01 2022 to discuss the problem at

hand and the requirements of Railway to get feasible solutions which can be based on either LIDAR technology equipped with thermal or infra-red sensors to sense and further communicate to the nearest Station Masters.

*Status:*

*The firm has now developed a small prototype which is now under discussion from the railway perspective to introduce in the current signalling system of Railways Once the methodology is approved the work can be executed within 4 months*

*3. I humbly submit that the following are the Suggestions and Objections to the report of Principal chief conservator of the Forest,*

*1. Engaging Additional Track Watchers for monitoring the track by forest:*

*In spite of the mentioned engagement of trackers on the railway track, it has been pointed out by higher official of Railways conducting Footplate inspection that no elephant watchers are seen on the railway track The same was pointed out by General Manager Southern Railway on 20-21.12.2021 in his Footplate inspection between PGT PTJ During the undersigned inspection of 09.03 2022 also, it has been highlighted to DFO PGT and DFO CBE that no forest watchers were observed on or near the railway track (Encl I GM inspection note & 2 letter addressed to DFO CBE)*

*2. Watch Towers:*

*DFO/Coimbatore had earlier informed that additional 4 nos of watch towers have been proposed by State Forest Dept at km 506 A/13 'B' line, 508/25 B line, 508/06 A line and 506/14 in A line. It was discussed that the location of watch tower should be such that mum area of forest and railway track is covered. Currently, the watch towers are proposed unity and exit of the reserve forest in both 'B' and 'A' line. The same was requested to be revised by DFO Coimbatore. Accordingly, the location of the same was requested by Railway. It was also stressed by the Railway (DEN/East) that the height of the watch tower currently existing in B line should be increased Solar lights can also be provide at this location on tract side. Railways requests State Forest Department to expedite the same through the Hon'ble Court.*

*3. Special Team for monitoring:*

*As mentioned in the report submitted by PCCF It is requested through Hon'ble Court to direct the Forest department to share the details of the team formed to coordinate with railways*

*4. I humbly submit that the following are the Steps taken by Railways consequent to the joint coordination meeting with Forest Official on 30.11.2021:*

*• Construction of Underpasses:*

*The CP EMC suggested creating Two underpasses at 505 A/600 and 506 B/900 in Line B in Tamil Nadu side for which Funding from Railways needed to be explored. It is informed that during Inter Ministerial meeting held*

on 05.03.2010, it was decided that the State Forest Department of Tamil Nadu shall provide the budget for the construction of the two underpasses and Railways shall execute the construction work. The railways has prepared and submitted the revised estimate with complete cost (Rs 708 crore) to PCCF TN on 03.12.2021 to deposit the fund to take up the work

In addition to it, on a proactive approach, Railways has sanctioned a work for construction of two underpasses at the above location in current financial year Out of Turn from Railway Board at a cost of 7.49 crores The Detailed General Arrangement Drawing for execution of the work has been approved on priority by Southern Railway Headquarter office and the work has been called for tender Since, the girder bridge has to be constructed in running man line necessary safety precautions have to be taken by Railways and work will be taken up in only non-Monsoon period.

- **Elephant Signage Boards:**

Railways has installed Whistle boards at strategic points to alert loco pilots to blow horns 'in such locations to pre warn the elephants on the movement of trains Similarly speed restriction indicators have also been installed by Railways for loco pilots to maintain the speed restriction on the railway tracks. It was requested in recent meeting with CCF PGT and CWW TN to erect additional signage boards by railways. The location of the same has been jointly finalized in field inspection and the work is planned to complete by March 2022. The work has been awarded at cost of Rs 5 lakh and fabrication work is now in progress.

- **Solar Lights:**

Solar lights have been provided by Railways at both ends of the cuttings between Kanjikode and Walayar Railway line passing through two cuttings- at Km 510/900-511/200 and 512 200-400 to ward away elephants from both ends of the cuttings and pre warn them of the presence of railway tracks, The solar lights also help in improving the visibility of loco pilots at night. It is now mentioned that railways has provided total 25 nos solar lights of higher lux with 7W is also erected in Tamil Nadu area at a cost of Rs 5 lakh at jointly selected strategic locations

- **Audio Alarm system:**

An audio alarm system has been developed by Signal Department of Palakkad Division which is installed in block sections at unmanned locations and directly controlled by nearest station to give sounds of honey bee and/or tiger roaring sounds to ward away elephant entering into critical railway locations. The asset is solar powered and will be powered after sunset till Sunrise

- **Sensitization Programmes:**

Regular internal Sensitization programmes are conducted by Operating and Safety officers of Palghat division to counsel the Loco Pilots and Guards of the trains

- *Throwing of Food articles and plastic materials along the track:*

*Food and garbage on railway tracks is a major source of attracting elephants. Necessary announcements are made at stations by Railways to warn passengers not to throw waste and garbage on railway tracks. The pantry car operators are also instructed to refrain from throwing food and waste on tracks.*

- *Solar Fencing:*

*The state forest department of Kerala had initially provided conventional solar fencing along the railway track which was successful to great extent preventing elephants to not cross the railway track at critical locations. Now, State forest department, Kerala has approved railway to provide 1.5 km of hanging solar fencing alongside the railway track which has been completed and fully functional and is very effective in mitigating train hit cases. On similar lines, few locations were identified jointly with DFO CBE also, but no approval has been received to proceed with the work and as directed by the Hon'ble High Court of Madras, the matter needs further deliberation between Forest Department and if permission is given, Railways is ready to provide hanging solar fencing near railway track. The same suggestion was given by the CPEMC committee also based on the efficiency of the hanging solar fencing in other parts of the country. Railways is awaiting confirmation from State Forest Department Tamil Nadu.*

- *Clearing Vegetation along the Railway Track*

*Suggested vista clearance of 10-15m on both sides of the railway tracks. Regular clearance of vegetation along the Railway tracks is being done by railways to facilitate clear sighting of elephants crossing across the railway tracks. Since 2019-20, widening of vegetation clearance zone up to 15m has been done to further improve visibility. Railways have provided Special Imprest/Work order to field engineers for regular clearing of vegetation. It is pertinent to note that with regular clearing vista alongside track, the loco pilots in as much as 69 cases in current financial year could take timely action to stop/slow the trains on elephant sighting on Track/alongside Track.*

*The railways has identified and intimated to State Forest Officials for clearing vegetation in the forest area where land boundary with southern railway is limited and needs further vista clearance to improve visibility. In this aspect, joint inspection with DFO/PGT and DFO/CBE was conducted on 28.12.2021 and 24.12.2021 respectively. The locations have been jointly identified (Minutes of meeting is attached as Encl / and 2 respectively) The earth cutting at Km 506/900 -500 has been provided with solar lights to improve the visibility at both ends of the cutting. Trees identified at KM 507/600 A line has been pruned to improve the visibility. Cutting widening identified at Km 510-512 in B line work is in progress by Railways where suitable ramps shall also be constructed. Work for widening cutting at Km 516/27 - 35 B line and Km 514/13-19 B line as identified is being prepared for*

widening. The new till IBH location at Km 515/15-27 has been provided with solar lights on either end and protected with solar fencing.

The State forest department, Kerala was requested to widen the cutting for further 15m to improve the visibility. As identified during joint site inspection, the lighting source is to be provided at the available watch tower in forest area by State Forest Department with adequate lighting.

*Widening of Railway Earth Cutting and Construction of Ramps:*

Ramps have been constructed at suitable locations at KM 506A/100, 506/400, 506A/300 Ettimadai - Walayar section in Tamil Nadu at high bank location for passage of elephants without getting entrapped near railway track area. Work for widening of railway cuttings for 2.5 Km track line between Km 510 - 512/500 for is in progress wherein suitable ramps shall also be provide for easy passage of elephants. Earthwork for widening of cutting has been done between Km 513/500 - 519/400, Km 500/00-505/00 on B Line to provide sufficient space to move away from railway tracks on sighting of trains approaching on the railway track. Cess widening including provision of ramps at three more locations between Kanjikode and Madukurai is in progress. At some locations due to limited railway line, the widening of forest area is also required for which the stretches has been jointly identified during field inspection, which was already agreed in the committee inspection As suggested and agreed jointly with state forest department, wider ramps is planned for construction for elephant herds to pass.

*It is therefore prayed that this Hon'ble Tribunal may be pleased to pass suitable orders and thus render justice."*

**24.** Since they have not mentioned about the timeline within which the new technology of altering loco pilots as mentioned by them will be implemented, we granted time to the Southern Railways to file a report in this regard.

**25.** In the meantime, the MoEF&CC also produced the committee report of project elephant division, MoEF&CC regarding the measures to reduce mortality of elephants on railway tracks in Kerala and Tamil Nadu for perusal and for consideration.

26. Though this Tribunal has granted time to the applicant as well as to the Southern Railways to file their further suggestions and also timeline within which the new technology will be implemented as directed by this Tribunal, the matter was taken up on 31.03.2022 for hearing.

27. On 31.03.2022, the Southern Railways has filed an affidavit dated 28.03.2022, e-filed on 29.03.2022 regarding the introduction of artificial intelligence to remedy the situation which reads as follows:-

**"AFFIDAVIT**

*I, Jatin Kumar, S/o Shri Chander Sain, Hindu aged about 30 years working as Divisional Engineer/East in the office of Divisional Railway Manager, Works Branch, Southern Railway, Palakkad Division, Palakkad - 678 002 do hereby solemnly affirm and sincerely states as follows:*

*1. I am the Respondent herein and I am authorised to file this report on behalf of Respondents 8 to 11 since I am well acquainted with the facts of the case.*

*2. I humbly submit that as per the direction of this Hon'ble Tribunal the following action plan is taken by Railway to prevent elephant deaths due to hitting of trains in ghat section of Southern Railway, Palakkad division.*

**1. Intrusion Deduction system.**

*In the earlier report filed by us to the Hon'ble court, it was mentioned that Southern Railway, Signal and Telecommunication Department is in close coordination with the North East Frontier Railway who has been authorized to carry out the trial of Intrusion Detection System in their Railway As per preliminary information received from Alipurdwar Division of North East Frontier Railway about Intrusion Detection System, it is learned that Letter Of Acceptance for the work has been issued on 25 02 2022 as per which Proof of concept is to be demonstrated by the firm before starting the work It is informed that only after proof of concept is finalized and found successful for identifying the signature of the foot print of elephant and not any other source, then only this work can be taken up by Southern Railway to avoid any infructuous utilization of fund Since it is in very preliminary stage, the Signal and Telecommunication Department of Southern Railway has advised that no definite time line can be given at this point of time but the project will be taken up as soon as the work is commissioned in Alipurdwar Division of North East Frontier Railway*

**2. Audio alarm system:**

*As stated earlier in the report filed by us to the Hon'ble Court, an audio alarm system has been developed by Signal Department of Palakkad Division at*

a cost of Rand installed in block sections at unmanned locations which is directly controlled by nearest station to give sounds of honey bee and/or tiger roaring sounds to ward away elephant entering into critical railway locations. The asset is solar powered and will be powered on after sunset till sunrise It is submitted to the Hon'ble Court that the Southern Railways is willing to provide additional such units at jointly identified locations based on the request from State forest Department

### 3. Artificial Intelligence Technology

In the earlier report filed before this court, it was submitted by us that we are in consultation with company at Coimbatore to develop an Artificial Intelligence Mechanism using lidar Technology to give prior warning to loco drivers regarding elephant movement near the track. During our preliminary consultation, it is found that adoption of this technology is not feasible for this location. Hence, to find out the next possible technology, we are in discussion with Advantech Group of companies along with the Pramura Software Company, Coimbatore to develop Processing Artificial Intelligence Early warning system

Advantech Group of Company have established this AI technology developed by them to monitor movement of wild elephants in forest area at Pannimadai Village, Coimbatore. Through this technology, elephant movement reserve forest can be monitored by deploying a network of artificial intelligence early warning system and the same shall be monitored on 24 x 7 basis by providing sufficient number of IR Cameras/long range thermal cameras connected on wireless intranet. This system can automatically detect elephant and raise an alert with a claimed accuracy of 87% to 95 % accuracy. Using proper algorithm, it is possible to detect elephants 3 – 6 Km away depending on the density of the forest. As proposed by the said company, cameras installed at multiple locations connected through wireless intranet shall be sending data on real time basis to a centrally monitored control setup. It is stated that the working modalities for the project is now under discussion with Advantech Group of Company. After the finalization of working modalities and its integration with the nearest station, the work requires 3 months of execution time to complete the project and commission.

3. It is therefore prayed that this Hon'ble Tribunal may be pleased to record this report and pass suitable orders thus render justice."

28. In the meantime, we also came across another news item published in Junior Vikatan dated 10.04.2022 titled "6 ஆண்டுகள்... 561 யானைகள் மரணம்... - நாம் ஏன் கவலைகொள்ள வேண்டும்?" wherein, it was stated that about 561 Elephants died in various parts of the country due to

various reasons from 2015-2020, either due to intervention of humans or by accident, electrocution, apart from poaching and other cause of death. It was further mentioned therein that from 1978 to 2021 there were 19 accidents occurred between Palakkad and Coimbatore, in which, 20 Elephants died.

29. Heard Mr. Kaushik N Sharma, the learned counsel for the applicant, Dr. D. Shanmuganathan for Respondents No.1 to 3, 6 & 7, Mr. G.M. Syed Nurullah Sheriff for Respondents No.4 & 5 and Mr. K. Muthamil Raja for Respondents No.8 to 11.

30. The learned counsel appearing for the applicant argued that the elephant is one of the animals protected under the Wildlife (Protection) Act, 1972 and large numbers of deaths are being caused due to several reasons including the rail accident, electrocution and attack by human beings. In spite of several incidents happening, no effective steps have been taken by the Government to evolve a mechanism by which this can be mitigated and reduced. It has also come to the knowledge of the applicant that the mechanism that is now being provided by several projects evolved by the Central Government and the State Government for the purpose of protecting the elephants and also meet the man-animal conflict, they are not effective on ground level and it is necessary for the Tribunal's interference to issue necessary directions and guidelines regarding the steps to be taken by the respective departments to avoid such things to save wildlife which is required for protection of environment as such.

31. On the other hand, the learned counsel appearing for the State of Tamil Nadu argued that in respect of railway incident occurred in Madukarai, the matter was taken by the Hon'ble High Court of Madras in W.P. (MD) Nos.19771 & 23901 of 2018 and W.P. (MD) Nos.8222 & 19652 of 2020 and certain directions have been issued to the Forest Department as well as the Railways Department to carry out the same and that are being carried out by both the departments. If any directions are given by this Tribunal to protect wildlife and in order to avoid casualties of both wild animals and human due to man-animal conflict, if any, the same will be implemented by the State Government in its letter and spirit.

32. The learned counsel appearing for the MoEF&CC argued that already there are certain projects as Project Elephant and Project Elephant Gajah are being implemented and certain guidelines have been issued for avoiding man-animal conflict. Since accidents are occurring on the railways lines resulting in death of elephants and other wild animals, a meeting was held between the Railways Department and the MoEF&CC and on the basis of the meeting, certain decisions have been taken and on that basis, certain directions have been issued to the Forest Department as well as to the Railways Department to carry out the recommendations so as to avoid hitting of animals by train and also mitigate the circumstances of man-elephant conflicts which also results in loss of life of elephants, human beings and also causing damage to the properties of the persons residing on the fringe of the forest. Any direction given by this Tribunal to improve the situation will be implemented by the MoEF&CC in its letter and spirit.

33. The learned counsel appearing for the Southern Railways argued that whenever such incidents are happening, they used to have meetings with the Forest Department and any decision taken in that meeting will be sincerely implemented by the Forest Department and the Railways Department, as both are interested in avoiding such incidents recurring, causing death of wild animals as part of Wildlife Protection and Conservation. Further, on the basis of the directions given by the Hon'ble High Court of Madras in W.P. (MD) Nos.19771 & 23901 of 2018 and W.P. (MD) Nos.8222 & 19652 of 2020, certain steps have been taken. As directed by this Tribunal, they are also considering the proposal of using artificial intelligence to alert the loco pilots to spot the animal from a distance so as to reduce the speed to avoid collision with the animals and prevent mortality. On account of various steps taken by the Railways, including reducing the speed at particular wee hours, at which time, the movement of elephants or wild animals is more by reducing the speed at particular level to avoid hitting of train against the wildlife animals, the number of such incidents have come down. They are also prepared to abide by any directions issued by this Tribunal in this regard.

34. We have considered the pleadings, submissions made by the learned counsel appearing for the parties and also perused the documents available on record.

35. The points arise for consideration are:-

- (i) Whether the measures taken by the Southern Railways and the Forest Department in this regard in avoiding death due

to hit by trains and also by man-animal conflicts are sufficient or not?

(ii) Whether the projects launched by the MoEF&CC in this regard are sufficient to meet the requirements in an effective manner?

(iii) What are all the directions, if any, to be given by this Tribunal applying the "Precautionary Principle" to save the wildlife and also save human life casualties being caused both on account of the conflict between the man and wildlife and also due to intervention of human agencies like railway accident, electrocution etc.?

(iv) Relief and costs.

**POINTS:-**

36. The grievance in this application is a general problem faced globally i.e. causing harm to the wildlife on account of various reasons namely, man-animal conflict, electrocution and train and other accidents, apart from poaching. The issue in this case mainly revolves around the huge number of tusker deaths either due to man-elephant conflict or due to train accidents when they pass through the villages and their corridors. Though several projects have been launched by the Central Government like Project Elephant Gajah and several other wildlife conservation projects, the things are recurring which is a matter of concern for the regulators, also the policy makers, apart from the animal lovers, environmentalists. Protection and conservation of wildlife is required as part of wildlife protection, apart from protecting the forest environment.

Unless, the population of the wildlife in the forest area is maintained in its equilibrium, it may have its own impact on forest ecology which will affect the total environment, in turn having impact on human life as well. Though the applicant has filed the application stating that the authorities are lagging behind in providing the mechanism to mitigate these incidents which is easy to point out, no solution has been forthcoming from the side of the applicant as to how this can be effectively managed and how such incidents can be minimized, as total eradication of such incident is a remote possibility, especially when there cannot be any control over the movement of the wild animals especially elephants which are supposed to be nomadic animals.

37. In respect of such incidents happened on 29.05.2021, the Principal Bench of National Green Tribunal, New Delhi has Suo Motu registered a case as **Original Application No.142 of 2021** (*In Re: News Item published in The Hindu, dated 29.05.2021 titled "Night, early morning trains cause most elephant deaths"*) and by order dated 08.07.2021, after obtaining reply statement from the Southern Railways and after considering the dictum laid down by the Hon'ble Apex Court by order dated 04.08.2017 in **Writ Petition (Civil) No.275 of 2015 (Vidya Athreya & Anr. Vs. Union of India & Ors.)** dated 22.10.2018 in **Writ Petition (Civil) No.489 of 2018 (Prerna Singh Bindra & Ors. Vs. Union of India & Ors.)** where directions were issued to the MoEF&CC to constitute a Central Monitoring Committee to coordinate with the States on issues relating to safety of elephants in elephant protection zones and also considered the suggestions given in the Gajah Report to be implemented by the State Governments, disposed of the case, directing the Central Monitoring

Committee constituted by the MoEF&CC dealing with the project 'Elephant' needs to look into the issue raised in the media report in coordination with the Railway Authorities, the Wildlife Institute of India and the States of Tamil Nadu and Kerala and the Southern Railways within one month to evolve the methodology to meet the situation, including the authority which is to incur the necessary expenditure.

38. The Southern Bench of National Green Tribunal also had an occasion to consider this aspect in **Original Application No. 77 of 2020 (SZ) (Suo Motu)** based on the news item published in The New Indian Express dated 03.06.2020 "**KERALA ELEPHANT TRAGEDY: ANOTHER JUMBO SUSPECTED TO HAVE BEEN KILLED IN SIMILAR FASHION**"). This Bench had considered the Joint Committee report and also considered the report filed by the Chief Conservator of Forest, Central Circle, Thrisur on behalf of the Joint Committee wherein they have given certain measures which can be considered for the purpose of mitigating the situation. They have suggested for SMS based alter system, change of cropping pattern in the fringe areas where farmers were doing agricultural activities, implementation of crop insurance scheme even if it is affected by the wild animals including elephant, usage of unmanned aerial vehicles (drones) in Man-animal conflict mitigations, where they have explained the modality under the following heads,

*“(i) Locate and Monitor wild animals that are coming to human inhabited areas,*

*(ii) Safely driving away wild animals back to forest with minimal collateral damage, [where they have suggested the Flash light-speaker (Animal Control) payload can be used to produce flashing lights and pre-recorded sound the animal might be afraid of. This might help to scare the*

*animal and drive it back to its own habitat. For example Elephant are scared of flashing light and roaring sound of tiger.],*

*(iii) Alerting the public on the presence of wild animals nearby,*

*(iv) Day and Night time search and rescue assistance,*

*(v) Routine inspection of hard to reach forest area,*

*(vi) Forest fire fighting assistance,*

*(vii) Trip Alarm for elephant [Trip alarm is a warning system to prevent elephants from damaging the crop fields or human settlements. A thin wire is installed around a field or a settlement at the usual entrance of elephants whenever the wired circuit is broken it makes a loud sound. The noise alerts people and irritates elephants tending them to go back without entering the human territory. The installation of this cost effective early warning system is easy, requiring regular maintenance without frequent replacements. It is more suitable to small fields which are fringe of forest and tribal colonies located inside forest area. This may be installed on pilot basis on one or two locations and after studying the effectiveness and feasibility the activity can be up scaled]."*

**39.** Sensor based Alarm system [Sensor based alarm system can be tried to detect the presence of elephants in or near village or agriculture land. These are solar powered infrared based systems and could be even fitted with a camera and can alert villagers/RRT when elephants are close to human settlements or agriculture land through SMS/Light/Alarm. The primary response team and Rapid response team could then come into action to drive the elephants back to the forest area. This may be installed on pilot basis on one or two locations and after studying the effectiveness and feasibility the activity can be scaled] and Mitigation Measures for conflict with species other than elephants.

40. They also suggested certain measures for preventing deaths of elephants

due to train accidents in Part II of the report which reads as follows:-

*“The places vulnerable for accidental death of elephants by the trains are as follows:*

*a. Kanjikkod Walayar “A” Line 6.5 km through forest and “B” Line 11.5 km through forests.*

*b. Walayar-Podanur Section “A” Line 2 km through forest and “B” Line 5 km through forests.*

*The urgent mitigation measures being adopted to reduce the mortality are as below:*

*i. Deployed 11 numbers of NMR watchers for day and night patrolling along the Railway track.*

*ii. 18 km of solar fencing is constructed and maintained periodically along the railway tracks.*

*iii. Solar lights have been erected nearby railway tracks.*

*iv. Continuous communication is maintained with railway authorities and watchers.*

*v. Joint patrolling is done with the railway trackman during the night hours.*

*vi. Directions is given to loco pilots to continuously horn when the train is passing through forest area, especially when the presence of elephant is detected and communicated.*

*vii. Train speed restrictions @45 km per hour when passing through forest area during night.*

*viii. Railways have constructed ramps along the tracks passing through forest to facilitate easy movement of elephants away from the track on the site of a train for 6 km length of line B*

*ix. Vista clearance is done in the bushy areas on both sides of railway tracks passing through forests to reduce the tendency of elephants camping in such locations and also to increase the visibility to the watchers, trackmen and locos.*

*x. Common whatsapp group is formed with railway officials up to the level of Sr. DEN and DFO and all watchers to make easy communication during elephant sighting so that immediate caution is exercised by control.*

*xi. Continuous monitoring of the elephant wandering near to railway tracks are done as a measure of caution.*

xii. Established watch towers on Line B which are manned 24x7 at place of mobile connectivity and they pass on information to station master for alerting LPS.

xiii. Constant training and awareness to loco pilots on warnings and precautions.

xiv. Best possible solution is to find alternative to line outside forest area."

**41.** Thereafter, this Bench had disposed of the case, with the following directions:-

"18. So the application is disposed of as follows:

i) The MoEF&CC is directed to examine the detailed reported submitted by Principal Chief Conservator of Forests (PCCF) which was extracted by the Tribunal in the order and then take all necessary steps to evolve a mechanism to mitigate the problem of man-animal conflict especially the elephant issues and provide necessary fresh guidelines, if required, in this regard.

ii) If such guidelines are given, the respective State Governments are directed to implement the same and see that man-animal conflict is reduced to protect wildlife.

iii) Whatever suggestions given by the PCCF which can be implemented at the State Level can be examined by the State of Kerala and take steps to implement the same within their State.

iv) The MoEF&CC is also directed to examine the question as to whether any guidelines for recovery of any compensation from the person who are committing such act and evolve a formula for that purpose is possible and direct the authorities to take steps to recover the same apart from initiating prosecutions under the relevant provisions of Wildlife (Protection) Act or any other allied Forest Acts.

v) The State Governments are also directed to provide necessary effective investigation machinery in the Forest Department to deal with such incidents in an effective manner as well.

vi) The State Governments can also consider the question as to whether any separate wing will have to be provided within the Forest Department to deal with these issues effectively and if so create such posts if any required for meeting the situation.

vii) MoEF&CC is directed to complete the process and prepare the guidelines and mechanism as directed and submit the action taken report to this tribunal within a period of six months.

viii) The State Government is also directed to submit the action taken report regarding the compliance of the direction given by this tribunal within a period of six months.

*ix) If such reports are filed, then the office is directed to place the same before the bench for consideration."*

**42.** The Hon'ble Supreme Court in decisions viz., **Hospitality Association of Mudumalai Vs. In defence of Environment and animals &Ors. (2020) 10 SCC 589** and **T.N. Godavarman Thirumulpad Vs. Union of India & Ors. (2012) 3 SCC 277** has reiterated the necessity for protecting the wild animals like elephant corridor and implementation of certain centrally sponsored schemes to protect forest and wild animals and the role of the Government in protecting the same.

**43.** Further, in *T.N. Godavarman Thirumulpad'* case cited supra, the Hon'ble Apex Court has observed that

*"Environmental Justice could be achieved only if we drift away from the principle of anthropocentric to ecocentric. Many of our principles like sustainable development, polluter-pays principle, intergenerational equity have their roots in anthropocentric principles. Anthropocentrism is always human interest focussed and that non-human has only instrumental value to humans. In other words, humans take precedence and human responsibilities to non-human based benefits to humans. Ecocentrism is nature-centred where humans are part of nature and non-humans have intrinsic value. In other words, human interest does not take automatic precedence and humans have obligations to non-humans independently of human interest. Ecocentrism is therefore life-centred, nature-centred where nature includes both humans and non-humans. The National Wildlife Action Plan 2002-2012 and the Centrally Sponsored Integrated Development of Wildlife Habitats Scheme, 2009 are centred on the principle of ecocentrism."*

44. Further, in *Hospitality Association of Mudumalai's* case cited supra, the

Hon'ble Apex Court has observed that

*"32. At the very outset, it must be noted that the Wildlife Trust of India terms elephants as a "keystone species" because their nomadic behaviour is immensely important to the environment. Herds of roaming elephants play several important roles in the ecosystem:*

*32.1 Landscape architects: Elephants create clearings in the forest as they move about, preventing the overgrowth of certain plant species and allowing space for the regeneration of others, which in turn provide sustenance to other herbivorous animals.*

*32.2 Seed dispersal: Elephants eat plants, fruits and seeds, releasing the seeds when they defecate in other places as they travel. This allows for the distribution of various plant species, which benefits biodiversity.*

*32.3 Nutrition: Elephant dung provides nourishment to plants and animals and acts as a breeding ground for insects.*

*32.4 Food chain: Apex predators like tigers will sometimes hunt young elephants. Further, elephant carcasses provide food for other animals.*

*32.5 The umbrella effect: By preserving a large area for elephants to roam freely, one provides a suitable habitat for many other animal and plant species of an ecosystem.*

*33. Elephant corridors allow elephants to continue their nomadic mode of survival, despite shrinking forest cover, by facilitating travel between distinct forest habitats. Corridors are narrow and linear patches of forest which establish and facilitate connectivity across habitats. In the context of today's world, where habitat fragmentation has become increasingly common, these corridors play a crucial role in sustaining wildlife by reducing the impact of habitat isolations. In their absence, elephants would be unable to move freely, which would in turn affect many other animal species and the ecosystem balance of several wild habitats would be unalterably upset. It would also eventually lead to the local extinction of elephants, a species which is widely revered in our country and across the world. To secure wild elephants' future, it is essential that we ensure their uninterrupted movement between different forest habitats. For this, elephant corridors must be protected.*

*34. Legal intervention in preservation of these corridors has been necessitated because wildlife corridors are threatened by various social, economic and anthropogenic factors, as noted above. Commercial activities such as running of private resorts and construction of new buildings with barbed and electric fences within elephant corridors pose a serious threat of*

*fragmentation and destruction of habitats. The long-term survival of the species depends on maintaining viable habitats and connecting corridors which maintain variance in the species' gene pool and avoid other risks associated with habitat fragmentation and isolation of species.*

*35. Overtime, several environmental legislations including the Indian Forest Act, 1927 and the Wildlife Act have been enacted to provide for the protection of forests and wild animals, with a view to ensuring ecological balance and preserving natural habitats including such corridors. The object of the Wildlife Act was interpreted emphatically by this Court in State of Bihar v. Murad Ali Khan 1988 (4) SCC 655 in the following terms:*

*"8. ... The policy and object of the Wild Life laws have a long history and are the result of an increasing awareness of the compelling need to restore the serious ecological-imbances introduced by the depredations inflicted on nature by man. The state to which the ecological imbalances and the consequent environmental damage have reached is so alarming that unless immediate, determined and effective steps were taken, the damage might become irreversible. The preservation of the fauna and flora some species of which are getting extinct at an alarming rate, has been a great and urgent necessity for the survival of humanity and these laws reflect a last-ditch battle for the restoration, in part at least, a grave situation emerging from a long history of callous insensitiveness to the enormity of the risks to mankind that go with the deterioration of environment.*

*xxx xxx xxx*

*10. ... Environmentalists conception of the ecological balance in nature is based on the fundamental concept that nature is "a series of complex biotic communities of which a man is an inter-dependant part" and that it should not be given to a part to trespass and diminish the whole. The largest single factor in the depletion of the wealth of animal life in nature has been the "civilized man" operating directly through excessive commercial hunting or more disastrously, indirectly through invading or destroying natural habitats."*

**45.** It is clear from this that importance of protection of environment especially forest wildlife habitats which is necessary for not only protecting the wildlife but also to avoid man-animal conflict to greater extent.

46. The Hon'ble High Court of Madras while dealing with the issue in W.P. (MD) Nos.19771 & 23901 of 2018 and W.P. (MD) Nos.8222 & 19652 of 2020 (S. Manoj Immanuel Vs. Union of India & Ors. and other connected case) considered this aspect and after considering the reports submitted by the Railway and Forest authorities, the Hon'ble High Court of Madras issued the following directions:-

*“(i) So far as speed restriction of the trains is concerned, according to the southern railways they have restricted the speed limit to 45 kmph in both 'A' and 'B' line. The Chief Wildlife Warden of Tamil Nadu who appeared before this Court and the learned counsel appearing for the parties, submitted that, the speed limit may be reduced further, which will enable the loco driver to stop the train at the sight of elephant near the track. However, Mr.P.T.Ramkumar, learned standing counsel appearing for the Southern Railways and the Additional Divisional Manager, Palakkad division who appeared before this Court through video conferencing would submit that, considering the gradients of 'A' and 'B' line train speed cannot be reduced less than 45 kmph, and the speed restriction imposed on considering various factors. Apart from that another suggestion has been made by the learned counsel appearing for the parties that, accidents are taking place during night hours, and the frequency of the train movement can be reduced in the 'A' and 'B' line by diverting some of the trains through Coimbatore-Pollachi-Palakkad route. The Additional Divisional Manager, Southern Railway, agreed to consider this proposal and assured to take up this issue with the higher officials.*

*(ii) Considering those submissions, the Southern Railways is directed to make further consultations with the experts for reducing the train speed both in 'A' and 'B' line and also the proposal of diverting some of the trains through Coimbatore-Pollachi-Palakkad route during night hours. The Southern Railway is directed to file a further report on that on or before 25.02.2022.*

*(iii) Regarding construction of solar fencing, the forest department has a different view. According to the Chief Wildlife Warden, providing solar fencing along track will prevent and restrict the usual movement of elephants and it will have other serious effects and submitted that providing solar fencing is not a right remedy, he has also explained some of the ill effects of providing solar fencing along the railway track. Considering the difference of opinion between the forest department and the southern railways, we direct the officials of Southern Railways and Tamil Nadu Forest Department to have further consultation on providing solar fencing along the railway track. Till they arrive at a workable solution, the railway authorities are directed not to install solar fencing along the railway tracks and submit their report on or before 25.02.2022.*

*(iv) For construction of two underpasses in the 'B' line, a proposal has already been sent to the Railway Board for Board's approval for sanctioning of*

*funds. Considering the urgency in constructing underpasses for free movement of elephants, the Railway Board is directed to take immediate action for sanctioning necessary funds and the Railway Board is directed to consider the proposal of Southern Railway and pass suitable orders on or before 28.02.2022.*

*(v) For clearing Vegetation along the railway track, now it is stated that the Southern Railway has already sanctioned necessary amount for removal of vegetation. As per the Committee recommendations, railways clearing the vegetation upto 15 meters from the railway line on either sides. It is further stated that, in some places, it comes under land belonging to the Forest Department and necessary permission have to be given by the forest department for clearing the vegetation. In such circumstances, the Tamil Nadu Forest Department is directed to give necessary permission to the Southern Railways for clearing the vegetation in the land belonging to them and extend their cooperation for removal of vegetation along the railway tracks. Further the Southern Railways is directed to monitor the growth of vegetation and remove the same periodically.*

*(vi) The Southern Railways is directed to proceed with the widening the earth cutting for clear visibility of loco drivers and it is directed to complete widening within a short period.*

*(vii) So far as construction of ramps for free movement of elephants, it is stated that some of the ramps were already constructed and the Southern Railways is directed to proceed with the construction of ramps in the identified places and also to provide solar lights before the ramps immediately.*

*(viii) Regarding Sign Boards sought to be placed on the railways lines, the Southern Railways is directed to speed up the work and it should be installed immediately for giving suitable warnings to the loco drivers.*

*(ix) For providing solar lights, it is stated that on the Kerala side the Southern Railway has already provided solar lights, and the Southern Railways is directed to erect solar lights on the Tamil Nadu side also in the strategic locations identified by them at the earth cutting areas forthwith.*

*(x) The Southern Railways is directed to install audio alarm as proposed by them in suitable places where the elephants used to cross the railway tracks.*

*(xi) So far as conducting sensitising programs, the Southern Railways is directed to conduct the same periodically to the loco drivers and other stake holders and involve forest department officials also in the sensitizing programs.*

*(xii) The Railways is directed to create awareness amongst the travelling passengers in the train against throwing of food articles and other plastic materials along the tracks.*

*(xiii) Regarding engagement of elephant trackers and anti deperadation watchers, the Tamil Nadu forest department is directed to take immediate steps to appoint more forest watchers and deploy them along the railways lines and also provide advanced communication systems to communicate the movement of wild animals along the track.*

*(xiv) The Southern Railways as well as the Forest Department officials are directed to take immediate steps for construction of watch towers at suitable places and deploy personnels to watch the movement of elephants along the railway tracks.*

*(xv) Both the Southern Railways and the Forest Department are directed to avail the latest available technology to watch the elephant movement and to alert the loco pilots as well as other concerned persons regarding the movement of elephants along the railway tracks."*

47. Though all those writ petitions were posted thereafter for consideration of further reports, no further orders have been passed by the Hon'ble High Court of Madras in this regard, though certain other aspects have been considered in respect of other areas where similar issues have arisen.

48. The MoEF&CC has filed a report regarding the measures to reduce the mortality of elephants on railway tracks in the States of Kerala and Tamil Nadu (Committee Report Project Elephant Division, MoEF&CC - prepared in September 2021). They have made the following recommendations:-

*"Recommendation:*

*The installation of GSM based alert systems to warn the approach of elephants towards railway tracks may be explored. One of the early warning system as proposed by WII is as below:*

*Level crossings with early warning system*

*Level-crossings for animals, in combination with fencing, cattle guards and animal warning systems would allow for free and safe movement of wild animals across the railway track. These sites have been selected based on high probability of animal movement and suitable terrain.*

*The width of the level crossings is to be 50 m. There should be no ballast between the tracks on these crossings, and the ground should be levelled with surrounding area using cement. The track near the end of the fence (at beginning and end of the crossing) should have cattle guards of minimum 3 m width, to discourage animals from entering the fenced portions of the track. The design of level crossings for animals is provided in Figure 7. Early warning systems should be installed at these sites at appropriate locations. These devices*

must function to emit sounds to dispel any animals present at the site after getting triggered by an approaching train that is within 1 km of level crossing.

#### 5. Operation of trains in Line A/B:

Of the 18 accidents that occurred between 2002 – 2021, 14 (78%, n=18) have occurred on Line B and 4 in Line A. However, Railways has limitation in transferring the entire traffic from Line B to Line A as good trains mostly operate at night through Line B as the gradient in Line A is steeper towards Podanur making it difficult to operate good trains on Line A.

*Recommendation:* The suggestion of shifting of few passenger trains operating at night from Line B to Line A needs to be explored. Future developments for additional trains shall be planned to be directed in Line A and any new line towards Line B shall be avoided.

#### 6. Solar fencing:

Solar fencing has been erected by Railways at many strategic places in Kerala parallel to Line B to prevent crossing of elephants from forests/plain lands towards Line B and subsequently to Line A. Railways is constructing hanging fences in Kerala side for a distance of 1.5km which shall be operational within a month. Similarly strategic locations in Tamil Nadu side needs to be identified for erection of solar fencing.

*Recommendation:* The vulnerable stretch of fencing in Kerala side is 4.5km. The cost of jointly incurring the cost by Railways and Kerala FD may be explored. Solar fencing may also be erected in Tamil Nadu side and joint incurring of expenses may be explored. The areas for installation of solar fencing may be identified jointly by Railways and Tamil Nadu Forest Department.

#### 7. Rail fencing:

In the inter Ministerial meeting held on 2010 it was decided to erect rail fencing to prevent crossing of elephants towards the railway track. Rail fencing has thereby been erected in certain locations in Kerala side. However, the proposal of erecting rail fencing may not be relevant now due to initiatives like solar fencing. However, desirability shall be finalized after joint inspection.

*Recommendation:* Joint inspection by Railways and Kerala FD may be conducted to identify and finalize the location of rail fencing.

#### 8. Solar lighting:

Solar lighting has been installed in Kerala side for better visibility of loco pilots at night.

*Recommendation:* Similar solar lights may be installed in Tamil Nadu side at strategic locations for better visibility. The installation of solar lights jointly by Railways and Forest Department may be explored.

#### 9. Speed restriction on trains:

A speed restriction of 45 km per hour at night and 65 km per hour during daytime has been imposed on Railways to avert train accidents in the area. Railways are also monitoring the speed of trains through speedometer.

*Recommendation: The existing speed restriction imposed for 45 km per hour at night and 65 km per hour during daytime shall continue.*

10. Covering of drainage area:

*In certain areas the drainage along the line of railway tracks is open where incidences of elephant calves slipping and getting stuck have been recorded.*

*Recommendation: As per the request of Tamil Nadu Forest Department, KM 477-00 to 497-400 can be covered with RCC slab to ensure smooth passage of elephant herd. The open drainage shall be covered with RCC slabs by the Railways.*

11. Whistle board and speed indicators:

*Railways has installed Whistle boards at strategic points to alert loco pilots to blow horns in such locations to pre warn the elephants on the movement of trains. Similarly speed restriction indicators have also been installed by Railways for loco pilots to maintain the speed restriction on the railway tracks.*

*Recommendation: Signage boards are installed in Kerala side. Similarly, signboards may also be erected in Tamil Nadu side after joint inspection with Railways for alerting the loco drivers of speed restrictions and blowing horns at vulnerable points. The installation of signboards jointly by Railways and Forest Department may be explored. Horn - signal-signages should be erected in all curves. Loco pilots should blow horn regularly to pre warn elephants of train movement on railway track.*

12. Creation of emergency road:

*Railways reported that there was no road connectivity between KM 507 to 509 on Line B and an emergency earthen road needs to be prepared for easy accessibility to railway track. Railways requested the permission of Kerala Forest Department in creation of an earthen road for the purpose.*

*Recommendation: The Chief Conservator of Forest, Palakkad agreed in principle for which necessary request to be made from Railways as per their requirement*

13. Plastic, food and garbage management:

*Passengers commuting in Railways tend to throw plastics, food or garbage on railway tracks which attracts elephants towards railway tracks. This may become a major factor for accidents which needs to be immediately attended to.*

*Recommendation: Railways passengers and pantry cars need to be regularly sensitized to not throw plastics, food or garbage on railway tracks. Railways may engage 6-7 watchers to ensure plastics are regularly removed from railway tracks.*

14. Anti depredation watchers:

*Few anti depredation watchers have been engaged in Tamil Nadu side for driving away elephants from crop raiding. The frequency of crop raiding incidences has decreased after engaging anti depredation watchers.*

*Recommendation: Five more anti depredation watchers may be engaged in Tamil Nadu side. Night watch surveillance programme may be charted out jointly by Railways and Forest Department.*

15. Watch tower:

*A watch tower is erected in Tamil Nadu side between Walayar and Madukkarai to locate movement of elephants.*

*Recommendation: A watch tower towards Line A may be constructed. Tamil Nadu Forest Department may submit the requirement for construction of the watch tower to Project Elephant Division in the APO of the State Forest Department being submitted.*

16. Intrusion Detection System:

*This system uses the "Distrinuted Optical Fibre Sensing" as the core technology. The working principle of the system depends on the change in light illumination properties of reflected light in the optical fiber. This system can be coupled with TCAS (Train Collisions Avoidance System) to avoid the hit/death of elephants by trains. This is being tested by Railways in Assam.*

*Recommendation: This system may be deployed along the railway track."*

49. In the affidavit filed by the Southern Railways dated 28.03.2022, they have mentioned that they had a consultation with a company at Coimbatore to develop an Artificial Intelligence based system using Lidar Technology to give prior warning to loco divers regarding elephant movement near the track. It was found that adoption of this technology is not feasible for this location. So, they are thinking of engaging another software company by name Advantech Group of Company to develop some other methodology using Artificial Intelligence Technology which was experimented by them in a Pannimadai Village, Coimbatore to watch the elephant movements and after consultation with them, if it is feasible, they will try to adopt the same, if it can be established.

50. Since the Hon'ble High Court of Madras and the Principal Bench of National Green Tribunal, New Delhi have issued several directions and the Central Monitoring Committee appointed by the MoEF&CC after

conducting meetings with the Southern Railways and the Forest Department, issued certain guidelines to be adopted, we feel that the application can be disposed of with the following directions:-

- a. The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to strictly implement the directions issued by the National Green Tribunal, Principal Bench, New Delhi in *Original Application No. 142 of 2021 (In Re: News Item published in The Hindu, dated 29.05.2021 titled "Night, early morning trains cause most elephant deaths")* and the Hon'ble High Court of Madras in **W.P. (MD) Nos.19771 & 23901 of 2018 and W.P. (MD) Nos.8222 & 19652 of 2020** to mitigate the situation and also directions issued by the MoEF&CC in their report (Committee Report Project Elephant Division, MoEF&CC prepared in September 2021) which was extracted in Para No.48 of this Judgment.
- b. The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to explore the possibility of using Artificial Intelligence based systems to provide a system of alerting loco pilot at a sufficient distance on locating the passage of elephant and other wild animals so that they can reduce the speed and avoid hitting of wild animals and causing death to some extent.
- c. The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to convene meetings at frequent levels to discuss about the future methodology to be adopted, if the existing systems are not working as expected to

mitigate the situation and evolve further effective and sustainable scientific methods and implement the same.

- d. The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to conduct a frequent sensitising and awareness programmes to the loco pilots and other staff dealing with the mitigation programme of this aspect and update the technology and further guidelines (if any) to be evolved on the basis of that discussion which are being given by the Central Monitoring Committee of the MoEF&CC and Wildlife Institute of India in this regard, so that they can also update their knowledge and utilize the same in discharging their duties of tracking and passing information to the necessary stakeholders to avoid such incidents in future.
- e. The Forest Department of both the States of Tamil Nadu and Kerala are directed to create a team which can interact with the villagers in the fringe areas where there is a possibility of conflict between wild animals, especially elephants and villagers and educate them about the methodology which they can adopt to drive away the animal by the systems available and usage of the same in an effective manner and have a communication system between this group and the villagers/farmers, so that whenever information regarding sighting of wild animal is located in the vulnerable areas, then the Task Force can immediately take action to divert the elephant from those area to the forest area itself to avoid damage being caused to the property of the farmers and casualties of human life and also to protect the life of the elephant/wild animals from being attacked or injured by the farmers/villagers.

f. The respective State Governments namely, State of Tamil Nadu and Kerala are directed to provide necessary assistance i.e., infrastructure, finance, enhancement of staff strength (if any) required for meeting the situation, as without sufficient strength of staff and infrastructure, this cannot be effectively implemented.

51. The points are answered accordingly.

52. In the result, this Original Application is allowed in part and disposed of with the following directions:-

(i) The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to strictly implement the directions issued by the National Green Tribunal, Principal Bench, New Delhi in *Original Application No. 142 of 2021 (In Re: News Item published in The Hindu, dated 29.05.2021 titled "Night, early morning trains cause most elephant deaths")* and the Hon'ble High Court of Madras in *W.P. (MD) Nos.19771 & 23901 of 2018* and *W.P. (MD) Nos.8222 & 19652 of 2020* to mitigate the situation and also directions issued by the MoEF&CC in their report (Committee Report Project Elephant Division, MoEF&CC prepared in September 2021) which was extracted in Para No.48 of this Judgment.

(ii) The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to explore the possibility of using Artificial Intelligence based systems to provide a system of alerting loco pilot at a sufficient distance on locating the passage of elephant and other wild animals so that they can reduce the speed and avoid hitting of wild animals and causing death to some extent.

(iii) The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to convene meetings at frequent levels to discuss about the future methodology to be adopted, if the existing systems are not working as expected to mitigate the situation and evolve further effective and sustainable scientific methods and implement the same.

(iv) The Southern Railways and the Forest Department of both the States of Tamil Nadu and Kerala are directed to conduct a frequent sensitising and awareness programmes to the loco pilots and other staff dealing with the mitigation programme of this aspect and update the technology and further guidelines (if any) to be evolved on the basis of that discussion which are being given by the Central Monitoring Committee of the MoEF&CC and Wildlife Institute of India in this regard, so that they can also update their knowledge and utilize the same in discharging their duties of tracking and

passing information to the necessary stakeholders to avoid such incidents in future.

(v) The Forest Department of both the States of Tamil Nadu and Kerala are directed to create a team which can interact with the villagers in the fringe areas where there is a possibility of conflict between wild animals, especially elephants and villagers and educate them about the methodology which they can adopt to drive away the animal by the systems available and usage of the same in an effective manner and have a communication system between this group and the villagers/farmers, so that whenever information regarding sighting of wild animal is located in the vulnerable areas, then the Task Force can immediately take action to divert the elephant from those area to the forest area itself to avoid damage being caused to the property of the farmers and casualties of human life and also to protect the life of the elephant/wild animals from being attacked or injured by the farmers/villagers.

(vi) The respective State Governments namely, State of Tamil Nadu and Kerala are directed to provide necessary assistance i.e., infrastructure, finance, enhancement of staff strength (if any) required for meeting the situation, as without sufficient strength of staff and infrastructure, this cannot be effectively implemented.

(vii) Considering the circumstances, parties are directed to bear their respective costs in the application.

(viii) The Registry is directed to communicate this order to the MoEF&CC, New Delhi, Regional Office, MoEF&CC, Chennai and Bangalore, General Manager - Southern Railways, Chennai, Principal Chief Conservator of Forest (Head of Forest Force) and Chief Wildlife Warden, State of Tamil Nadu and Kerala, the Additional Chief Secretary to Government, Department of Environment and Forest of both the States of Tamil Nadu and Kerala and also to the Chief Secretary to Government of both the States of Tamil Nadu and Kerala for their information and compliance of direction.

**53. With the above observations and directions, this Original Application is disposed of.**

Sd/-  
Justice K. Ramakrishnan, JM

Sd/-  
Dr. Satyagopal Korlapati, EM

O.A.No.157/2020 (SZ),  
17<sup>th</sup> May 2022. Mn.

NGT