JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SREE SUNTHARAM AGENCIES

Objective of the JRM Report

This JRM report is designed to ensure compliance with the Central Motor Vehicle Rules, 1989 (CMVR), AIS 140 standards, and the Road Transport Safety Policy (RTSP). It provides a comprehensive risk assessment for the transportation of hazardous materials along specified routes. By integrating these legal frameworks, the report offers a broad strategy for identifying and mitigating route-specific risks.

Regulatory Compliance

The report complies with the Central Motor Vehicles (Eleventh Amendment) Rules, 2022, mandating safe transportation practices for N2 and N3 category vehicles carrying hazardous materials. These rules require detailed route assessments, especially regarding road conditions, speed limits, and risk areas, to ensure safety compliance.

Risk Management Strategy

This report categorizes transportation routes into high-risk and medium-risk areas, with a focus on factors such as sharp turns, accident-prone regions, and elevation changes. The goal is to provide actionable recommendations to minimize these risks, including speed regulations, driver warnings for hazardous zones, and the option of alternate routes.

Compliance with the Road Transport Safety Policy (RTSP)

The report integrates RTSP provisions, including mandatory driving hours, rest periods, and nighttime driving restrictions. It ensures that drivers follow official guidelines, such as taking prescribed rest breaks and avoiding dangerous road conditions like poor visibility, heavy crowds, or high-traffic areas during peak hours.

Emergency Preparedness and Response

The report highlights the significance of predetermined emergency stops for refueling, rest, and overnight stays. It includes protocols for safe responses to road hazards, alternative routes, and rerouting processes if roads are closed or severe weather arises. This aligns with the RTSP emphasis on driver safety and rapid emergency response.

Environmental Considerations

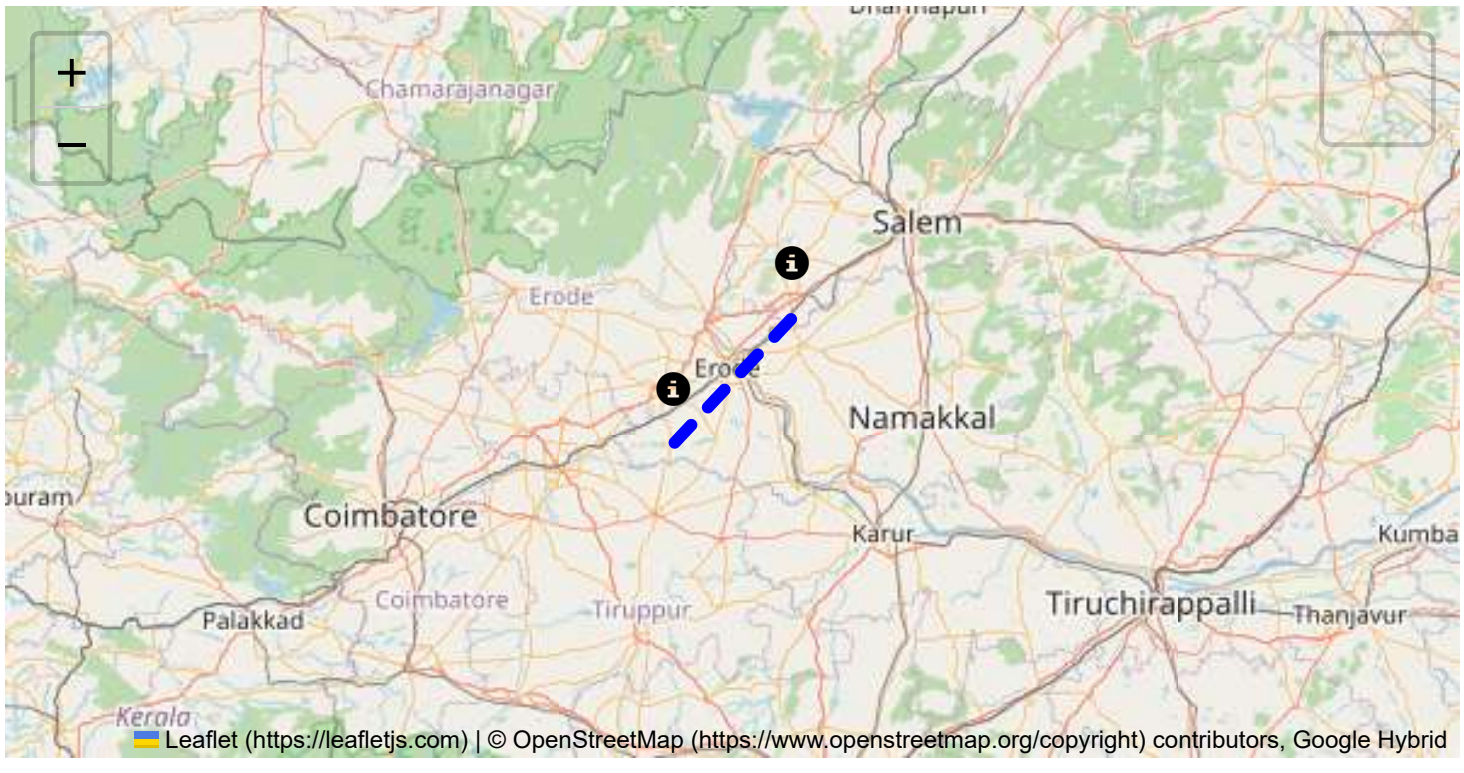
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental impacts during transport.

Journey Risk Mitigation

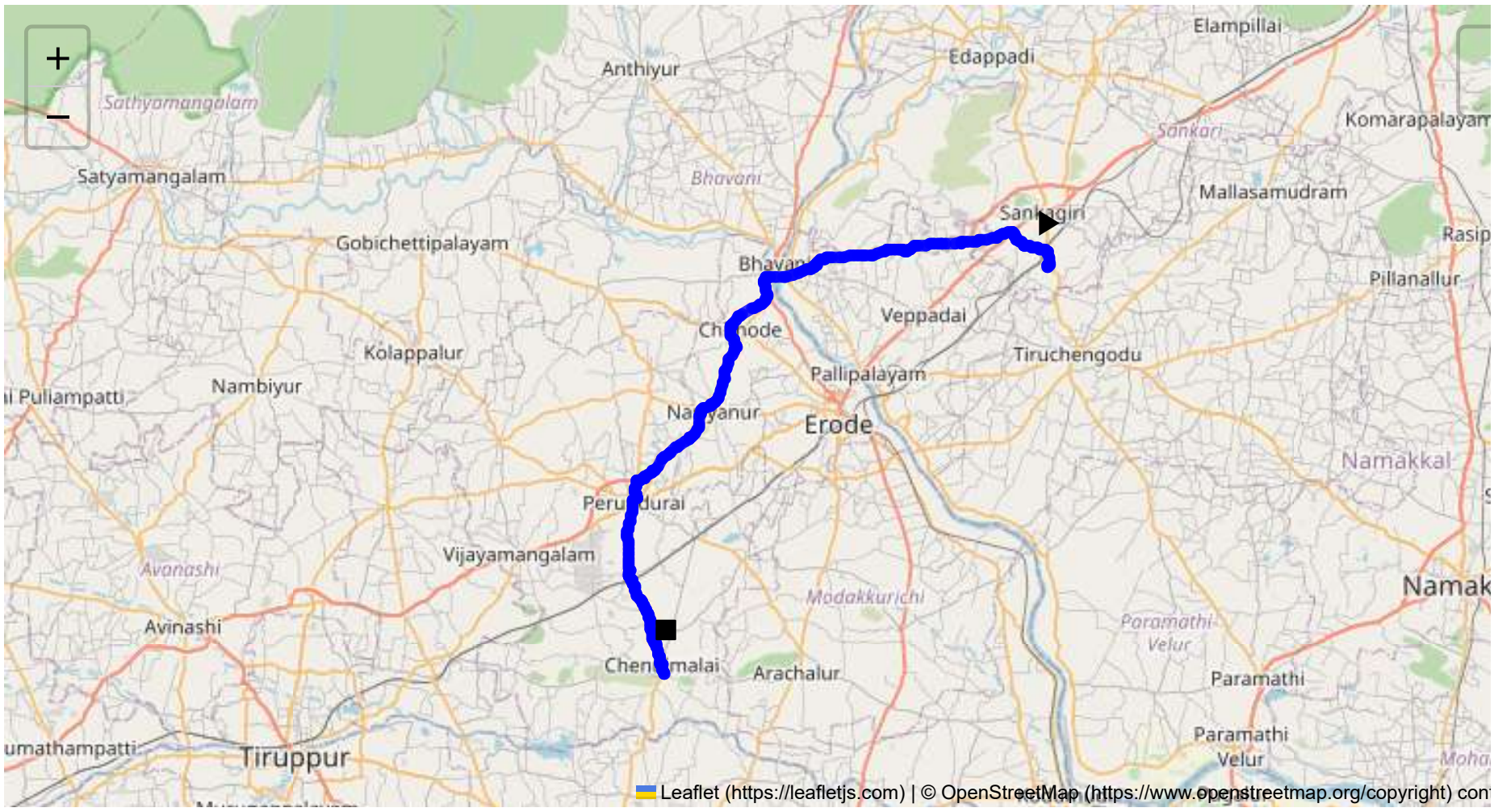
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety norms.

Compliance with Government Directives

This report fully adheres to governmental directives regarding hazardous material transportation, implementing mandatory speed limits, nighttime driving restrictions, and comprehensive driver briefings and real-time alerts about route-related risks.



Route Summary:
Total Distance: 60.66 km
Estimated Duration: 1.3 hours
Adjusted Duration (Heavy Vehicle): 1.6 hours
Start: (11.4381, 77.8734)
End: (11.158043, 77.604253)



Welcome to the Journey Risk Management Study

Here is an analysis of the route from Sangagiri to Erode, Tamil Nadu, focusing on aspects relevant to truck drivers, especially those carrying hazardous materials.

1. Overview of the Route Map

The route from Sangagiri to Erode covers approximately 60.66 kilometers, traversing state highways and connecting rural settings to city environments. Starting at Sangagiri, the path generally heads northeast toward Erode, passing through various small towns and industrial areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

- **Typical Weather:** The region experiences hot and humid conditions with temperatures often exceeding 35°C in summer (March to June). Monsoon season (July to September) brings substantial rainfall, and winters (November to February) are mild and dry.
- **Weather-Related Hazards:** During monsoon, roads can become slippery and prone to flooding. Heavy rainfall may reduce visibility, and waterlogging in certain sections may pose challenges, especially at poorly drained intersections and rural settings.

3. Analysis of Traffic Patterns

- **Peak Hours:** Traffic congestion is most pronounced during the morning (8:00 - 10:00 AM) and evening (5:00 - 8:00 PM) rush hours as people commute to and from work.
- **Congestion-Prone Areas:** Watch for potential delays around town centers, large junctions, such as Sangagiri and outskirts of Erode. Industrial areas might experience high heavy vehicle traffic, causing slow movement.

4. Assessment of Road Quality and Infrastructure

- The primary roads are generally maintained well, but secondary roads may exhibit signs of potholes, uneven surfaces, and narrower lanes.
- Some rural road sections might lack clear markings and adequate lighting, presenting challenges at night.

5. Suggestions for Alternative Routes

- In emergencies, consider state highways leading toward national highways which offer alternate paths to Erode with better infrastructure and services. Alternative routing through adjacent towns might offer relief if major roads are blocked or flooded.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- Tamil Nadu mandates strict adherence to Hazardous Material (HazMat) transport regulations, including proper documentation, vehicle signage, and compliance with safety norms.
- Restrictions may apply in certain densely populated or environmentally sensitive areas.

7. Overview of Historical Incidents

- Incidents involving heavy vehicles often relate to brake failures or over-speeding on highways due to inadequate vehicle maintenance.
- Past accidents highlight concerns about sharp turns and inadequate warning signs in rural sections.

8. Environmental Considerations and Sensitive Areas

- The route might pass through agricultural zones where air and soil quality considerations are significant due to proximity to crops.
- Inhabitants may rely on local ecosystems, urging caution to prevent contamination from spills.

9. Analysis of Communication Coverage

- Mobile network coverage is generally robust in most parts, but rural and remote road segments might experience temporary dead zones. It is advisable to equip vehicles with VHF radios for reliable communication.

10. Estimated Emergency Response Times

- Urban segments near Erode benefit from a faster emergency response time, typically within 30 minutes.

- Rural and less accessible sections might experience delays, raising response time to 1-2 hours depending on conditions.

11. Overall Summary of Risk Assessment

- **High-Risk Factors:** Include monsoon-related road conditions, potential congestion in urban regions, and limited communication at specific stretches.
- **Moderate Risk:** Weather-related delays and potential environmental impacts require consistent monitoring.
- **Low Risk:** Generally, the road consists of good infrastructure where routine precautions ensure safe travels.

For trucks carrying hazardous materials, heightened vigilance is necessary, and adherence to guidelines is critical to ensuring both transport safety and environmental protection. Prior knowledge of route conditions and strategic planning will significantly reduce risks associated with this journey.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.27925, 77.58494	15 KM/Hr
1	Turn	Medium	11.43822, 77.87348	30 KM/Hr
2	Turn	High	11.43968, 77.87345	15 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	Medium	11.44898, 77.87410	30 KM/Hr
5	Turn	Medium	11.45357, 77.85789	30 KM/Hr
6	Turn	Medium	11.45352, 77.85698	30 KM/Hr
7	Turn	Medium	11.45847, 77.85140	30 KM/Hr
8	Turn	Medium	11.46048, 77.85036	30 KM/Hr
9	Turn	Medium	11.46303, 77.84945	30 KM/Hr
10	Turn	Medium	11.46314, 77.84928	30 KM/Hr
11	Turn	Medium	11.45509, 77.81383	30 KM/Hr
12	Turn	Medium	11.29288, 77.59029	30 KM/Hr
13	Turn	High	11.29158, 77.58600	15 KM/Hr
14	Turn	Medium	11.28223, 77.58511	30 KM/Hr
15	Turn	Medium	11.22673, 77.58027	30 KM/Hr
16	Turn	Medium	11.17652, 77.59985	30 KM/Hr
17	Turn	Medium	11.16555, 77.60233	30 KM/Hr
18	Turn	Medium	11.16547, 77.60241	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
19	Turn	Medium	11.16531, 77.60369	30 KM/Hr
20	Turn	High	11.16521, 77.60379	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Government Hospital	11.4525596, 77.7749426	30 km/h	Medium
4	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
5	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
6	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
8	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
9	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
10	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
11	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
12	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
13	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
14	hospital	Marutham Hospital	11.2796906, 77.5864262	30 km/h	Medium
15	hospital	KMCH Hospital	11.2788797, 77.5848796	30 km/h	Medium
16	hospital	Sakthi Dental Hospital	11.2788566, 77.5849413	30 km/h	Medium
17	clinic	VP Medical Centre & Eye Foundation	11.2784922, 77.5836374	30 km/h	Medium
18	hospital	Santhi Hospital	11.2787879, 77.5872993	30 km/h	Medium
19	pharmacy	Nathan Medicals	11.2773384, 77.5829441	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
20	police	Police Station	11.277733, 77.5865812	30 km/h	Medium
21	clinic	Logeshwaran Homeo Clinic	11.277675, 77.583065	30 km/h	Medium
22	hospital	Sivakumar Hospital	11.2770302, 77.5852952	30 km/h	Medium
23	clinic	Dass Homoeo Clinic	11.2771706, 77.5841177	30 km/h	Medium
24	hospital	N V Nursing Home	11.2780408, 77.5848735	30 km/h	Medium
25	clinic	Ravi Clinic	11.2768201, 77.5836969	30 km/h	Medium
26	hospital	Anu Child Care	11.2765928, 77.5848408	30 km/h	Medium
27	clinic	Thulasi Clinic	11.2766687, 77.5869752	30 km/h	Medium
28	clinic	Avm Physiotherapy Clinic	11.2766435, 77.5842715	30 km/h	Medium
29	clinic	Gks Child Clinic	11.2759154, 77.5832766	30 km/h	Medium
30	hospital	Priya Hospital	11.2761, 77.584773	30 km/h	Medium
31	clinic	Baby Dental and Poly Clinic	11.2753902, 77.5829593	30 km/h	Medium
33	hospital	Government Hospital	11.1935282, 77.5923131	30 km/h	Medium
34	hospital	Divya Hospital	11.17586, 77.600701	30 km/h	Medium
35	hospital	Herbert Brough Memorial Hospital	11.1688371, 77.601892	30 km/h	Medium
36	hospital	Shanmuga Hospital	11.1650789, 77.6036595	30 km/h	Medium
37	clinic	Senthil Clinic	11.163922, 77.601461	30 km/h	Medium
38	hospital	Dr. Palanisamy Hospital	11.161573, 77.603607	30 km/h	Medium
39	hospital	Abhirami Hospital	11.1616659, 77.6057677	30 km/h	Medium
40	hospital	Dharani Hospital	11.1616599, 77.605546	30 km/h	Medium
41	hospital	Arul Murgan Hospital	11.161705, 77.603603	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
42	hospital	Cattle Hospital	11.1597961, 77.6039276	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	KRP Matric. Hr. Sec School	11.4546193, 77.8142445	30 km/h	Medium
1	college	Vivekanandha Engineering College	11.4589312, 77.7899284	30 km/h	Medium
2	marketplace	Monday market	11.452863, 77.775989	30 km/h	Medium
7	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
32	school	Kongu Vellalar Matriculation Higher Sec School	11.2722171, 77.5817369	30 km/h	Medium

Route Photos of Risky Spots

Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.27925, 77.58494

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44029, 77.87544

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.44898, 77.87410

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45357, 77.85789

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45352, 77.85698

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45847, 77.85140

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46048, 77.85036

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46303, 77.84945

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46314, 77.84928

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45509, 77.81383

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29288, 77.59029

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29158, 77.58600

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28223, 77.58511

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22673, 77.58027

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17652, 77.59985

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16555, 77.60233

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16547, 77.60241

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16531, 77.60369

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.16521, 77.60379