JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SRIKRISHNA ENERGY

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

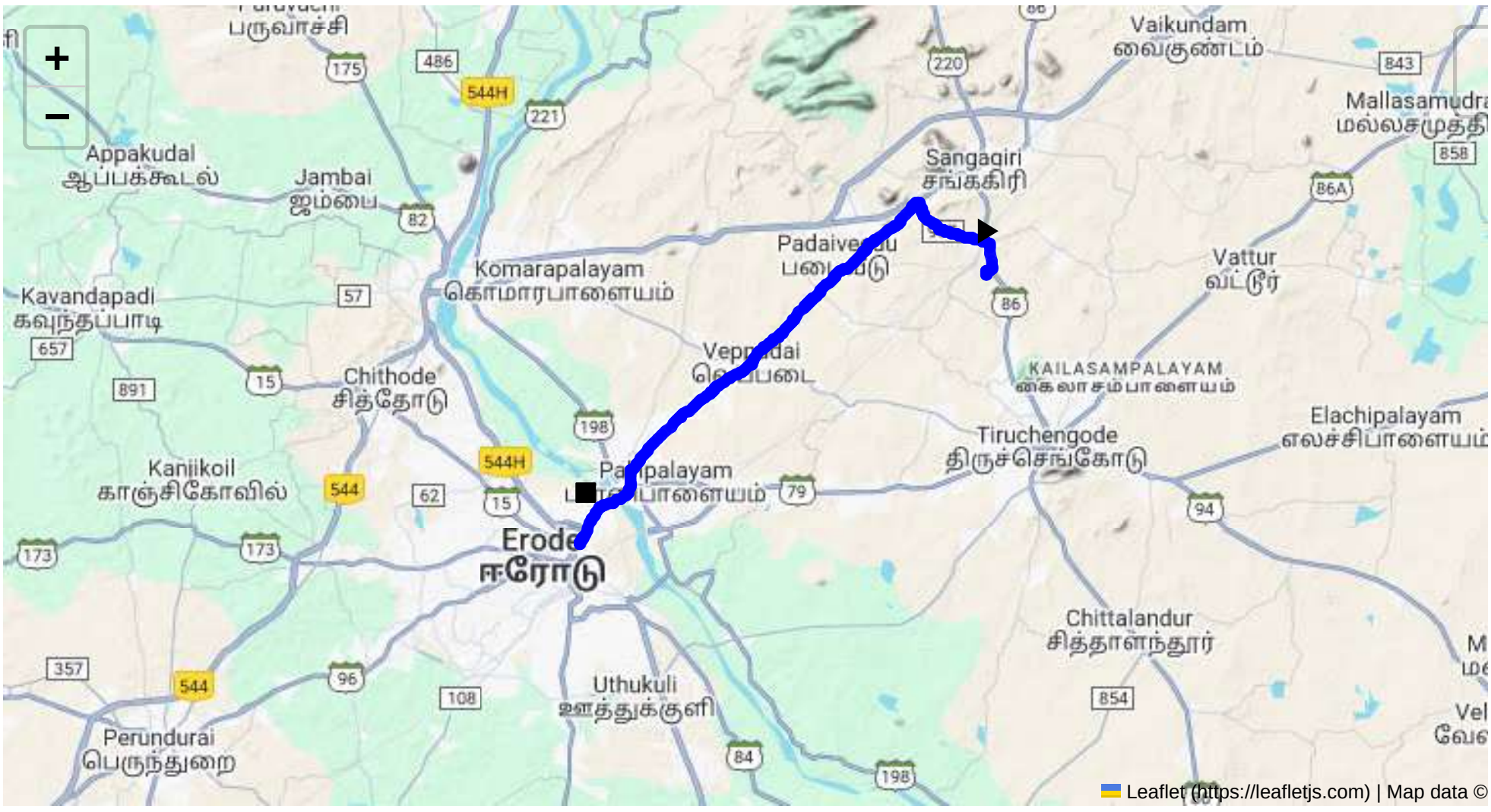
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 24.14 km
Estimated Duration: 0.6 hours
Adjusted Duration (Heavy Vehicle): 0.8 hours
Start: (11.4381, 77.8734)
End: (11.348392, 77.731888)



Welcome to the Journey Risk Management Study

Route Analysis Report

1. Overview of the Route Map: The route from Sangagiri to Erode, spanning approximately 24.14 kilometers, primarily follows local roads within Tamil Nadu. The journey typically begins on local roads in Sangagiri before transitioning onto broader highways that lead into the city of Erode, specifically ending at Cauvery Road in Karungalpalayam.

2. Typical Weather Conditions and Potential Weather-Related Hazards: The region experiences a tropical climate, with hot and dry conditions from March to June, monsoon rains from July to September, and cooler weather between October and February. During monsoon season, heavy rainfall can lead to flooding and poor road visibility, contributing to hazardous driving conditions. Therefore, caution is advised during this period due to reduced traction and the potential for water-logged roads.

3. Analysis of Traffic Patterns: Traffic can be heavy, particularly during morning (7:30 AM - 9:30 AM) and evening (5:30 PM - 8:00 PM) peak hours. The stretch near the city of Erode is prone to congestion due to local commutes and commercial activities. Traffic conditions are generally steady outside these periods, but construction or roadwork could introduce sporadic delays.

4. Assessment of Road Quality and Infrastructure: The roads leading from Sangagiri to Erode are generally well-paved and suitable for heavy vehicles, though periodic maintenance issues like potholes or surface irregularities might be encountered. As the route progresses into more urban areas, expect narrower paths and more frequent intersections, increasing the likelihood of traffic slowdowns.

5. Suggestions for Alternative Routes for Emergencies: In case of roadblocks or severe congestion, one alternative is taking NH544 to bypass congested local road segments. Another option could be using state highways that connect nearby towns, although this could increase the travel distance.

6. Summary of Local Regulations Affecting Hazardous Material Transport: Transporting hazardous materials requires adherence to strict Tamil Nadu state regulations, which include specific permits, vehicle signage, and adherence to designated travel times to minimize risk. Ensure all compliance-related documents are in order, and it may be necessary to avoid densely populated areas during peak hours.

7. Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials: While specific recent incidents on this route might be limited, the region has experienced general traffic accidents involving heavy vehicles due to road congestion and weather conditions, emphasizing the need for defensive driving practices.

8. Environmental Considerations and Sensitive Areas: The route traverses agricultural landscapes and urban zones, necessitating careful driving to prevent chemical spills or pollution. Minimize disturbances by adhering to regulated speed limits and avoiding unnecessary honking in populated areas.

9. Analysis of Communication Coverage: Mobile network coverage is generally reliable throughout most of the route. However, there may be occasional dead zones when passing through rural stretches or transitional areas between towns. It would be prudent to have alternative communication means, like two-way radios, for emergencies.

10. Estimated Emergency Response Times for Different Route Segments: Response times might vary, with quicker responses (approximately 15-20 minutes) expected in urban areas like Erode due to proximity to emergency services. In rural sections, response could take longer, up to 30-45 minutes, due to increased travel distance for services.

11. An Overall Summary of Risk Assessment: This route poses moderate risk for heavy vehicles carrying hazardous materials, primarily due to traffic congestion and weather-related hazards. With proper planning and adherence to regulations, the journey can be managed safely. Recommended practices include checking weather forecasts, planning trips outside peak hours when possible, and ensuring vehicles are equipped for safe transport of hazardous materials.

To mitigate risks, ongoing route monitoring, adherence to safety protocols, and being prepared for weather and traffic fluctuations are paramount.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	U-Turn	High	11.3453211, 77.7304652	10 KM/Hr
2	Turn	High	11.43811, 77.87348	15 KM/Hr
3	Turn	Medium	11.43956, 77.87340	30 KM/Hr
4	Turn	High	11.43968, 77.87345	15 KM/Hr
5	Turn	High	11.44029, 77.87544	15 KM/Hr
6	Turn	Medium	11.44898, 77.87410	30 KM/Hr
7	Turn	Medium	11.45348, 77.85706	30 KM/Hr
8	Turn	Medium	11.45352, 77.85698	30 KM/Hr
9	Turn	Medium	11.46318, 77.84913	30 KM/Hr
10	Turn	Medium	11.46312, 77.84886	30 KM/Hr
11	Turn	High	11.34532, 77.73047	15 KM/Hr
12	Blind Spot	Blind Spot	11.34535, 77.73036	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	hospital	Cheran Hospital	11.3680302, 77.7481976	30 km/h	Medium
2	pharmacy	Pharmacy	11.3652161, 77.7486375	30 km/h	Medium
3	hospital	Sri Kumaran E N T Hospital	11.3657814, 77.7477763	30 km/h	Medium
4	hospital	Sri Krishna Hospital	11.3656648, 77.7477783	30 km/h	Medium
5	hospital	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
6	police	Police Station	11.3630177, 77.7476505	30 km/h	Medium
7	hospital	Government Hospital	11.3608508, 77.747453	30 km/h	Medium
9	hospital	Sri Hari Sakthivel Hospital	11.3526901, 77.7323055	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
10	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
11	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
12	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
13	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
14	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
16	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
17	hospital	City Hospital	11.3451151, 77.7300887	30 km/h	Medium
18	clinic	K.B.N. Nursing Home	11.344835, 77.7310771	30 km/h	Medium
19	clinic	Kpn Nursing Home	11.3437022, 77.7304525	30 km/h	Medium
20	hospital	Milan Hospital	11.343591, 77.733182	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	Ssri Valliappa Vidhayalayam mat hr school	11.4004878, 77.7794381	30 km/h	Medium
8	marketplace	Weekly Market	11.3605669, 77.7488199	30 km/h	Medium
15	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium

Route Photos of Risky Spots

Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37086, 77.74828

Risk Type: U-Turn

Risk Level: High

Speed Limit: 10 KM/Hr

Coordinates: 11.3453211, 77.7304652

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: 11.45348, 77.85706

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: 11.46318, 77.84913

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46312, 77.84886

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.34532, 77.73047

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.34535, 77.73036