



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SHANTHI ENTERPRISES

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

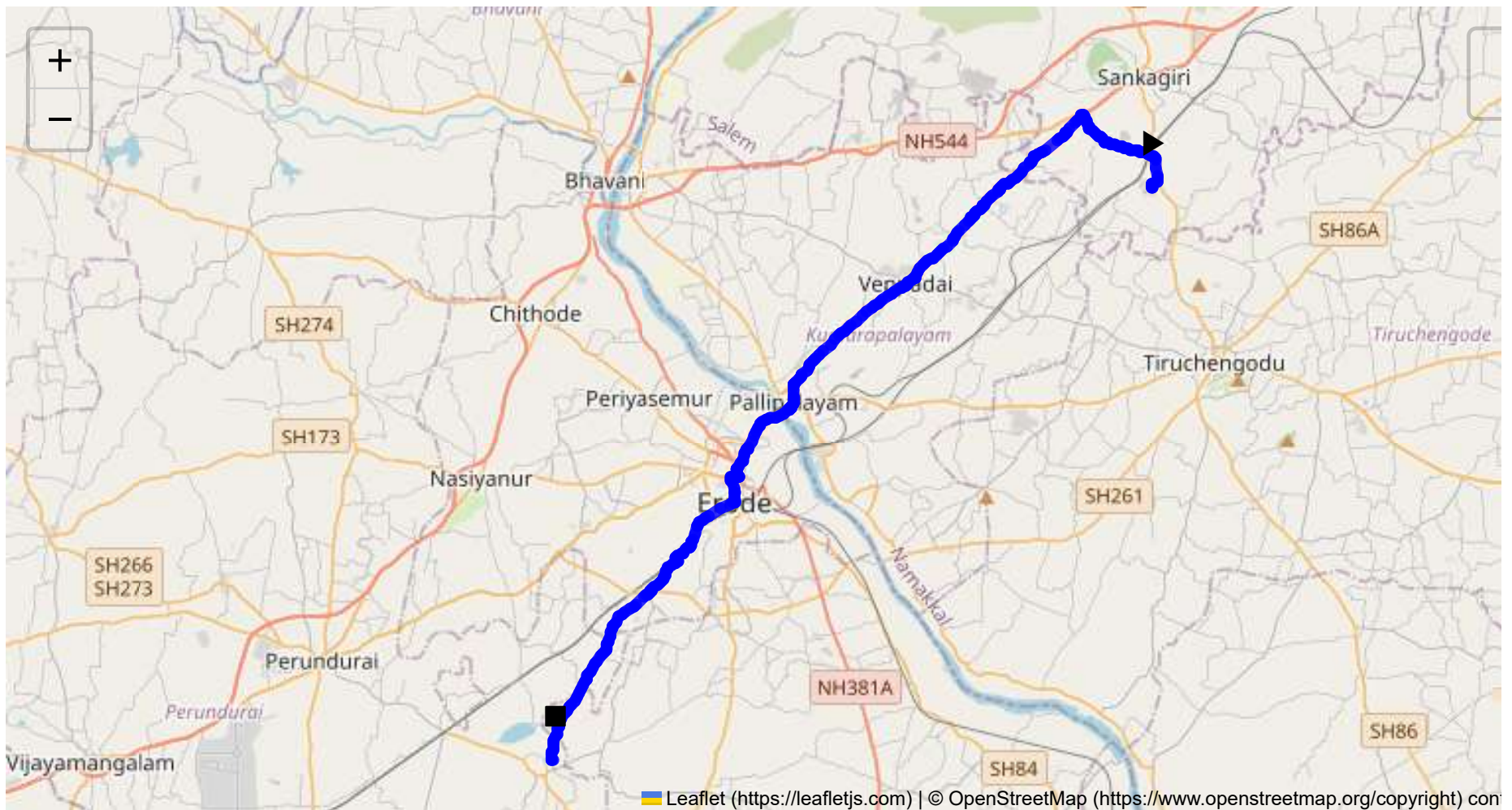
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 38.49 km
Estimated Duration: 1.0 hours
Adjusted Duration (Heavy Vehicle): 1.3 hours
Start: (11.4381, 77.8734)
End: (11.242082, 77.664333)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Thenmugam Vellode spans approximately 38.49 kilometers. The journey typically takes about 1.04 hours for heavy vehicles transporting hazardous materials. Major points along the route include Sangagiri, SH 79A, Nethaji Road in Erode, and Gandhiji Road, eventually leading to Erode-Chennimalai Road in Thenmugam Vellode.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate with hot summers, relatively moderate winters, and monsoon rains. The main weather-related hazard is the monsoon season (June to September), which can cause heavy rains leading to waterlogging and reduced road visibility. Flash floods during this period can also obstruct traffic flow.

3. Analysis of Traffic Patterns

- Peak Hours:** Morning (8:00 AM - 10:00 AM) and evening (5:00 PM - 7:00 PM) are typically congested due to local commuting traffic.
- Congestion-Prone Areas:** Erode city, especially on Nethaji Road and Gandhiji Road, are known for heavy traffic. The intersection at SH 79A can also experience significant slowdowns.

4. Assessment of Road Quality and Infrastructure

- The road from Sangagiri to Erode, mainly SH 79A, is generally in good condition, though some sections may experience wear and tear, particularly during the monsoon.
- Nethaji Road and Gandhiji Road within Erode have frequent traffic lights and pedestrian crossings, which contribute to slower traffic movement.
- Erode-Chennimalai Road has mixed road conditions with some stretches requiring caution due to uneven surfaces.

5. Suggestions for Alternative Routes for Emergencies

In case of road blockage or severe congestion:

- Consider using the NH 47 to bypass Erode city, rejoining the original route near Vellode.
- During peak monsoon, alternative routes closer to highways should be considered to avoid waterlogged urban streets.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- Hazardous material transport in Tamil Nadu is subject to government regulations that require permits for transporting certain classes of hazardous materials. Restricted hours (often during daytime) are enforced.
- Compliance with local speed limits, safety standards, and vehicle checks is mandatory.

7. Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials

- Historical data indicates occasional incidents of vehicle breakdowns and minor accidents, chiefly attributed to road congestion and wet conditions.
- There have not been significant hazardous material incidents reported in recent years, suggesting adherence to regulations.

8. Environmental Considerations and Sensitive Areas

- Protected environmental zones and schools in Erode require slow driving and extra caution.
- The Vellode Bird Sanctuary near the route suggests vigilance to avoid any ecological disruption.

9. Analysis of Communication Coverage

- Coverage is generally good throughout the route. However, certain semi-rural stretches may experience occasional signal drops.
- Ensuring communication is critical, hence dual network SIMs are advisable for emergencies.

10. Estimated Emergency Response Times for Different Route Segments

- Within Erode city, emergency response times can be relatively quick at 10-15 minutes.
- More remote stretches towards Thenmugam Vellode might experience longer response times, around 20-30 minutes.

11. Overall Summary of Risk Assessment

The route is generally safe but requires heightened vigilance during the monsoon due to weather-related hazards. Proper scheduling to avoid peak hours, compliance with hazardous material transport regulations, and precautions taken in environmentally sensitive areas will ensure safe passage. Alternative routes should be planned for unforeseen congestion or emergencies. Maintaining communication coverage and understanding local response times will aid in managing any incident efficiently.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	Turn	High	11.43811, 77.87348	15 KM/Hr
2	Turn	Medium	11.43961, 77.87341	30 KM/Hr
3	Turn	Medium	11.43968, 77.87345	30 KM/Hr
4	Turn	High	11.44029, 77.87544	15 KM/Hr
5	Turn	Medium	11.44893, 77.87413	30 KM/Hr
6	Turn	High	11.45350, 77.85700	15 KM/Hr
7	Turn	Medium	11.46046, 77.85037	30 KM/Hr
8	Turn	Medium	11.46303, 77.84945	30 KM/Hr
9	Turn	Medium	11.46317, 77.84906	30 KM/Hr
10	Blind Spot	Blind Spot	11.33920, 77.72902	10 KM/Hr
11	Turn	Medium	11.33914, 77.72659	30 KM/Hr
12	Turn	High	11.33890, 77.72637	15 KM/Hr
13	Turn	Medium	11.33092, 77.72748	30 KM/Hr
14	Turn	High	11.33085, 77.72744	15 KM/Hr
15	Turn	Medium	11.33085, 77.72730	30 KM/Hr
16	Turn	High	11.31172, 77.70715	15 KM/Hr
17	Turn	Medium	11.31052, 77.70780	30 KM/Hr
18	Turn	Medium	11.31034, 77.70783	30 KM/Hr
19	Turn	Medium	11.31008, 77.70768	30 KM/Hr
20	Turn	High	11.24215, 77.66407	15 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	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
4	hospital	Sri Kumaran E N T Hospital	11.3657814, 77.7477763	30 km/h	Medium
5	hospital	Sri Krishna Hospital	11.3656648, 77.7477783	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
10	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
11	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
12	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
13	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
15	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
16	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	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	Kaviraj Ayurveda Hospital	11.3400349, 77.7298199	30 km/h	Medium
21	hospital	Dr Kokilasekar Nursing Hospital	11.3395874, 77.7269838	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
22	clinic	M.R Nursing Home	11.3386746, 77.7294262	30 km/h	Medium
24	hospital	Government Maternity Hospital, Agathiar	11.33716, 77.727075	30 km/h	Medium
25	clinic	Naseer Nursing Home	11.3364485, 77.7271691	30 km/h	Medium
26	hospital	Vikram Hospital, Erode	11.3356411, 77.7280569	30 km/h	Medium
27	hospital	Shabeer Hospital	11.33529, 77.7285236	30 km/h	Medium
28	hospital	J.B. Clinic And Hospital	11.3351769, 77.7282031	30 km/h	Medium
29	hospital	Dr. R.M. Habibullah Hospital	11.335246, 77.7266028	30 km/h	Medium
30	hospital	Kumarasamy Hospital	11.334273, 77.7259118	30 km/h	Medium
31	hospital	Thangam Hospital, Erode	11.3340961, 77.7262437	30 km/h	Medium
32	hospital	Ck Hospital	11.3326562, 77.7282011	30 km/h	Medium
33	hospital	Immick Hospital	11.332617, 77.728073	30 km/h	Medium
34	fire_station	Erode District Fire Station	11.3326366, 77.7272532	30 km/h	Medium
35	hospital	JJ hospital	11.33168, 77.728823	30 km/h	Medium
36	hospital	Jai Maaruthi Hospital	11.332, 77.727272	30 km/h	Medium
37	hospital	Shubiksha Hospital	11.3318174, 77.7299544	30 km/h	Medium
38	hospital	Bethesda Hospital	11.3314183, 77.7266231	30 km/h	Medium
39	hospital	Mercury Hospital	11.3328384, 77.7240531	30 km/h	Medium
40	hospital	Aditi Ent Hospital	11.3300862, 77.7236924	30 km/h	Medium
41	hospital	Erode Ortho Centre	11.3294487, 77.7230172	30 km/h	Medium
42	hospital	KRN Hospital	11.330054, 77.723136	30 km/h	Medium
43	hospital	Divisional Railway Hospital	11.3237354, 77.7204487	30 km/h	Medium
44	hospital	Joseph Hospital	11.30801, 77.704584	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
14	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium
23	school	E.V.R. Govt Girls Hr. Sec School	11.3371265, 77.7266283	30 km/h	Medium
45	college	Erode Arts and Science College	11.3002956, 77.6984443	30 km/h	Medium
46	school	The Indian Public School	11.2908927, 77.6934601	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: 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: 11.44893, 77.87413



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.45350, 77.85700



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46046, 77.85037



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: 11.46317, 77.84906



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.33920, 77.72902



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33914, 77.72659



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.33890, 77.72637



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33092, 77.72748



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.33085, 77.72744



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.33085, 77.72730



Risk Type: Turn
Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.31172, 77.70715



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31052, 77.70780



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31034, 77.70783



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31008, 77.70768



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24215, 77.66407
