



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SPK PETROLEUM

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

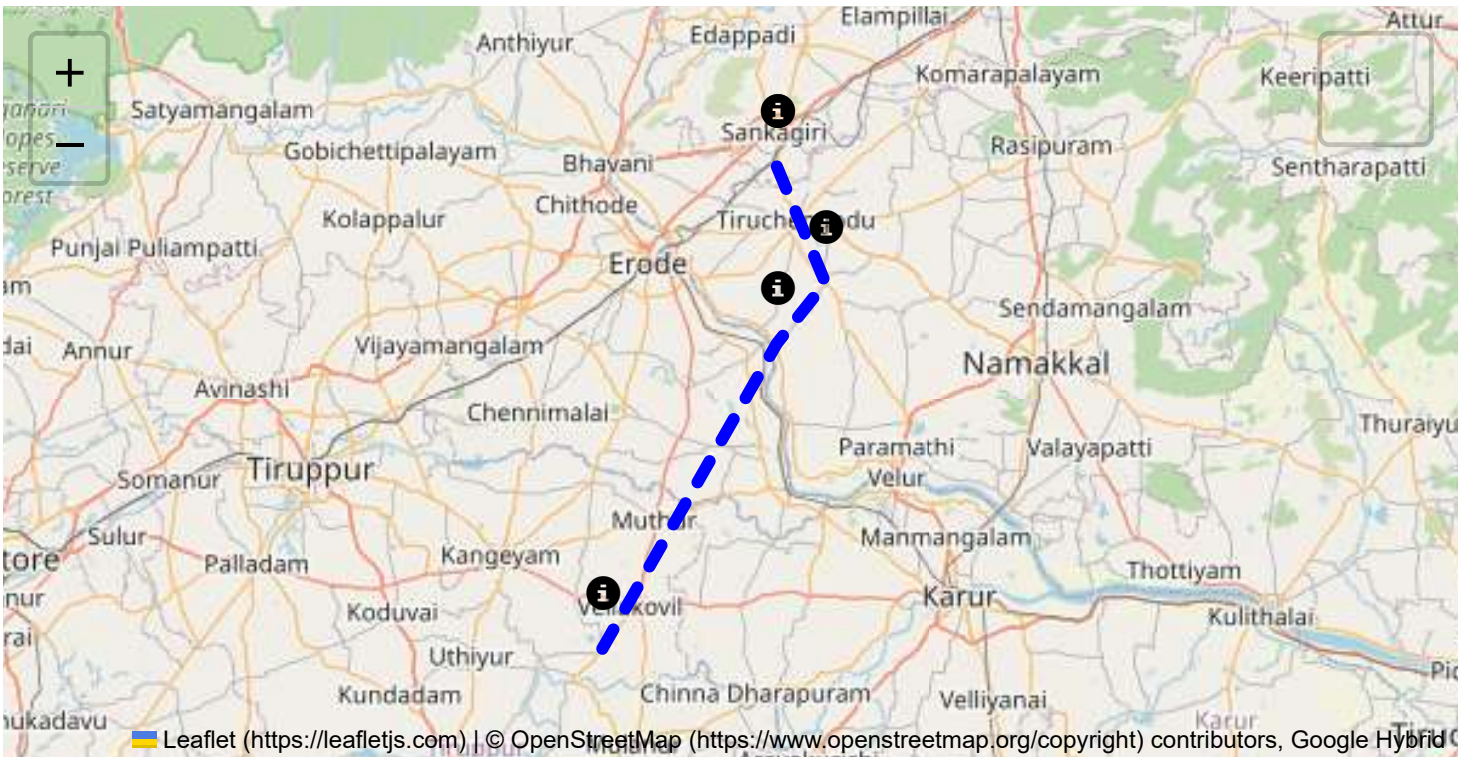
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

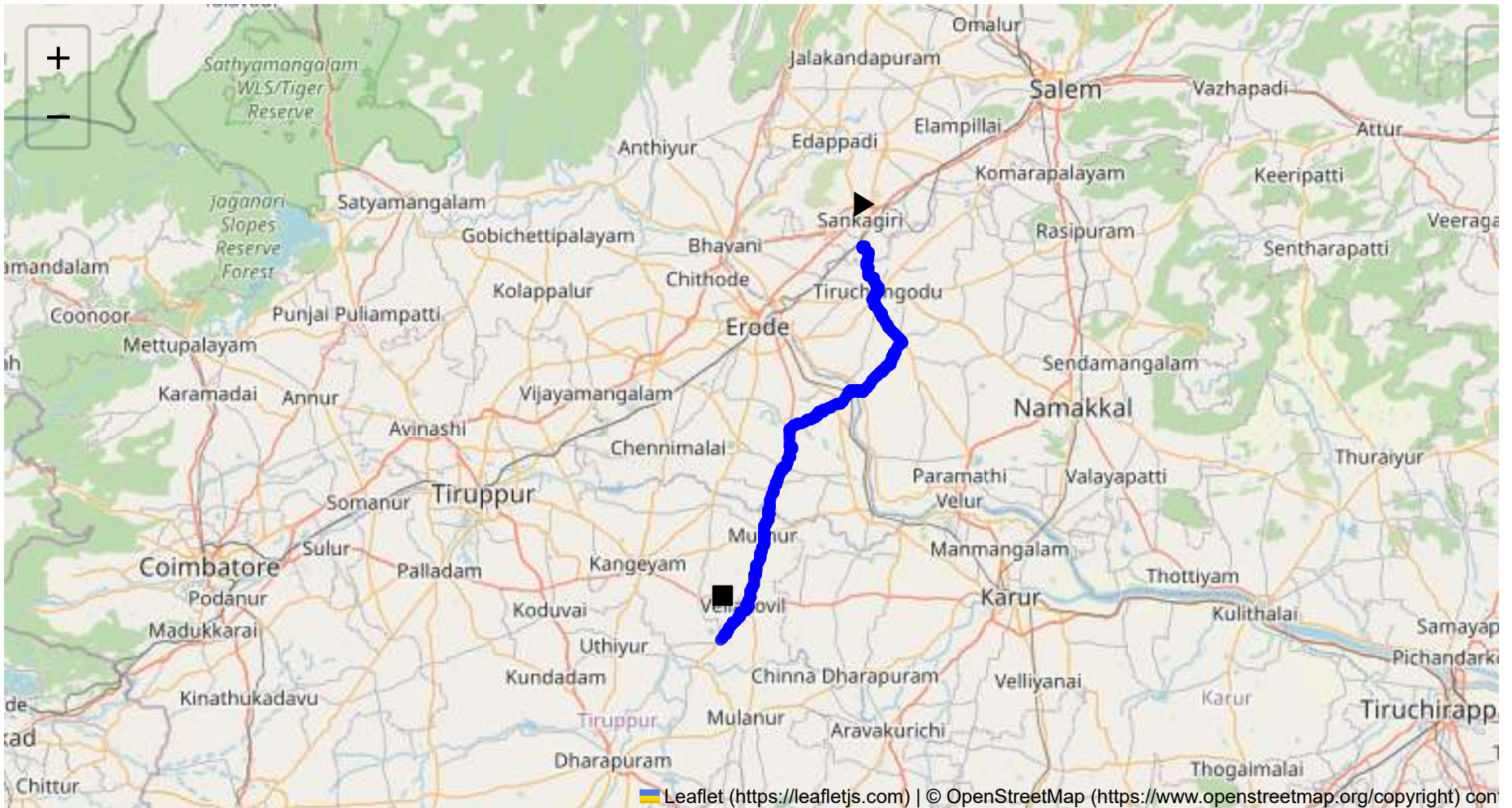
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 76.66 km
Estimated Duration: 1.8 hours
Adjusted Duration (Heavy Vehicle): 2.2 hours
Start: (11.4381, 77.8734)
End: (10.901548, 77.674858)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route spans approximately 76.66 kilometers, starting at CVQF+23W Sangagiri and ending at WM2F+CQP Uthamapalayam in Tamil Nadu. The route passes through intermediate points such as SH 86 in Sullipalayam and Chittalandur-Jedarpalayam Rd in Solasiramani. The drive primarily involves regional highways with two-lane roads featuring periodic expansions in populated areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu experiences a tropical climate, with significant monsoons from June to September and lighter northeast monsoons from October to December. Weather-related hazards such as heavy rains and occasional flooding can significantly impact road conditions, particularly on rural segments of the route, leading to reduced visibility and potentially slippery surfaces.

3. Analysis of Traffic Patterns

Traffic tends to peak during morning hours (8 AM - 10 AM) and evening hours (5 PM - 8 PM), correlating with commuter flows. Congestion might be experienced near towns like Sangagiri and Solasiramani, with slower movement in markets and near school zones. The presence of agricultural vehicles can also lead to intermittent slow-moving traffic sections.

4. Assessment of Road Quality and Infrastructure

The route's road quality is mixed, with well-maintained stretches on major highways like SH 86. However, there can be potholes and uneven road surfaces, particularly on less-travelled rural roads such as the Chittalandur-Jedarpalayam Rd. Infrastructure is generally supportive with periodic rest stops, but signage might be inadequate in less populated areas.

5. Suggestions for Alternative Routes for Emergencies

In case of emergencies or roadblocks, detours via district roads connecting major highways like SH 6 and SH 89 could be considered. Coordination with local transport authorities is advisable for real-time updates and the best alternative routes.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Tamil Nadu enforces strict regulations on hazardous material transport, including mandatory signage on vehicles, adherence to specific time windows, and compliance with safety norms. Carriers must ensure proper documentation and contingency plans for spills or accidents.

7. Overview of Historical Incidents

Historically, there have been isolated incidents involving heavy vehicles, particularly in industrial areas around Sangagiri due to improper cargo securing or brake failures on poorly maintained roads. Reports of hazardous materials incidents are not frequent but emphasize the necessity of strict compliance with regulations.

8. Environmental Considerations and Sensitive Areas

The route passes near agricultural lands and small water bodies, which require utmost care to prevent contamination from hazardous materials. Drivers should be aware of these sensitive areas and exercise caution.

9. Analysis of Communication Coverage

While most of the route benefits from adequate mobile network coverage, dead zones can occur, particularly on isolated rural stretches. Using dual-network sim cards or satellite communications could mitigate coverage issues, ensuring continuous communication capability.

10. Estimated Emergency Response Times

Emergency response times are relatively quick in urban centers but could extend in rural areas, averaging 30-45 minutes. Dispatch times could improve through coordination with local emergency services and clear communication delineating the nature and exact location of an incident.

12. Overall Summary of Risk Assessment

The route presents mixed risk levels, with primary concerns revolving around road quality, inclement weather, and congested traffic areas. Proactive risk management strategies, including route planning with

contingency stops, regular vehicle maintenance, adherence to local transport regulations, and ensuring effective communication setups, will mitigate many of these risks. Preparedness and adhering to guidelines for transporting hazardous materials remain key to maintaining safety.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Roundabout	High	11.04637, 77.73761	15 KM/Hr
2	Turn	Medium	11.43822, 77.87348	30 KM/Hr
3	Turn	High	11.43961, 77.87341	15 KM/Hr
4	Turn	High	11.44029, 77.87544	15 KM/Hr
5	Turn	Medium	11.39671, 77.88878	30 KM/Hr
6	Turn	High	11.37862, 77.89488	15 KM/Hr
7	Turn	High	11.37850, 77.89453	15 KM/Hr
8	Turn	Medium	11.34151, 77.90137	30 KM/Hr
9	Turn	High	11.30859, 77.92918	15 KM/Hr
10	Turn	Medium	11.24421, 77.87541	30 KM/Hr
11	Turn	Medium	11.24192, 77.87363	30 KM/Hr
12	Turn	High	11.24001, 77.87368	15 KM/Hr
13	Turn	High	11.24061, 77.86899	15 KM/Hr
14	Turn	High	11.24157, 77.86876	15 KM/Hr
15	Turn	High	11.24167, 77.86843	15 KM/Hr
16	Turn	High	11.24242, 77.86833	15 KM/Hr
17	Turn	Medium	11.24252, 77.86780	30 KM/Hr
18	Blind Spot	Blind Spot	11.24384, 77.86689	10 KM/Hr
19	Turn	High	11.24101, 77.86023	15 KM/Hr
20	Turn	Medium	11.24198, 77.85893	30 KM/Hr
21	Turn	Medium	11.24198, 77.85860	30 KM/Hr
22	Blind Spot	Blind Spot	11.18861, 77.77108	10 KM/Hr
23	Turn	Medium	11.16450, 77.77357	30 KM/Hr
24	Turn	Medium	11.16407, 77.77376	30 KM/Hr
25	Turn	Medium	11.16357, 77.77434	30 KM/Hr
26	Turn	High	11.13667, 77.76526	15 KM/Hr
27	Turn	Medium	11.04703, 77.73745	30 KM/Hr
28	Turn	Medium	11.04528, 77.73627	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
29	Turn	High	10.99029, 77.72513	15 KM/Hr
30	Turn	Medium	10.98961, 77.72379	30 KM/Hr
31	Turn	High	10.94597, 77.71319	15 KM/Hr
32	Turn	High	10.94582, 77.71257	15 KM/Hr
33	Turn	Medium	10.93825, 77.70342	30 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Tiruchengode, Goverment Hospital	11.3903328, 77.8920627	30 km/h	Medium
1	hospital	SPM Medical Centre,Tiruchengode	11.3881331, 77.8931963	30 km/h	Medium
5	clinic	Kongu Nursing Home	11.3783065, 77.8961134	30 km/h	Medium
6	hospital	T.C.A Hospital Tiruchengode	11.3791885, 77.8965774	30 km/h	Medium
7	hospital	Soorya Multispecialty Hospital	11.3786429, 77.8931912	30 km/h	Medium
8	hospital	Tiruchengode Government Hospital	11.37645, 77.89426	30 km/h	Medium
9	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
10	hospital	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
13	police	கரட்டுப்பாளையம் காவல் நிலையம்	11.357586, 77.8922539	30 km/h	Medium
14	hospital	Government Hospital, Elumathur	11.18533, 77.772496	30 km/h	Medium
15	hospital	Malar Hospital, Muthur	11.0438049, 77.7361156	30 km/h	Medium
16	hospital	SIBI Hospital, Vellakoil	10.9569141, 77.7160216	30 km/h	Medium
17	hospital	KG Hospital, Vellakoil	10.9511, 77.714116	30 km/h	Medium
18	hospital	Vellakoil Government Hospital	10.9410661, 77.7110372	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
2	school	அரசு ஆண்கள் மேல்நிலைப் பள்ளி	11.3850439, 77.8948279	30 km/h	Medium
3	school	அரசு பெண்கள் மேல்நிலைப் பள்ளி	11.3844247, 77.8949053	30 km/h	Medium
4	marketplace	திருச்செங்கோடு தினசரி காய்கறி சந்தை	11.3833608, 77.8970145	30 km/h	Medium
11	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
12	school	MDV School	11.3719843, 77.8915244	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.38395, 77.89480



Risk Type: Roundabout
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.04637, 77.73761



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: 11.39671, 77.88878



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37862, 77.89488



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37850, 77.89453



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34151, 77.90137



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.30859, 77.92918



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24421, 77.87541



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24192, 77.87363



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24001, 77.87368



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24061, 77.86899



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24157, 77.86876



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24167, 77.86843



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24242, 77.86833



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24252, 77.86780



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.24384, 77.86689



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24101, 77.86023



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24198, 77.85893



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24198, 77.85860



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.18861, 77.77108



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16450, 77.77357



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16407, 77.77376



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16357, 77.77434



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.13667, 77.76526



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.04703, 77.73745



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.04528, 77.73627



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.99029, 77.72513



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.98961, 77.72379



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.94597, 77.71319



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.94582, 77.71257



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr
Coordinates: 10.93825, 77.70342
