



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SHIVA MUTHUKUMAR PETROLEUMS

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

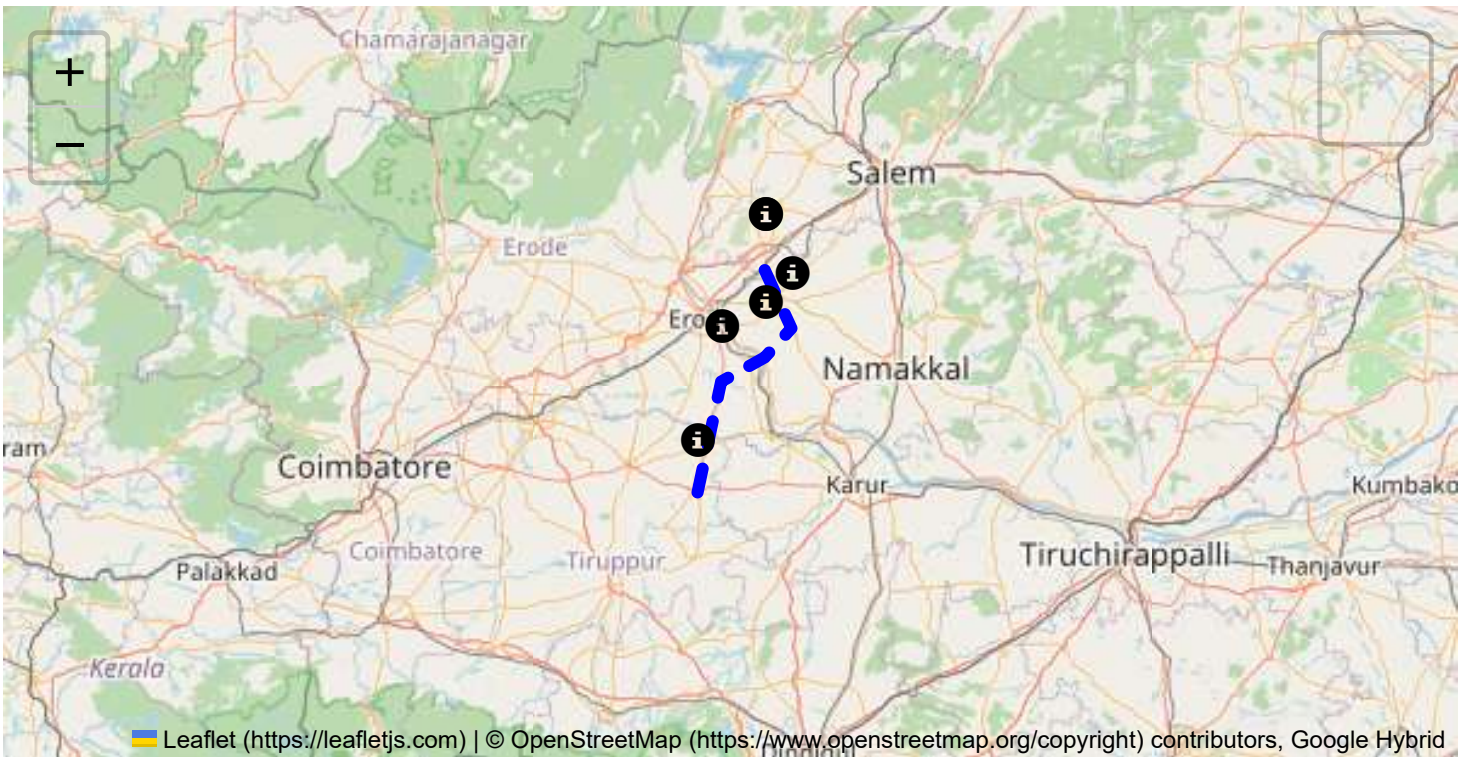
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

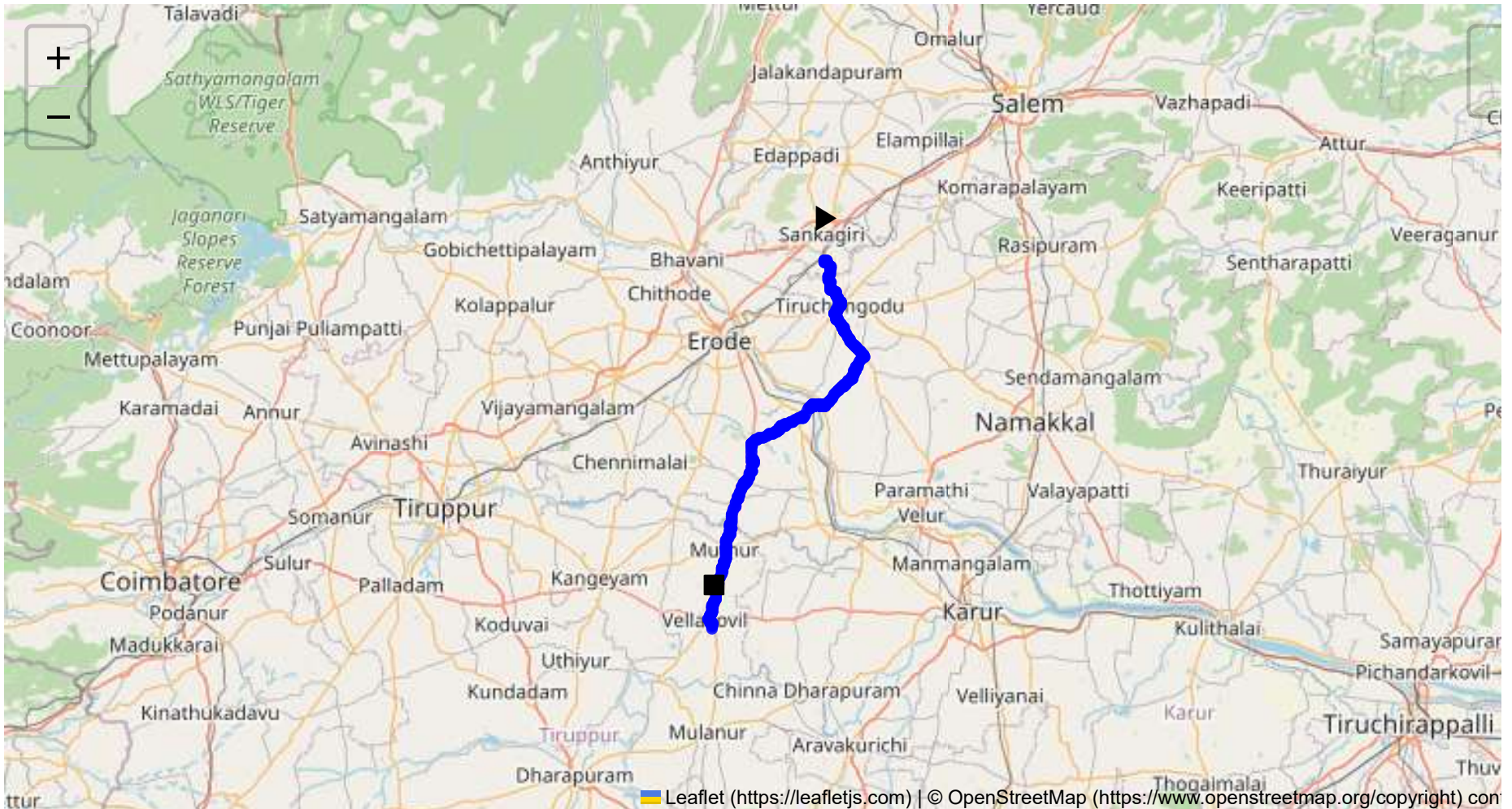
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 71.30 km
Estimated Duration: 1.7 hours
Adjusted Duration (Heavy Vehicle): 2.1 hours
Start: (11.4381, 77.8734)
End: (10.93622, 77.71822)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map:

- The route from Sangagiri to Vellakoil via the identified waypoints spans approximately 71.30 kilometers. It primarily follows local state highways and rural roads through towns like Sullipalayam and Solasiramani, with a combination of straight stretches and occasional sharp bends.

2. Typical Weather Conditions and Potential Hazards:

- The region generally experiences a tropical climate with hot summers, moderate monsoons, and mild winters. Monsoon season (June to September) can lead to waterlogging and slippery roads, particularly in low-lying areas. Occasional dense fog might affect visibility during winter mornings.

3. Analysis of Traffic Patterns:

- Traffic congestion tends to peak during morning (7:30 AM - 9:00 AM) and evening (5:00 PM - 7:00 PM) hours, particularly around township areas. Market days can see increased local traffic around smaller towns like Solasiramani.

4. Assessment of Road Quality and Infrastructure:

- The condition of SH 86 and other major roads is generally good, with periodic maintenance. However, rural roads may have sections with potholes and uneven surfaces. Road signage is present but can be sparse in rural stretches.

5. **Suggestions for Alternative Routes for Emergencies:**
 - In case of blockages or emergencies, an alternative route via NH544 connecting nearby larger towns should be considered. This access can lead to broader highways with relatively better resources and services.
6. **Summary of Local Regulations Affecting Hazardous Material Transport:**
 - Permits are required for transporting hazardous materials, with restrictions on timings and routes. Night-time travel might be restricted for trucks carrying such materials in certain districts.
7. **Overview of Historical Incidents:**
 - There have been past incidents involving heavy vehicles on narrow rural roads, primarily due to poor visibility and overloading. No major hazardous material spills have been documented, but caution is advised as rural infrastructure is less equipped to manage such events.
8. **Environmental Considerations and Sensitive Areas:**
 - There are agricultural lands along the route, which require extra caution to prevent contamination from hazardous material spills. Respect for local wildlife crossing areas is also encouraged.
9. **Analysis of Communication Coverage:**
 - Mobile network coverage is generally reliable along main highways but can be patchy in remote rural areas, potentially leading to communication dead zones.
10. **Estimated Emergency Response Times:**
 - Response times in town areas like Sangagiri and Vellakoil are within 15-30 minutes given proximity to local emergency services. Rural stretches may experience delays up to 45 minutes due to distance and road conditions.
11. **Overall Summary of Risk Assessment:**
 - Overall, the route poses moderate risk given the rural and semi-urban dynamic, with specific challenges during adverse weather and peak traffic times. Adequate preparations and adherence to regulations, alongside a keen awareness of the road and environment, can significantly mitigate these risks for heavy vehicles carrying hazardous materials.

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

	Risk Type	Risk Level	Coordinates	Speed Limit
6	Turn	High	11.37862, 77.89488	15 KM/Hr
7	Turn	High	11.37850, 77.89453	15 KM/Hr
8	Turn	High	11.30859, 77.92918	15 KM/Hr
9	Turn	Medium	11.24421, 77.87541	30 KM/Hr
10	Turn	Medium	11.24192, 77.87363	30 KM/Hr
11	Turn	High	11.24001, 77.87368	15 KM/Hr
12	Turn	High	11.24061, 77.86899	15 KM/Hr
13	Turn	High	11.24155, 77.86877	15 KM/Hr
14	Turn	High	11.24166, 77.86845	15 KM/Hr
15	Turn	High	11.24237, 77.86834	15 KM/Hr
16	Turn	High	11.24250, 77.86784	15 KM/Hr
17	Blind Spot	Blind Spot	11.24384, 77.86689	10 KM/Hr
18	Turn	High	11.24100, 77.86026	15 KM/Hr
19	Turn	Medium	11.24197, 77.85898	30 KM/Hr
20	Turn	Medium	11.24199, 77.85864	30 KM/Hr
21	Turn	Medium	11.20921, 77.81149	30 KM/Hr
22	Blind Spot	Blind Spot	11.18856, 77.77110	10 KM/Hr
23	Turn	Medium	11.16410, 77.77373	30 KM/Hr
24	Turn	Medium	11.16359, 77.77433	30 KM/Hr
25	Turn	Medium	11.13679, 77.76533	30 KM/Hr
26	Turn	Medium	11.04708, 77.73744	30 KM/Hr
27	Turn	Medium	11.04497, 77.73624	30 KM/Hr
28	Turn	High	10.99033, 77.72516	15 KM/Hr
29	Turn	High	10.98966, 77.72381	15 KM/Hr
30	Blind Spot	Blind Spot	10.94597, 77.71319	10 KM/Hr
31	Turn	High	10.94571, 77.71574	15 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

	type	name	coordinates	speed_limit	risk_level
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

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: 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: 11.24155, 77.86877



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24166, 77.86845



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24237, 77.86834



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24250, 77.86784



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: 11.24100, 77.86026



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24197, 77.85898



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24199, 77.85864



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.20921, 77.81149



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.18856, 77.77110



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16410, 77.77373



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16359, 77.77433



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13679, 77.76533



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.04708, 77.73744



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.04497, 77.73624



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.99033, 77.72516



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.98966, 77.72381



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.94597, 77.71319



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.94571, 77.71574

