



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to THIRUPPATHI VENGATESA 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

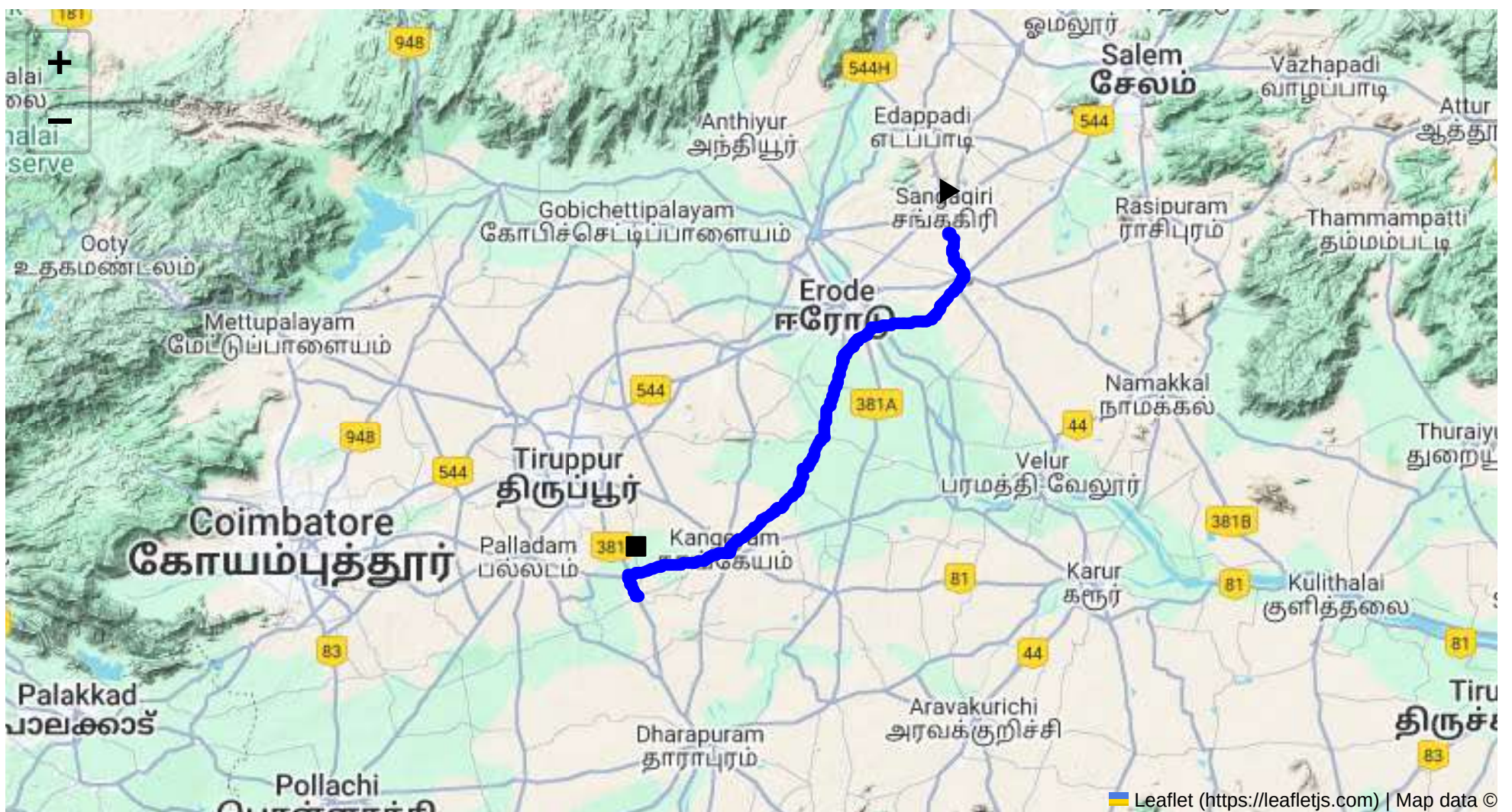
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 90.74 km
Estimated Duration: 2.1 hours
Adjusted Duration (Heavy Vehicle): 2.6 hours
Start: (11.4381, 77.8734)
End: (10.949872, 77.433807)



Welcome to the Journey Risk Management Study

Route Analysis Overview

1. Overview of the Route Map:

- The route from CVQF+23W, Sangagiri to WCXM+XG9, South Avanashipalayam covers approximately 90.74 kilometers. The journey primarily takes place on the NH 544 highway followed by a transition to local roads. NH 544 is a major highway connecting various towns and

is generally well-maintained. The route passes through a mix of urban, semi-urban, and rural areas, providing varied terrain and traffic conditions.

2. Typical Weather Conditions and Potential Weather-Related Hazards:

- Tamil Nadu experiences a tropical climate with monsoon seasons from June to September and from October to December. Heavy rainfall during these periods can lead to waterlogged roads, reduced visibility, and potential flooding, especially in low-lying areas. High temperatures are common during summer months, which could lead to road deformations and affect vehicle performance.

3. Traffic Patterns:

- Traffic is generally denser during morning (7:30 - 9:30 AM) and evening (5:30 - 7:30 PM) rush hours, especially near urban centers like Erode. Congestion is common at intersections and toll booths on NH 544. Major cities and towns can cause slowdowns, with potential bottlenecks at market areas and bus stops.

4. Assessment of Road Quality and Infrastructure:

- NH 544 is a national highway with good road quality, multiple lanes, and regular maintenance. However, local roads toward South Avanashipalayam might be narrower with variable surface conditions and less lighting which can pose risks during nighttime driving.

5. Suggestions for Alternative Routes in Emergencies:

- Alternative roads include using SH 81 or regional roads that parallel NH 544. During emergencies, consider major district roads that bypass town centers and congested areas. Locally known bypasses can also help avoid traffic snarls or roadwork zones.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Transporting hazardous materials requires adherence to specified guidelines like having proper permits, using marked vehicles, and following designated routes. Local regulations may restrict entry into specific city areas during certain times to avoid congestion.

7. Overview of Historical Incidents:

- While specific historical incident data may not be publicly detailed, NH 544 has been the site of various traffic accidents, including heavy vehicles. Safety measures have been heightened on this route with increased patrols and monitoring during peak seasons.

8. Environmental Considerations and Sensitive Areas:

- The route passes near agricultural zones and small water bodies. Special care should be taken to prevent contamination from spills. Avoid routes close to wildlife reserves or conservation areas to minimize ecological disturbance.

9. Analysis of Communication Coverage:

- Major parts of the route, especially on NH 544, have good network coverage from major telecom providers. Some rural parts might have weaker signals or dead zones impacting communication, particularly beyond urban areas.

10. Estimated Emergency Response Times:

- Emergency services have reasonably quick access to the highway due to its connectivity and police patrol presence. However, response times may increase in rural sections of the route or during adverse weather conditions and heavy traffic.

11. Overall Summary of Risk Assessment:

- Overall, the route presents moderate risks predominantly due to traffic congestion and variable weather conditions. The well-maintained highways reduce the risk associated with road infrastructure, although attention is needed for emergency scenarios and rural sections. Adhering to transport regulations and guidelines can mitigate risks associated with hazardous materials. Communication and timely updates about route conditions can further reduce potential hazards for such vehicles.

Truck drivers should be trained to handle varied road conditions, equipped with necessary emergency contact numbers, and aware of alternate routes and local customs for handling hazardous materials. Regular updates on weather and traffic conditions will be crucial for minimizing delays and enhancing safety.

Risk Assessment - Turns

| | Risk Type | Risk Level | Coordinates | Speed Limit |
|----|------------|------------|-------------------------------|-------------|
| 0 | Roundabout | High | 11.38395, 77.89480 | 15 KM/Hr |
| 1 | U-Turn | High | 10.9400073, 77.43922649999999 | 10 KM/Hr |
| 2 | Turn | High | 11.43968, 77.87345 | 15 KM/Hr |
| 3 | Turn | High | 11.44022, 77.87546 | 15 KM/Hr |
| 4 | Turn | Medium | 11.39976, 77.88382 | 30 KM/Hr |
| 5 | Turn | Medium | 11.39690, 77.88852 | 30 KM/Hr |
| 6 | Turn | High | 11.37868, 77.89498 | 15 KM/Hr |
| 7 | Turn | Medium | 11.37857, 77.89473 | 30 KM/Hr |
| 8 | Turn | High | 11.36616, 77.88885 | 15 KM/Hr |
| 9 | Turn | Medium | 11.34067, 77.86347 | 30 KM/Hr |
| 10 | Turn | Medium | 11.33854, 77.86216 | 30 KM/Hr |
| 11 | Turn | Medium | 11.33778, 77.86236 | 30 KM/Hr |
| 12 | Turn | Medium | 11.30952, 77.77587 | 30 KM/Hr |
| 13 | Turn | Medium | 11.30973, 77.76712 | 30 KM/Hr |
| 14 | Turn | High | 11.29490, 77.74685 | 15 KM/Hr |
| 15 | Turn | High | 11.29141, 77.74662 | 15 KM/Hr |
| 16 | Turn | Medium | 11.28844, 77.74319 | 30 KM/Hr |

| | Risk Type | Risk Level | Coordinates | Speed Limit |
|----|------------|------------|--------------------|-------------|
| 17 | Turn | Medium | 11.28573, 77.74281 | 30 KM/Hr |
| 18 | Turn | High | 11.27319, 77.72981 | 15 KM/Hr |
| 19 | Blind Spot | Blind Spot | 11.27330, 77.72715 | 10 KM/Hr |
| 20 | Turn | Medium | 11.23054, 77.71796 | 30 KM/Hr |
| 21 | Turn | Medium | 11.22387, 77.71385 | 30 KM/Hr |
| 22 | Turn | Medium | 11.20776, 77.70916 | 30 KM/Hr |
| 23 | Turn | Medium | 11.15942, 77.70068 | 30 KM/Hr |
| 24 | Turn | Medium | 11.12102, 77.67919 | 30 KM/Hr |
| 25 | Turn | Medium | 11.11932, 77.67786 | 30 KM/Hr |
| 26 | Turn | Medium | 11.11710, 77.67175 | 30 KM/Hr |
| 27 | Turn | Medium | 11.09491, 77.66603 | 30 KM/Hr |
| 28 | Turn | Medium | 11.08296, 77.65857 | 30 KM/Hr |
| 29 | Turn | Medium | 11.06183, 77.63924 | 30 KM/Hr |
| 30 | Turn | High | 11.00826, 77.56962 | 15 KM/Hr |
| 31 | Blind Spot | Blind Spot | 11.00058, 77.56882 | 10 KM/Hr |
| 32 | Turn | High | 11.00172, 77.56268 | 15 KM/Hr |
| 33 | Turn | Medium | 11.00170, 77.56267 | 30 KM/Hr |
| 34 | Turn | Medium | 11.00168, 77.56264 | 30 KM/Hr |
| 35 | Turn | High | 10.97018, 77.42713 | 15 KM/Hr |
| 36 | Turn | Medium | 10.94222, 77.43831 | 30 KM/Hr |
| 37 | Blind Spot | Blind Spot | 10.94001, 77.43923 | 10 KM/Hr |
| 38 | Turn | Medium | 10.94014, 77.43907 | 30 KM/Hr |
| 39 | Turn | Medium | 10.94240, 77.43809 | 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 |

| | type | name | coordinates | speed_limit | risk_level |
|----|----------|----------------------------------|------------------------|-------------|------------|
| 8 | hospital | Tiruchengode Government Hospital | 11.37645, 77.89426 | 30 km/h | Medium |
| 9 | hospital | Tirukumaran Hospitals | 11.3782118, 77.8914933 | 30 km/h | Medium |
| 10 | hospital | Krishna Hospital, Namakkal | 11.3754811, 77.8931817 | 30 km/h | Medium |
| 13 | hospital | Government Hospital | 11.2343326, 77.719226 | 30 km/h | Medium |
| 16 | police | Kangeyam Police Station | 11.0011411, 77.562688 | 30 km/h | Medium |
| 17 | hospital | J K Hospital | 11.0042298, 77.5603345 | 30 km/h | Medium |
| 18 | hospital | Government Hospital, Koduvai | 10.9421891, 77.438567 | 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 |
| 14 | college | Government Arts and Science College, Kangeyam | 11.0626738, 77.636227 | 30 km/h | Medium |
| 15 | school | Carmel Girls Higher Secondary School | 11.0009019, 77.5710182 | 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: U-Turn

Risk Level: High

Speed Limit: 10 KM/Hr

Coordinates: 10.9400073, 77.43922649999999



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.44022, 77.87546



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39976, 77.88382



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39690, 77.88852



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37868, 77.89498



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.37857, 77.89473



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.36616, 77.88885



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.34067, 77.86347



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.33854, 77.86216



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33778, 77.86236



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30952, 77.77587



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30973, 77.76712



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29490, 77.74685



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29141, 77.74662



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28844, 77.74319



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28573, 77.74281



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.27319, 77.72981



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.27330, 77.72715



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23054, 77.71796



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22387, 77.71385



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.20776, 77.70916



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15942, 77.70068



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12102, 77.67919



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11932, 77.67786



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11710, 77.67175



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.09491, 77.66603



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08296, 77.65857



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.06183, 77.63924



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.00826, 77.56962



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.00058, 77.56882



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.00172, 77.56268



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00170, 77.56267



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00168, 77.56264



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.97018, 77.42713



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.94222, 77.43831



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.94001, 77.43923



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.94014, 77.43907



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.94240, 77.43809
