



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to BAAGA FUELS

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

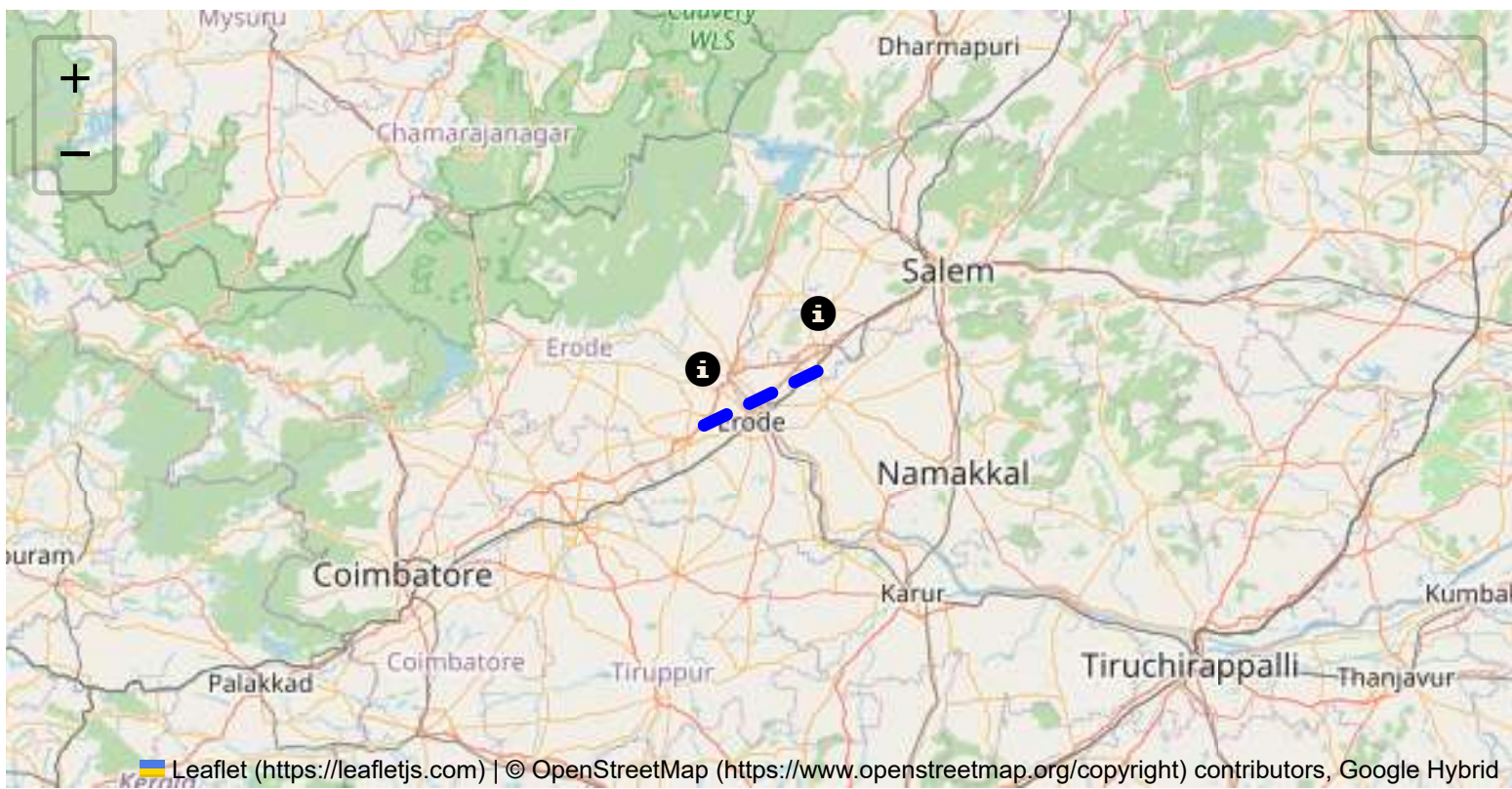
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

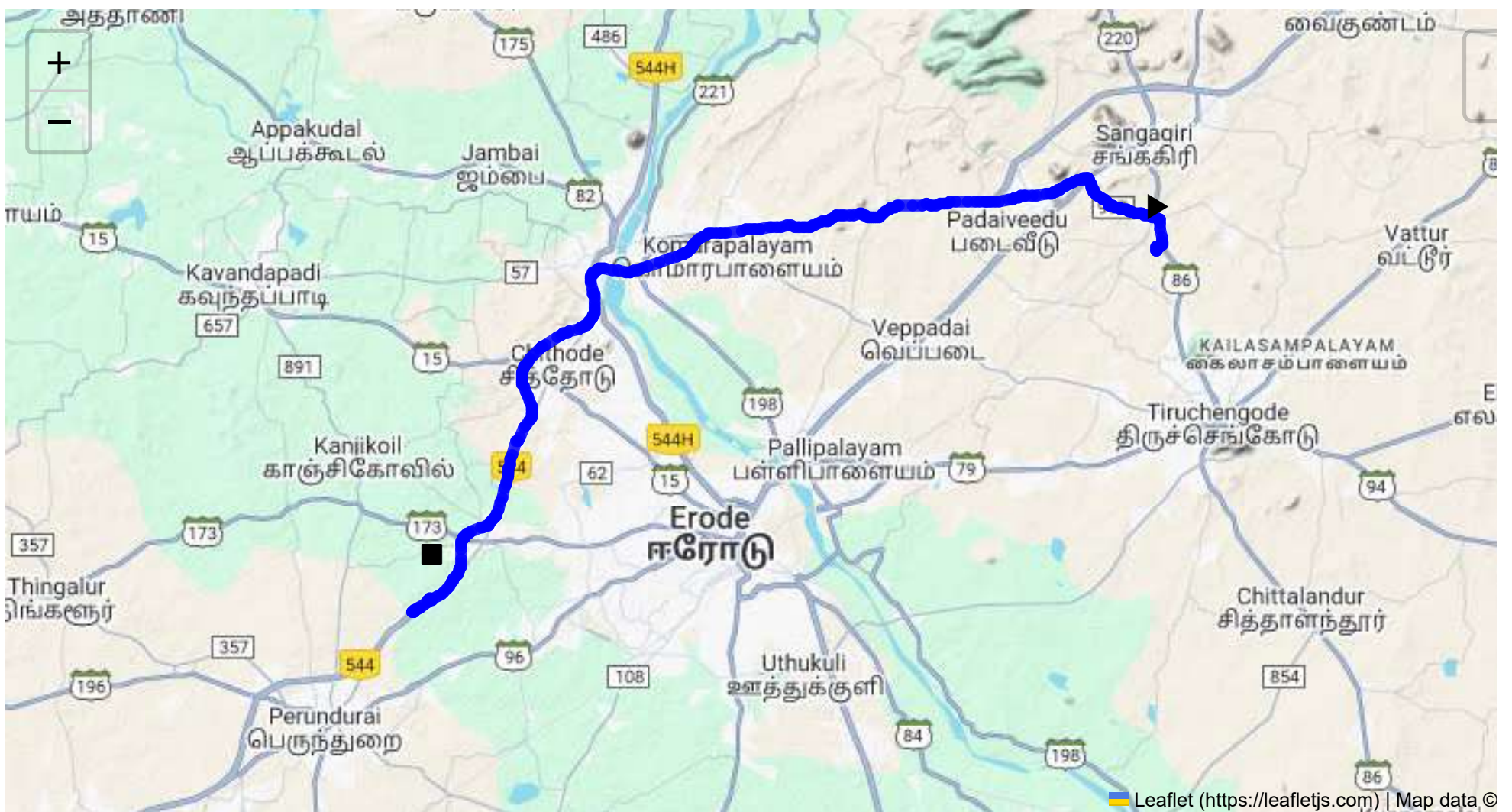
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 41.82 km
Estimated Duration: 0.8 hours
Adjusted Duration (Heavy Vehicle): 1.0 hours
Start: (11.4381, 77.8734)
End: (11.318859, 77.619258)



Welcome to the Journey Risk Management Study

Route Safety Analysis Report

1. Overview of the Route Map

The route from Sangagiri to Nasiyanur spans approximately 41.82 kilometers. The journey begins at Sangagiri, heading northeast via State Highways and eventually joining the NH 544, a major national

highway. The route predominantly covers rural and semi-urban areas, with a final stretch through urban environments near Bhavani and Nasiyanur.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate with variations like:

- **Summer (March to June):** High temperatures (up to 40°C) leading to potential vehicle overheating.
- **Monsoon (July to September):** Heavy rains can cause slippery roads and localized flooding, affecting vehicle handling.
- **Winter (October to February):** Mild and dry but early morning fog may reduce visibility.

3. Traffic Patterns

- **Peak Hours:** Morning (7:30 - 9:30 AM) and Evening (5:00 - 7:00 PM) due to local business and commuter traffic.
- **Congestion-Prone Areas:** Town centers of Bhavani and around market areas. Seasonal activities like festivals could cause additional congestion.

4. Assessment of Road Quality and Infrastructure

- **Rural Sections:** Generally well-maintained but may have narrow stretches and occasional potholes.
- **Urban Sections:** Good road quality but increased traffic signals and pedestrian crossings.
- **Bridges and Overpasses:** Structurally sound but suggest caution during rains.

5. Suggestions for Alternative Routes

In case of an emergency:

- Utilize parallel state highways, although some might add distance.
- Small detours using village roads can bypass congested towns but expect poor quality and navigation challenges.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- **Permits Required:** Ensure compliance with state transport regulations regarding hazardous materials.
- **Time Restrictions:** Transport of hazardous materials might be restricted to non-peak hours.
- **Safety Protocols:** Secure load and appropriate labeling as mandated.

7. Overview of Historical Incidents

- Past records indicate rare incidents, mostly involving vehicle breakdowns or minor spillage due to inadequate load securing.

- No significant accidents involving hazardous materials reported recently.

8. Environmental Considerations and Sensitive Areas

- Flora and Fauna:** The route skirts several agricultural zones; caution is needed to prevent chemical contamination.
- Water Bodies:** Proximity to Cauvery river branches; ensure zero spillage protocols near these areas.

9. Analysis of Communication Coverage

- The route is generally well-covered by major networks, though patches in rural stretches might suffer from weak signals.
- Ensure communication devices are fully charged and alternate contacting methods are available.

10. Estimated Emergency Response Times

- Urban Areas:** Approximately 15-30 minutes given proximity to facilities.
- Rural Areas:** 30-60 minutes, delays possible depending on traffic and weather.

12. Overall Summary of Risk Assessment

The route is moderately safe for transporting hazardous materials with thorough preparation. Pay close attention to weather conditions, ensure compliance with local transport laws, and be prepared for navigation challenges in rural detours. Effective communication and knowledge of emergency protocols enhance safety preparedness.

In conclusion, while there are standard risks associated with the transportation of hazardous materials, adherence to safety regulations and preparedness for environmental conditions will mitigate most challenges along this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	U-Turn	High	11.3141552, 77.6131059	10 KM/Hr
1	Turn	High	11.43811, 77.87348	15 KM/Hr
2	Turn	Medium	11.43956, 77.87340	30 KM/Hr
3	Turn	High	11.43968, 77.87345	15 KM/Hr
4	Turn	High	11.44029, 77.87544	15 KM/Hr
5	Turn	Medium	11.44898, 77.87410	30 KM/Hr
6	Turn	Medium	11.45357, 77.85789	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
7	Turn	Medium	11.45352, 77.85698	30 KM/Hr
8	Turn	Medium	11.46303, 77.84945	30 KM/Hr
9	Turn	Medium	11.46318, 77.84913	30 KM/Hr
10	Turn	High	11.45516, 77.81346	15 KM/Hr
11	Turn	High	11.45521, 77.81343	15 KM/Hr
12	Blind Spot	Blind Spot	11.31416, 77.61311	10 KM/Hr
13	Turn	High	11.31425, 77.61303	15 KM/Hr
14	Blind Spot	Blind Spot	11.31812, 77.61873	10 KM/Hr
15	Blind Spot	Blind Spot	11.31824, 77.61861	10 KM/Hr
16	Blind Spot	Blind Spot	11.31869, 77.61950	10 KM/Hr
17	Turn	High	11.31889, 77.61931	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Government Hospital	11.4525596, 77.7749426	30 km/h	Medium
4	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
5	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
6	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
7	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
9	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
10	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
11	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
12	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
13	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	KRP Matric. Hr. Sec School	11.4546193, 77.8142445	30 km/h	Medium
1	college	Vivekanandha Engineering College	11.4589312, 77.7899284	30 km/h	Medium
2	marketplace	Monday market	11.452863, 77.775989	30 km/h	Medium
8	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: U-Turn

Risk Level: High

Speed Limit: 10 KM/Hr

Coordinates: 11.3141552, 77.6131059



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: 11.45357, 77.85789



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: 11.46303, 77.84945



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46318, 77.84913



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.45516, 77.81346



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45521, 77.81343



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.31416, 77.61311



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.31425, 77.61303



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.31812, 77.61873



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.31824, 77.61861



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.31869, 77.61950



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.31889, 77.61931
