JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SRIVENI 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

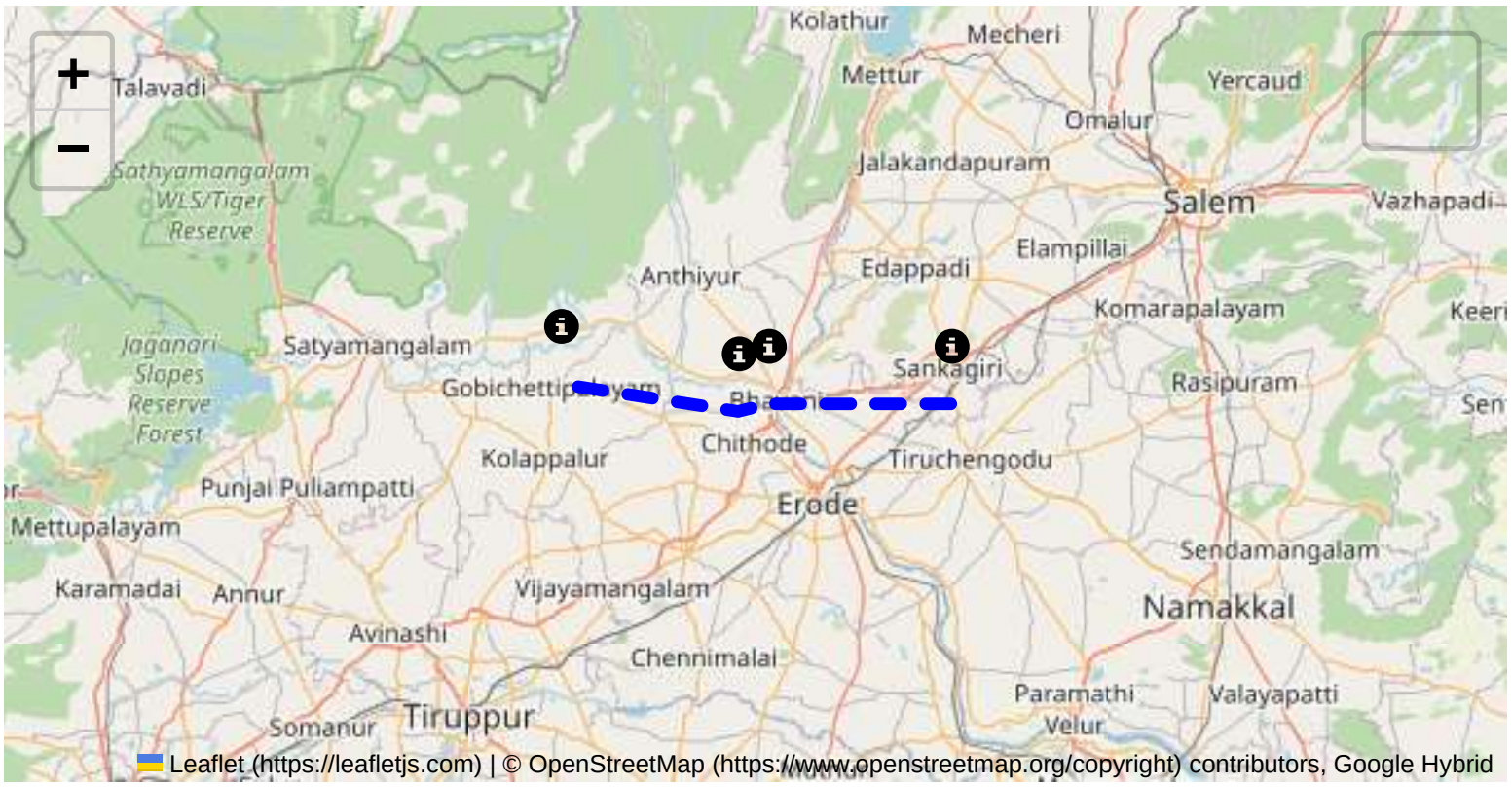
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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: 52.33 km
Estimated Duration: 1.1 hours
Adjusted Duration (Heavy Vehicle): 1.4 hours
Start: (11.4381, 77.8734)
End: (11.459641, 77.445305)

Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route begins in Sangagiri, Tamil Nadu, traverses through Bhavani and Periyapuliyur, and concludes at Gobichettipalayam, covering approximately 52.33 kilometers. The journey primarily follows state highways and local roads, moving through both semi-urban and rural areas. The route includes several turns, junctions, and town crossings.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate with high temperatures from March to June, monsoon rains between June and September, and cooler, drier weather from November to February. During the monsoon season, heavy rains can lead to flooding and reduced road visibility. The dry season might result in dust clouds from unpaved or damaged road sections affecting visibility as well.

3. Analysis of Traffic Patterns

- **Peak Hours:** Traffic congestion is most likely between 8 AM - 10 AM and 5 PM - 7 PM due to local commuting and market activity.
- **Congestion-Prone Areas:** Urban areas, marketplace junctions, Bhavani town crossing, and areas near educational institutions in Gobichettipalayam tend to experience higher traffic density.

4. Assessment of Road Quality and Infrastructure

Road quality varies, with some well-paved sections on the highways and less maintained roads in rural and semi-urban areas. Potential hazards include potholes, narrow roads, and occasional roadwork or construction. Signage may be sparse especially in rural segments, requiring careful navigation.

5. Suggestions for Alternative Routes for Emergencies

An alternative route involves using NH544 to bypass some of the smaller roads, though this may increase travel distance. Local roads towards Erode can provide access to major highways for detours during emergencies.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- Special permits may be required for hazardous materials.
- Time restrictions can be enforced within urban limits, typically during peak hours.
- Weight limitations and route-specific bans may apply on smaller roads or bridges.

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

Historically, there have been instances of overturned transport trucks and minor chemical spills, mostly due to driver error, poor road conditions, or inadequate vehicle maintenance.

8. Environmental Considerations and Sensitive Areas

The route passes near agricultural zones, requiring care to prevent contamination from hazardous material spills. Proximity to water bodies like rivers near Bhavani also necessitates caution to avoid water pollution.

9. Analysis of Communication Coverage

Cellular network coverage can be intermittent in rural segments, especially around Kalingarayanpalayam and Periyapuliyur. Ensure familiarity with alternate communication methods, such as satellite phones or offline GPS devices in dead zones.

10. Estimated Emergency Response Times

- **Near Urban Areas (Sangagiri and Gobichettipalayam):** 15-30 minutes.
- **Rural Areas (Between Bhavani and Periyapuliyur):** 30-60 minutes, depending on exact location and weather conditions.

11. Overall Summary of Risk Assessment

The route combines a mix of well-maintained highways and smaller, occasionally rough roads, presenting hazards from traffic congestion, varying weather conditions, and road quality issues. Comprehensive preparation includes understanding traffic patterns, ensuring vehicle readiness, and being equipped with emergency communication and response contacts. For hazardous material transport, adherence to regulations and emergency preparedness is crucial to mitigate risk.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	Medium	11.43822, 77.87348	30 KM/Hr
1	Turn	High	11.43968, 77.87345	15 KM/Hr
2	Turn	High	11.44029, 77.87544	15 KM/Hr
3	Turn	Medium	11.44898, 77.87410	30 KM/Hr
4	Turn	Medium	11.45357, 77.85789	30 KM/Hr
5	Turn	Medium	11.45352, 77.85698	30 KM/Hr
6	Turn	Medium	11.46048, 77.85036	30 KM/Hr
7	Turn	Medium	11.46303, 77.84945	30 KM/Hr
8	Turn	Medium	11.46318, 77.84913	30 KM/Hr
9	Turn	Medium	11.45509, 77.81383	30 KM/Hr
10	Turn	High	11.43001, 77.67575	15 KM/Hr
11	Turn	Medium	11.43003, 77.67551	30 KM/Hr
12	Turn	High	11.43026, 77.67525	15 KM/Hr
13	Turn	High	11.43099, 77.67543	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
14	Turn	Medium	11.43113, 77.67507	30 KM/Hr
15	Turn	High	11.43596, 77.67365	15 KM/Hr
16	Turn	Medium	11.43600, 77.67354	30 KM/Hr
17	Turn	Medium	11.43441, 77.67066	30 KM/Hr
18	Turn	Medium	11.43430, 77.67060	30 KM/Hr
19	Turn	High	11.43273, 77.67018	15 KM/Hr
20	Turn	Medium	11.43342, 77.66685	30 KM/Hr
21	Turn	Medium	11.43223, 77.65338	30 KM/Hr
22	Turn	High	11.42329, 77.55798	15 KM/Hr
23	Blind Spot	Blind Spot	11.45352, 77.44862	10 KM/Hr
24	Turn	High	11.45941, 77.44704	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
8	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	Velavan Homoeo Clinic	11.4367087, 77.6761472	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
14	hospital	PST Mahaa Hospital	11.4312903, 77.6585751	30 km/h	Medium
15	hospital	Dharun Hospital	11.4223638, 77.5597735	30 km/h	Medium
16	hospital	Dr. Ramaswamy Hospital	11.4249065, 77.5535658	30 km/h	Medium
17	hospital	Dakshin Trauma Centre	11.454593, 77.4461819	30 km/h	Medium
18	hospital	Dakshin Hospital	11.4546301, 77.445905	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
7	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
19	college	P.K.R.Arts College For Women	11.4620658, 77.4480182	30 km/h	Medium

Route Photos of Risky Spots

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: 11.46048, 77.85036

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: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45509, 77.81383

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43001, 77.67575

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43003, 77.67551

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43026, 77.67525

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43099, 77.67543

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43113, 77.67507

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43596, 77.67365

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43600, 77.67354

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43441, 77.67066

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43430, 77.67060

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43273, 77.67018

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43342, 77.66685

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43223, 77.65338

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.42329, 77.55798

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.45352, 77.44862