JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO KMS 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

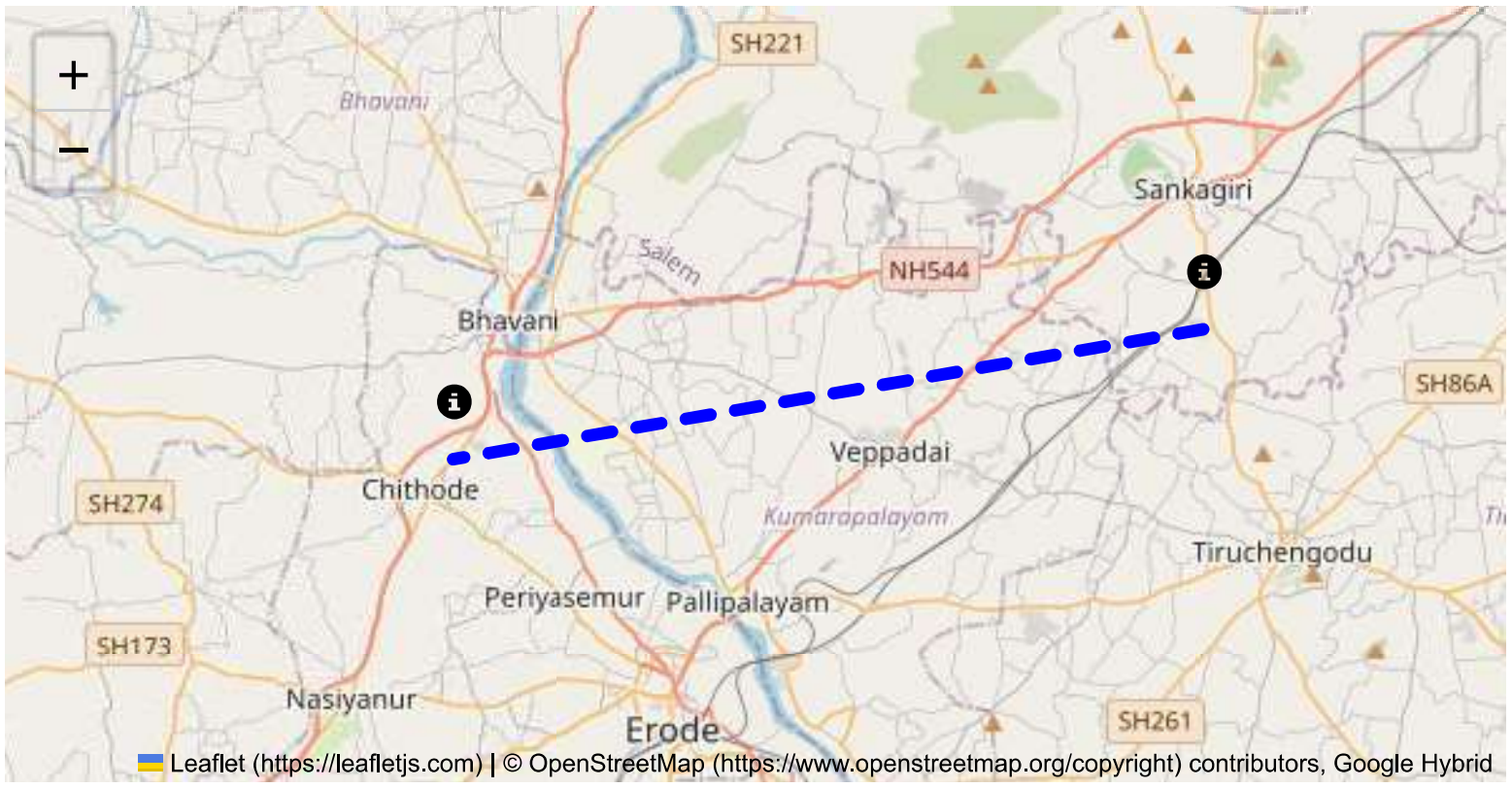
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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: 28.02 km
Estimated Duration: 0.6 hours
Adjusted Duration (Heavy Vehicle): 0.7 hours
Start: (11.4381, 77.8734)
End: (11.403132, 77.667473)

Welcome to the Journey Risk Management Study

Route Overview

The route from Sangagiri (CVQF+23W) to Erode (CM39+62H) in Tamil Nadu, India, spans approximately 28.02 kilometers and typically takes about an hour for heavy vehicles carrying hazardous material. This journey is mainly along state highways, which include well-traveled roads connecting two important regions within Tamil Nadu.

Typical Weather Conditions

The climate in this region is typically hot and humid. Summers (March to June) can see temperatures rising above 40°C, which may cause road surfaces to soften and contribute to wear and tear. The monsoon season (June to September) brings heavy rains that can lead to waterlogging and reduced visibility. During this period, there is also a risk of landslides and slippery surfaces on certain stretches of road, potentially posing hazards to vehicles carrying heavy or hazardous loads.

Traffic Patterns

Traffic typically sees peak hours in the mornings (8 AM to 10 AM) and late afternoons (5 PM to 8 PM), with increased congestion in areas near market towns or industrial complexes. Urban areas and intersections are particularly prone to jams. The route may experience increased traffic at festival times or during local events, affecting transport schedules.

Road Quality and Infrastructure

The road infrastructure here is generally maintained, though some sections may experience potholes and wear due to heavy usage and weather impacts. Signage is generally adequate, but vigilance is required as wildlife crossings and unexpected pedestrian movements are a possibility.

Emergency Alternative Routes

In case of emergency or road blockages, alternative routes through local feeder roads or connecting state highways should be considered. GPS systems can highlight viable detours based on real-time traffic conditions. However, these might add to the travel time and require navigation through narrower paths.

Local Regulations for Hazardous Material Transport

Tamil Nadu mandates strict guidelines for the transport of hazardous materials. These include specific routing, time restrictions, and vehicle specifications. Drivers must possess appropriate licenses, and vehicles must display requisite signage indicating the nature of the cargo.

Historical Incidents

There have been instances of accidents involving heavy and hazardous vehicles in this region. These are often due to speeding, mechanical failures, and inclement weather conditions. Lessons from past incidents stress the importance of proper vehicle maintenance and adherence to speed limits.

Environmental Considerations

Sensitive environmental areas, such as irrigated agricultural lands and local wildlife habitats, are present along the route. Transporters must avoid contamination and emissions impacting these areas. At no point should materials be dumped or leaked, as it could have significant detrimental effects on local ecosystems.

Communication Coverage

Mobile network coverage along this route is generally reliable; however, occasional dead zones may exist, particularly in less urbanized or topographically challenging areas. It is advisable to have alternative communication devices, such as satellite phones, especially for emergency announcements.

Emergency Response Times

Emergency response times can vary due to traffic conditions and the proximity of emergency services facilities. In urban segments, response times may be within 20-30 minutes, whereas more rural sections may see longer times. Pre-establishing contact with local emergency services can help mitigate delays.

Overall Summary of Risk Assessment

The route from Sangagiri to Erode poses moderate risks associated with weather, traffic congestion, and road quality, especially for heavy vehicles carrying hazardous materials. Compliance with regulations, frequent weather updates, and strategic route planning can mitigate these risks. Nevertheless, preparedness for unexpected delays and an awareness of emergency protocols are essential for safe transit.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.43811, 77.87348	15 KM/Hr
1	Turn	Medium	11.43956, 77.87340	30 KM/Hr
2	Turn	Medium	11.43971, 77.87348	30 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	Medium	11.44898, 77.87410	30 KM/Hr
5	Turn	Medium	11.45348, 77.85706	30 KM/Hr
6	Turn	Medium	11.46318, 77.84913	30 KM/Hr
7	Turn	Medium	11.45697, 77.82719	30 KM/Hr
8	Turn	High	11.45516, 77.81346	15 KM/Hr
9	Turn	High	11.45521, 77.81343	15 KM/Hr
10	Turn	Medium	11.43994, 77.71111	30 KM/Hr
11	Turn	Medium	11.43982, 77.71084	30 KM/Hr
12	Turn	Medium	11.41353, 77.67453	30 KM/Hr
13	Turn	Medium	11.41333, 77.67450	30 KM/Hr
14	Turn	High	11.41313, 77.67466	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
15	Turn	Medium	11.40833, 77.67154	30 KM/Hr
16	Turn	Medium	11.40826, 77.67154	30 KM/Hr
17	Blind Spot	Blind Spot	11.40316, 77.66733	10 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

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

	type	name	coordinates	speed_limit	risk_level
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: 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: 11.45348, 77.85706

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: 11.45697, 77.82719

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: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43994, 77.71111

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43982, 77.71084

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.41353, 77.67453

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.41333, 77.67450

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.41313, 77.67466

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.40833, 77.67154

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.40826, 77.67154

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.40316, 77.66733