JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SRI KRISHNA & CO

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.

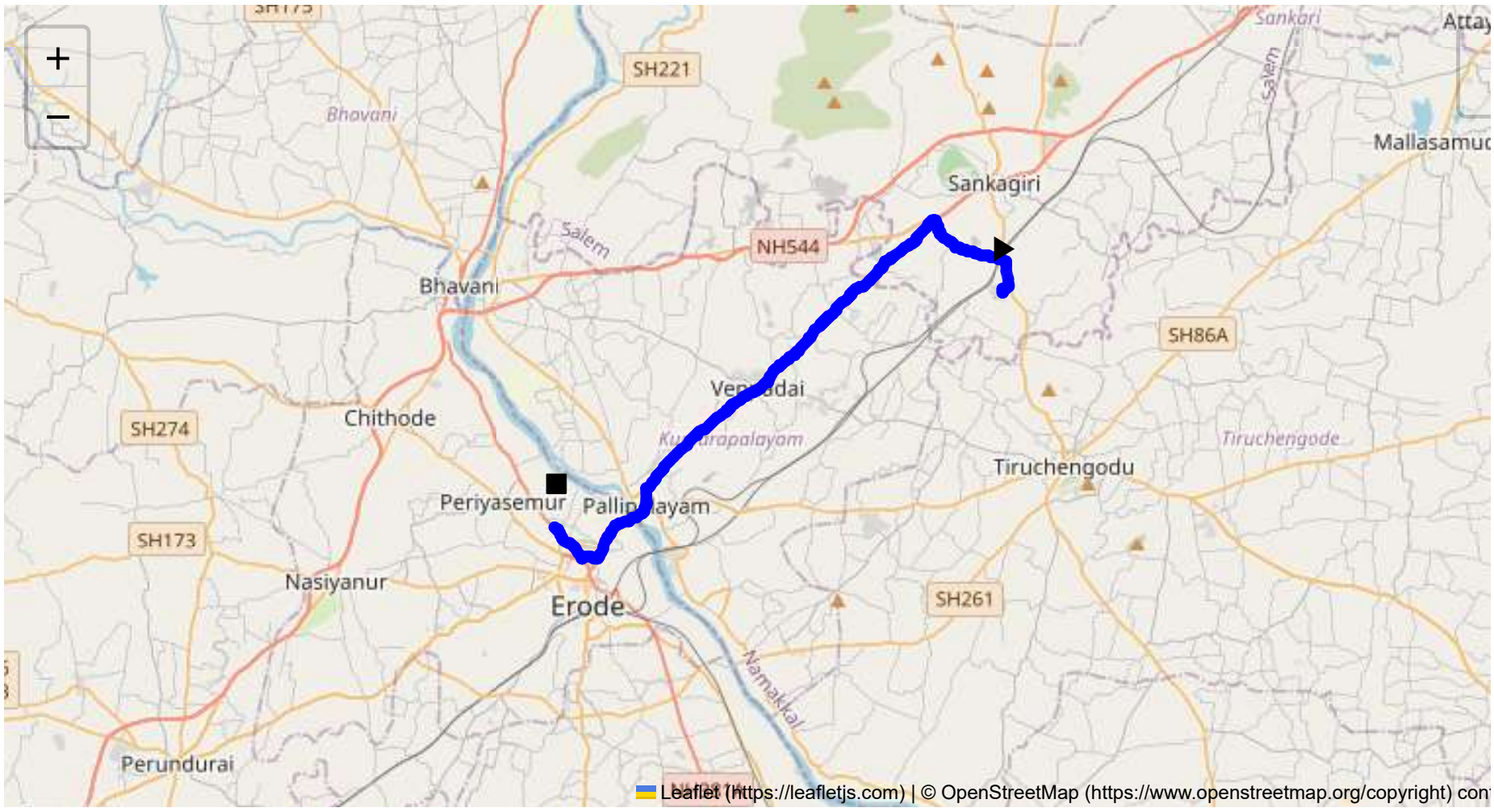
Journey Risk Mitigation

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: 25.80 km
Estimated Duration: 0.7 hours
Adjusted Duration (Heavy Vehicle): 0.8 hours
Start: (11.4381, 77.8734)
End: (11.357722, 77.716057)



Welcome to the Journey Risk Management Study

Route Analysis from Sangagiri to Erode, Tamil Nadu

1. Overview of the Route Map

The route from Sangagiri to Erode primarily follows NH544 and SH79. This 25.80 km journey passes through several small towns and rural areas, providing a direct path suitable for heavy vehicles.

2. Typical Weather Conditions and Potential Weather-Related Hazards

- **Weather Patterns**: The region experiences tropical weather, with hot summers, moderate monsoons, and mild winters.
- **Potential Hazards**: Monsoon season (June to September) can lead to heavy rains and potential flooding, causing slippery roads and reduced visibility. Summer months may result in high temperatures, affecting vehicle performance.

3. Traffic Patterns

- **Peak Hours**: Traffic congestion is most prevalent during morning (8:00 AM - 10:00 AM) and evening (5:00 PM - 7:00 PM) hours due to local commuting and market activity.

- **Congestion-Prone Areas**: Near town centers and junctions, particularly around Erode, where urban traffic increases due to local businesses and market proximity.

4. Assessment of Road Quality and Infrastructure

- **Road Quality**: NH544 is generally well-maintained, but some segments of SH79 may have issues with potholes and uneven surfaces.
- **Infrastructure**: Adequate signage and lane markings are present, but attention must be paid to rural sections where infrastructure may lag.

5. Suggestions for Alternative Routes for Emergencies

In case of roadblocks or severe traffic congestion, taking SH79 entirely or connecting through alternate local roads, like those via Thindal, offers viable detours.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- **Permits Required**: Transport of hazardous materials requires specific permits and adherence to guidelines set by the Tamil Nadu Pollution Control Board.
- **Route Restrictions**: Restricted zones in populated areas may impose time-bound transit permissions, especially during peak hours.

7. Overview of Historical Incidents

The region has a relatively low incidence rate of accidents involving heavy vehicles or hazardous materials, but historical data highlights sporadic incidents owing to human error or adverse weather conditions.

8. Environmental Considerations and Sensitive Areas

- **Environmental Zones**: The route passes through agricultural lands, where spillage can affect crops.
- **Sensitive Areas**: Awareness is crucial near water bodies running parallel or across the route to prevent contamination.

9. Analysis of Communication Coverage

- **Network Coverage**: Mobile network coverage is generally strong along the NH544, but some rural stretches on SH79 may experience weak signals or dead zones.
- **Dead Zones**: Anticipate coverage issues especially in forested areas or valleys.

10. Estimated Emergency Response Times

- Response times vary, with urban regions such as Erode offering faster response (~15-30 minutes), whilst rural sections might see delays (up to 60 minutes).

12. Overall Summary of Risk Assessment

The route presents moderate risk levels, primarily due to potential weather disruptions and infrastructure variability. Close adherence to traffic laws, vigilant driving during adverse weather, and being prepared for detours enhance safety. Pre-planning for communication and knowledge of local emergency contacts is vital.

Continuous updates and monitoring of dynamic factors like weather and traffic through dedicated apps and contact with local transit authorities can aid in risk mitigation. With proper precautions, the route is manageable for heavy vehicles transporting hazardous materials.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 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	11.45348, 77.85706	30 KM/Hr
7	Turn	Medium	11.45352, 77.85698	30 KM/Hr
8	Turn	Medium	11.46318, 77.84913	30 KM/Hr
9	Turn	Medium	11.46312, 77.84886	30 KM/Hr
10	Turn	High	11.34678, 77.73104	15 KM/Hr
11	Turn	High	11.34678, 77.72581	15 KM/Hr

Emergency Locations

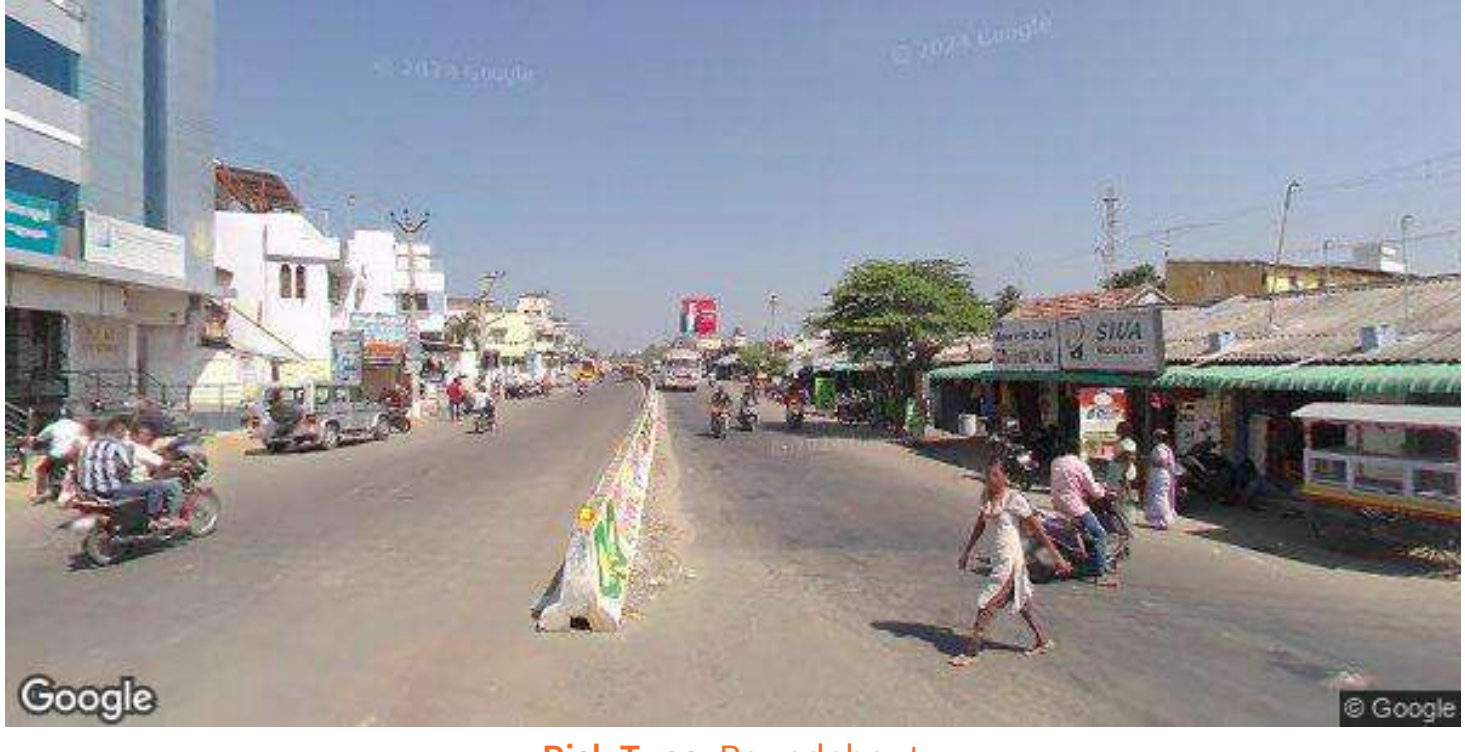
	type	name	coordinates	speed_limit	risk_level
1	hospital	Cheran Hospital	11.3680302, 77.7481976	30 km/h	Medium
2	pharmacy	Pharmacy	11.3652161, 77.7486375	30 km/h	Medium
3	hospital	Sri Kumaran E N T Hospital	11.3657814, 77.7477763	30 km/h	Medium
4	hospital	Sri Krishna Hospital	11.3656648, 77.7477783	30 km/h	Medium
5	hospital	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
6	police	Police Station	11.3630177, 77.7476505	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
7	hospital	Government Hospital	11.3608508, 77.747453	30 km/h	Medium
9	hospital	Sri Hari Sakthivel Hospital	11.3526901, 77.7323055	30 km/h	Medium
10	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
11	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
12	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
13	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
14	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
16	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
17	hospital	City Hospital	11.3451151, 77.7300887	30 km/h	Medium
18	clinic	K.B.N. Nursing Home	11.344835, 77.7310771	30 km/h	Medium
19	hospital	Kaviraj Siddha Hospital	11.347153, 77.720863	30 km/h	Medium
21	hospital	Sreedhareeam Eye Hospital	11.352858, 77.722408	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	Ssri Valliappa Vidhayalayam mat hr school	11.4004878, 77.7794381	30 km/h	Medium
8	marketplace	Weekly Market	11.3605669, 77.7488199	30 km/h	Medium
15	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium
20	school	Siddhartha Matriculation school	11.3519996, 77.7247861	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37086, 77.74828

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

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Risk Type: Turn

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Coordinates: 11.34678, 77.72581