



## **JOURNEY RISK MANAGEMENT (JRM) STUDY**

### **Salem Terminal To SRI GARUDA AGENCY**

#### **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

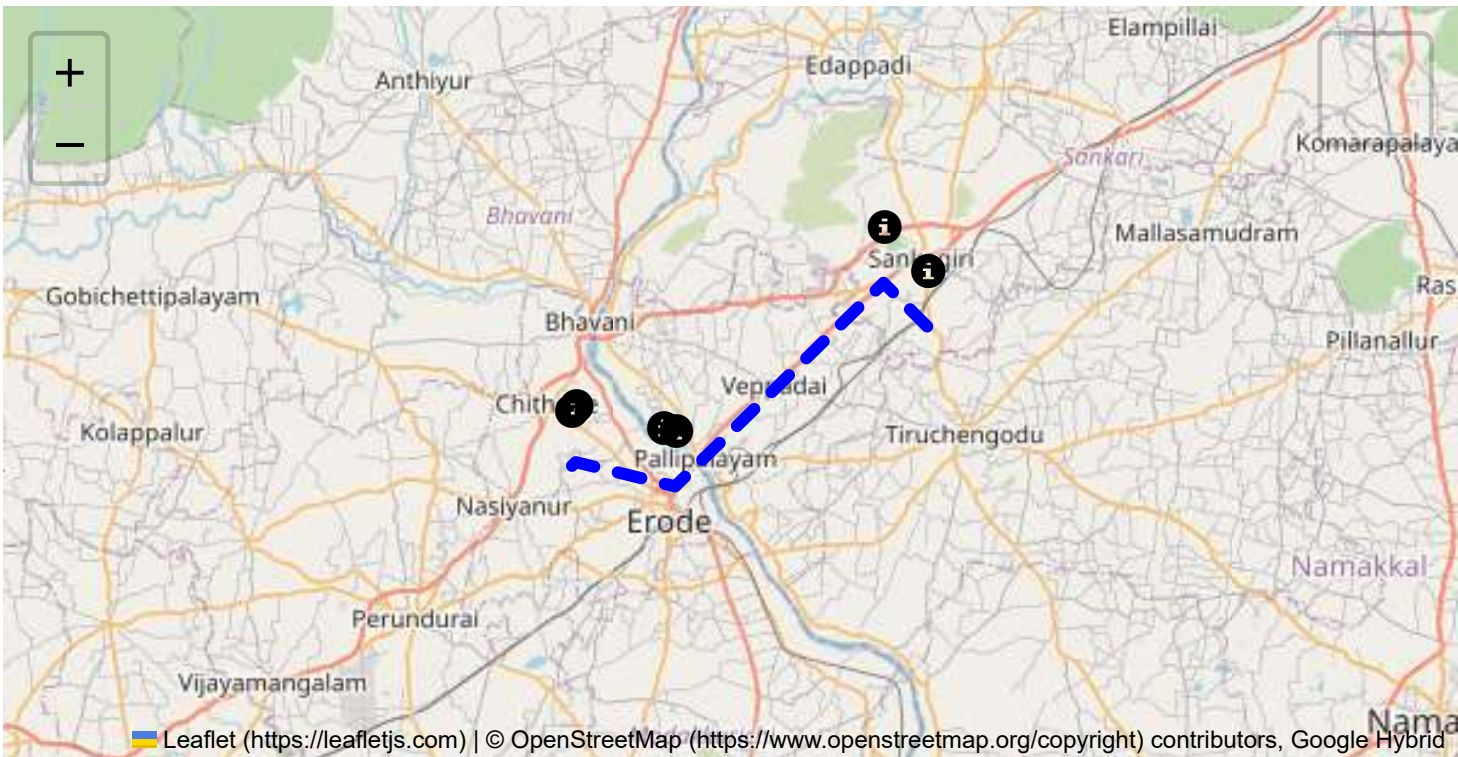
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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: 32.95 km**  
**Estimated Duration: 0.9 hours**  
**Adjusted Duration (Heavy Vehicle): 1.1 hours**  
**Start: (11.4381, 77.8734)**  
**End: (11.3607, 77.672)**



## Welcome to the Journey Risk Management Study

### 1. Overview of the Route Map

The route from Sangagiri to Ellapalayam near Chikkaiah Naicker College covers a distance of about 33 kilometers. It passes through key locations like Sankari West and Erode before reaching Gangapuram. This journey primarily involves highways and urban streets.

### 2. Typical Weather Conditions and Potential Weather-related Hazards

Tamil Nadu generally experiences tropical weather, with the region around Erode and Sangagiri witnessing hot and humid conditions most of the year. The monsoon season occurs from June to September, during which heavy rains can lead to flooding and reduced visibility. Weather-related hazards include slippery roads during rain and potential waterlogging in low-lying areas.

### 3. Traffic Patterns and Congestion-prone Areas

- **Sangagiri:** Moderate traffic, but can become congested during early morning and late afternoon.
- **Sankari West:** Traffic increases around schools and commercial areas, especially during school opening and closing hours.
- **Erode City:** Notoriously congested, particularly on KNK Road. Peak congestion is during morning and evening rush hours.

- **Gangapuram:** Relatively calm with occasional congestion around commercial areas.

## 4. Assessment of Road Quality and Infrastructure

The roads are generally in good condition with well-paved highways. However, urban areas like Erode might have potholes and uneven surfaces, needing careful navigation. Road signage is generally adequate, but caution is recommended around construction zones which may lack clear signs.

## 5. Suggestions for Alternative Routes for Emergencies

In case of roadblocks or emergencies, the following alternatives can be considered:

- Utilize the NH544 for bypassing congested areas in Erode.
- For Gangapuram area, the Erode-Kovilpatti-Sathy Road offers connectivity if access through KNK Road is obstructed.

## 6. Local Regulations Affecting Hazardous Material Transport

Transporting hazardous materials requires adherence to India's Motor Vehicles Act and specific local regulations. Ensure proper licensing, vehicle marking, and material documentation. Some areas may restrict passage during peak hours to minimize urban congestion.

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

The region has witnessed a few incidents involving heavy vehicles, primarily related to brake failures and driver fatigue. However, hazardous material accidents are rare. It is vital to maintain vehicle safety standards and perform regular checks to mitigate risks.

## 8. Environmental Considerations and Sensitive Areas

- **Protected areas:** Be cautious near parks or wildlife sanctuaries; the Erode region has some sensitive ecological zones.
- **Noise regulations:** Urban areas might have restrictions on noise from heavy vehicles; ensure compliance particularly at night.

## 9. Analysis of Communication Coverage

The route primarily has good mobile and internet coverage, with potential spotty connectivity in rural stretches near Sankari West. Emergency communication systems should be verified and alternative communications (e.g., radio systems) checked where mobile coverage is weak.

## 10. Estimated Emergency Response Times

- **Sangagiri to Sankari West:** Approximately 20-30 minutes, given proximity to urban centers.
- **Sankari West to Erode:** Around 30-40 minutes, considering traffic conditions.
- **Erode to Gangapuram:** Typically 15-25 minutes, dependent on urban storm congestion.

# 11. Overall Summary of Risk Assessment

The route presents moderate risks typical of semi-urban areas with some heavy traffic zones. Key risks include traffic congestion, especially in Erode, and potential weather impacts during monsoons. Adherence to hazardous material regulations is critical, and contingency planning is advised for emergencies. Overall, with the right precautions, this route is manageable for transporting hazardous materials.

## Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	U-Turn	High	11.3453211, 77.7304652	10 KM/Hr
2	Turn	High	11.43811, 77.87348	15 KM/Hr
3	Turn	Medium	11.43961, 77.87341	30 KM/Hr
4	Turn	Medium	11.43968, 77.87345	30 KM/Hr
5	Turn	High	11.44029, 77.87544	15 KM/Hr
6	Turn	High	11.45350, 77.85700	15 KM/Hr
7	Turn	Medium	11.46303, 77.84945	30 KM/Hr
8	Turn	Medium	11.46316, 77.84921	30 KM/Hr
9	Turn	Medium	11.46312, 77.84886	30 KM/Hr
10	Turn	High	11.34532, 77.73047	15 KM/Hr
11	Blind Spot	Blind Spot	11.34535, 77.73036	10 KM/Hr
12	Blind Spot	Blind Spot	11.34964, 77.73257	10 KM/Hr
13	Turn	High	11.35072, 77.72261	15 KM/Hr
14	Turn	High	11.37396, 77.70396	15 KM/Hr
15	Turn	Medium	11.37301, 77.70207	30 KM/Hr
16	Turn	Medium	11.37050, 77.70035	30 KM/Hr
17	Blind Spot	Blind Spot	11.36676, 77.69652	10 KM/Hr
18	Turn	High	11.36638, 77.69678	15 KM/Hr
19	Turn	Medium	11.36067, 77.67336	30 KM/Hr
20	Blind Spot	Blind Spot	11.36054, 77.67198	10 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
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	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
12	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
13	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
15	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	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	clinic	Kpn Nursing Home	11.3437022, 77.7304525	30 km/h	Medium
20	hospital	Milan Hospital	11.343591, 77.733182	30 km/h	Medium
21	hospital	Roja Hospital	11.3509181, 77.7282478	30 km/h	Medium
23	hospital	Sreedhareeam Eye Hospital	11.352858, 77.722408	30 km/h	Medium
24	hospital	Christhu Jothi Hospital	11.364103, 77.7098785	30 km/h	Medium
25	hospital	Shifa Free Hospital	11.3683589, 77.7070167	30 km/h	Medium
26	hospital	Government Hospital	11.371101, 77.703436	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
14	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium



	type	name	coordinates	speed_limit	risk_level
22	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:** U-Turn

**Risk Level:** High

**Speed Limit:** 10 KM/Hr

**Coordinates:** 11.3453211, 77.7304652





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.44029, 77.87544



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.45350, 77.85700



**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: 11.46316, 77.84921**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.46312, 77.84886**





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.34532, 77.73047



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot

**Speed Limit:** 10 KM/Hr

**Coordinates:** 11.34535, 77.73036



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot



Speed Limit: 10 KM/Hr

Coordinates: 11.34964, 77.73257



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.35072, 77.72261



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37396, 77.70396





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.37301, 77.70207



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.37050, 77.70035



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot



**Speed Limit: 10 KM/Hr**

**Coordinates: 11.36676, 77.69652**



**Risk Type: Turn**

**Risk Level: High**

**Speed Limit: 15 KM/Hr**

**Coordinates: 11.36638, 77.69678**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.36067, 77.67336**



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot

**Speed Limit:** 10 KM/Hr

**Coordinates:** 11.36054, 77.67198

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