JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal ToSREE PARANI AGENCIES

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.

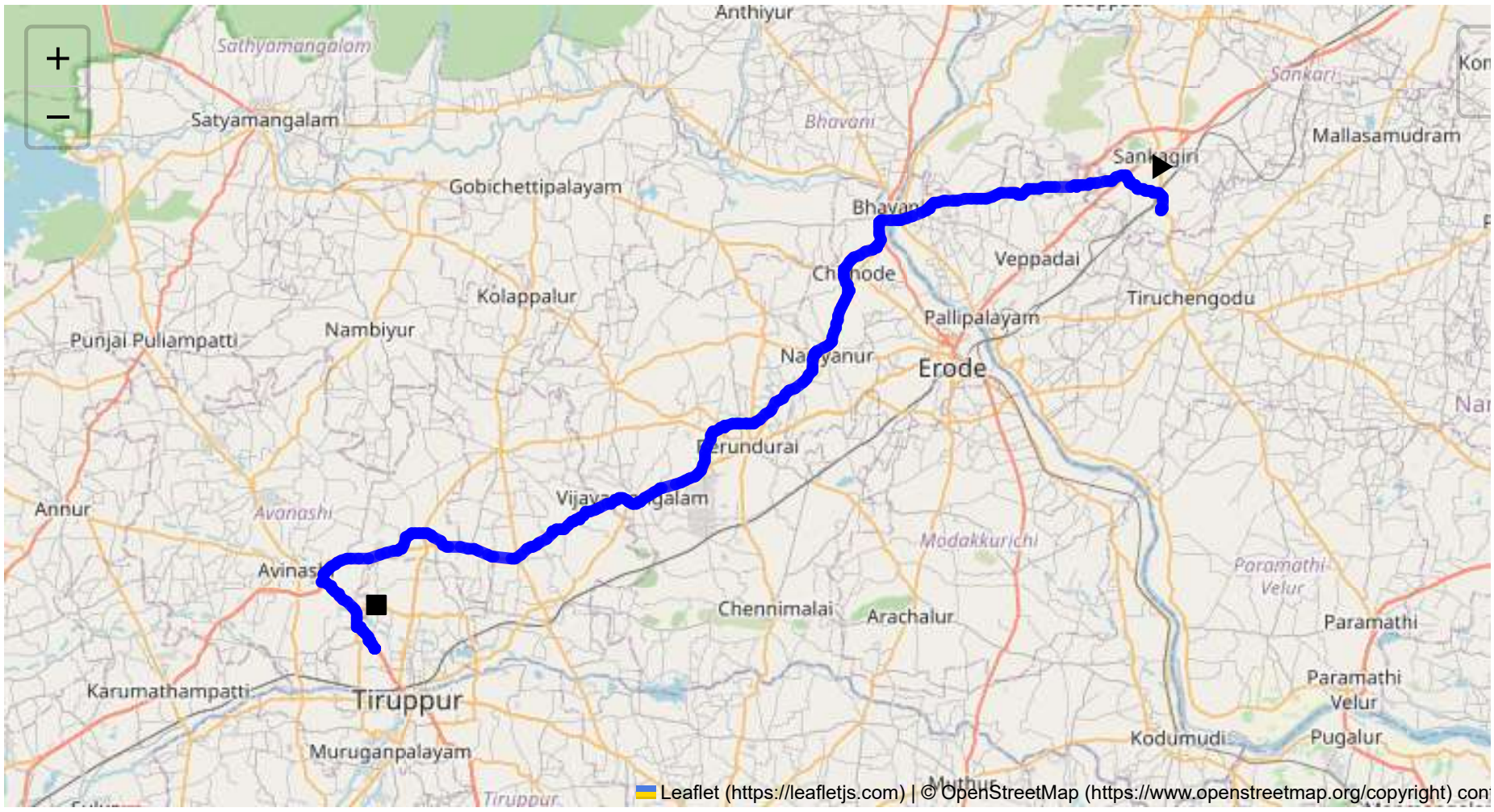
Journey Risk Mitigation

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: 91.48 km
Estimated Duration: 1.7 hours
Adjusted Duration (Heavy Vehicle): 2.2 hours
Start: (11.4381, 77.8734)
End: (11.136761, 77.321558)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The specified route starts from Sangagiri, passing through Sangagiri on SH 79A, Bhavani, Thiruvengadam Palayam Pudhur, Avinashilingampalayam, and finally reaching Tiruppur. It covers approximately 91.48 kilometers and takes about 1.72 hours for heavy vehicles. The route primarily follows state highways and local roads.

2. Typical Weather Conditions and Potential Weather-Related Hazards

- **Weather Conditions:** Tamil Nadu typically experiences a tropical climate. Summers (March to June) are hot, with temperatures reaching up to 40°C. The monsoon season from June to September can bring heavy rainfall, sometimes causing floods. Winters (November to January) are mild.
- **Weather-Related Hazards:** During the monsoon, waterlogging and reduced visibility can be significant issues. In summer, overheating of vehicles might be a concern.

3. Analysis of Traffic Patterns

- **Peak Hours:** Typically, peak traffic hours are in the morning (8 AM to 10 AM) and evening (5 PM to 7 PM).

- **Congestion-Prone Areas:** Traffic congestion is common in urban centers like Bhavani and areas near Avinashi. Industrial activities in these regions contribute to higher vehicular movements, particularly during peak hours.

4. Assessment of Road Quality and Infrastructure

The road infrastructure along this route is a mix of well-maintained highways and narrow local roads. State highways such as SH 79A are generally in good condition but might have periodic maintenance work. Local roads may have uneven surfaces, potholes, and minimal lighting.

5. Suggestions for Alternative Routes for Emergencies

Alternative routes can be considered via:

- SH 168 from Bhavani to Tiruppur, bypassing the central areas of Avinashi for avoiding congestion.
- Utilize bypass roads around Kalingarayanpalayam to divert from heavy traffic zones.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Heavy vehicles carrying hazardous materials need to adhere to specific time restrictions, with permits required for certain areas. Night driving restrictions and designated routes for such materials may apply.

7. Overview of Historical Incidents

There have been occasional incidents involving heavy vehicles, particularly during the monsoon season when roads may be slippery. There are no significant records of hazardous materials incidents, but vigilance is necessary.

8. Environmental Considerations and Sensitive Areas

The route passes near several agricultural lands and small water bodies, requiring caution to prevent contamination. Noise and air pollution regulations are enforced in dense populated areas, particularly near Avinashi.

9. Analysis of Communication Coverage

Most sections of the route have reliable mobile network coverage. However, certain rural stretches between Bhavani and Thiruvengadam Palayam Pudhur may experience brief dead zones.

10. Estimated Emergency Response Times

- **Urban Areas (Sangagiri, Bhavani, Avinashi):** Emergency response typically ranges from 15 to 30 minutes.
- **Rural Areas:** Response times can extend from 30 minutes to an hour, owing to distance and accessibility challenges.

12. Overall Summary of Risk Assessment

The route carries moderate risk due to its mixture of urban and rural areas, weather conditions, and traffic congestion. Regular monitoring of weather forecasts, adherence to traffic laws, and maintaining communication with emergency services can mitigate risks. Proper alternate route planning and adherence to hazardous materials transport regulations are crucial for a safer journey.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	U-Turn	High	11.1365755, 77.3224245	10 KM/Hr
1	Turn	High	11.43961, 77.87341	15 KM/Hr
2	Turn	High	11.44029, 77.87544	15 KM/Hr
3	Turn	High	11.44893, 77.87413	15 KM/Hr
4	Turn	Medium	11.45127, 77.86734	30 KM/Hr
5	Turn	High	11.45350, 77.85700	15 KM/Hr
6	Turn	Medium	11.45845, 77.85141	30 KM/Hr
7	Turn	Medium	11.45889, 77.85136	30 KM/Hr
8	Turn	High	11.46303, 77.84945	15 KM/Hr
9	Turn	Medium	11.46317, 77.84906	30 KM/Hr
10	Turn	Medium	11.43175, 77.67757	30 KM/Hr
11	Turn	Medium	11.29141, 77.58266	30 KM/Hr
12	Turn	High	11.18267, 77.28532	15 KM/Hr
13	Turn	Medium	11.18242, 77.28553	30 KM/Hr
14	Turn	Medium	11.16527, 77.30700	30 KM/Hr
15	Turn	Medium	11.16093, 77.30955	30 KM/Hr
16	Turn	High	11.15180, 77.30889	15 KM/Hr
17	Turn	Medium	11.15175, 77.31121	30 KM/Hr
18	Blind Spot	Blind Spot	11.13653, 77.32237	10 KM/Hr
19	Turn	High	11.13664, 77.32220	15 KM/Hr
20	Turn	High	11.13629, 77.32186	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
4	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
5	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
6	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
8	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
9	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
10	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
11	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
12	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
14	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
16	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
17	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
18	hospital	Dr. N Viswanathan Hospital	11.2412783, 77.5005502	30 km/h	Medium
19	clinic	P.M. Clinic	11.2281078, 77.4647296	30 km/h	Medium
21	hospital	Sri Renu Hospital	11.1990225, 77.4219937	30 km/h	Medium
22	hospital	Niranjana Hospital Anupparpalayam,Tiruppur	11.1363086, 77.3200071	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

	type	name	coordinates	speed_limit	risk_level
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
13	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium
15	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
20	marketplace	Weekly Market (sandhai)	11.2287229, 77.4646676	30 km/h	Medium

Route Photos of Risky Spots

Risk Type: U-Turn

Risk Level: High

Speed Limit: 10 KM/Hr

Coordinates: 11.1365755, 77.3224245

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: 11.44893, 77.87413

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45127, 77.86734

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: 11.45845, 77.85141

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45889, 77.85136

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.46303, 77.84945

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46317, 77.84906

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43175, 77.67757

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29141, 77.58266

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.18267, 77.28532

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18242, 77.28553

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16527, 77.30700

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16093, 77.30955

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15180, 77.30889

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15175, 77.31121

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

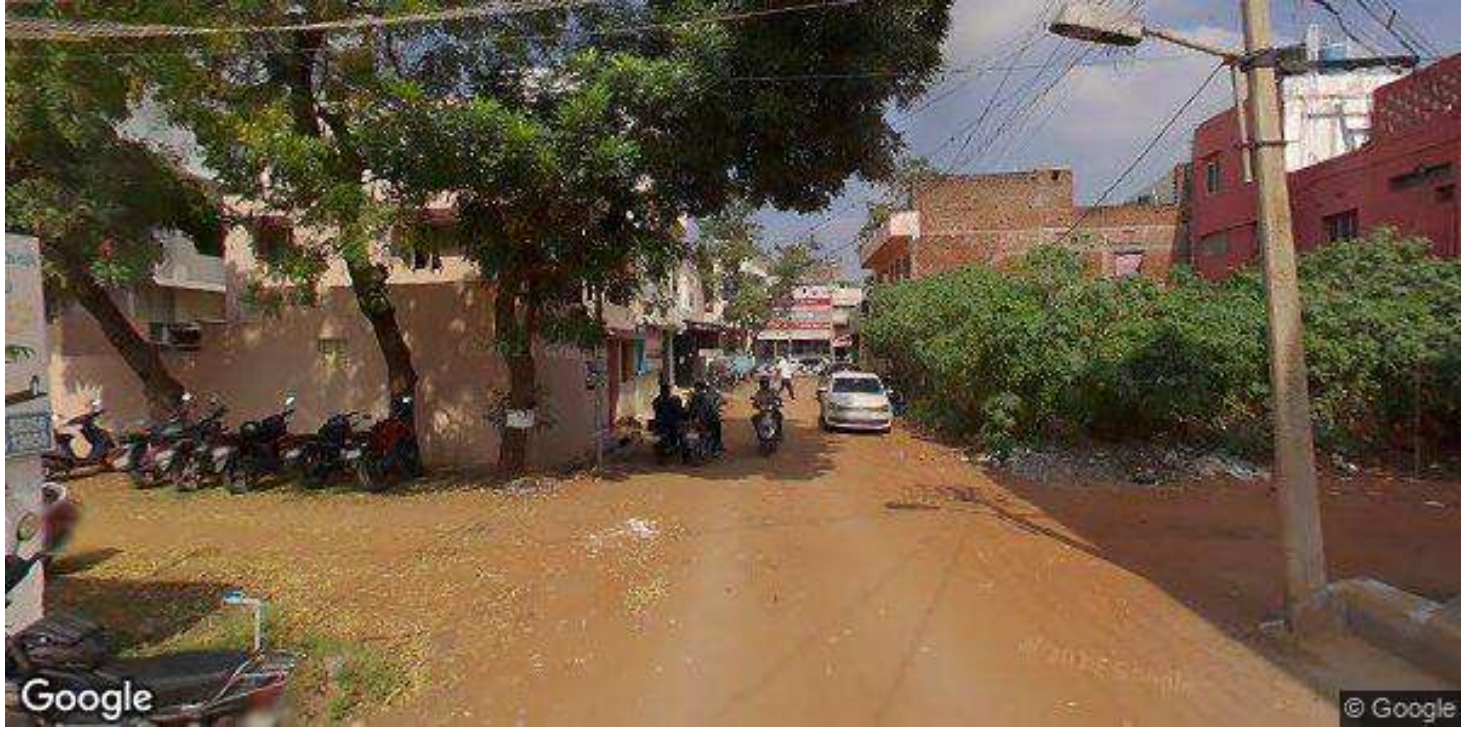
Coordinates: 11.13653, 77.32237

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.13664, 77.32220



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.13629, 77.32186