JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO KUMAR 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

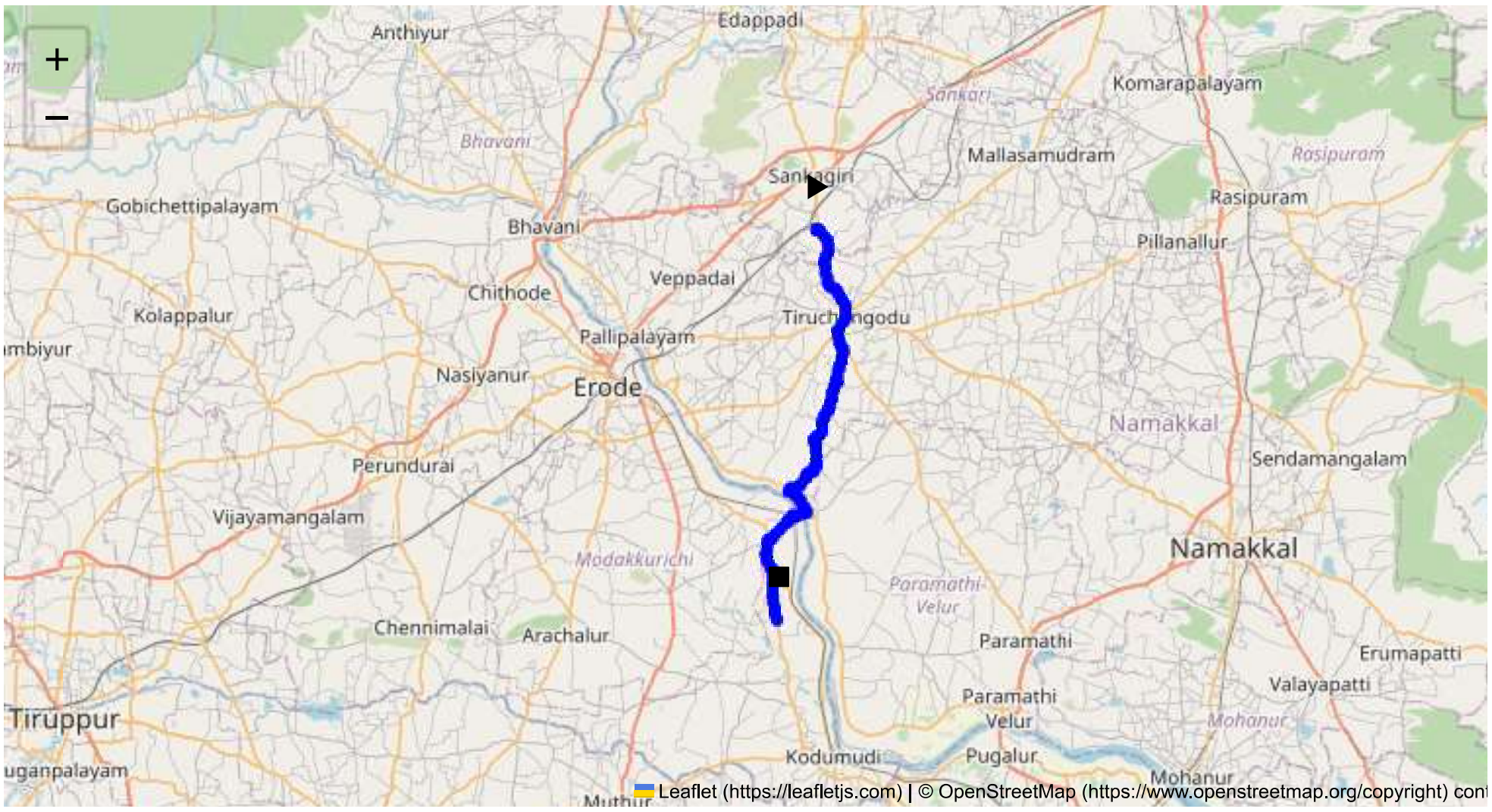
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 35.97 km
Estimated Duration: 0.9 hours
Adjusted Duration (Heavy Vehicle): 1.2 hours
Start: (11.4381, 77.8734)
End: (11.1684, 77.84604)



Welcome to the Journey Risk Management Study

Route Safety Analysis

1. Overview of the Route Map: The route from CVQF+23W, Sangagiri to 5R9W+9C Velappampalayam in Tamil Nadu spans approximately 35.97 kilometers. It typically follows regional roads, including state highways and rural connectors, with relatively straightforward paths and few major intersections. The typical travel time for heavy vehicles is around 55 minutes.

2. Typical Weather Conditions and Potential Weather-Related Hazards: Tamil Nadu generally experiences a tropical climate, with high temperatures and humidity throughout the year. Potential weather hazards include:

- **Monsoon season (June to September):** Heavy rainfall can cause flooding and reduced visibility, impacting driving conditions.
- **Cyclones and heavy storms:** Rare but can severely disrupt routes, leading to road closures or detours.
- **Summer heat (March to May):** Extreme temperatures can affect vehicle performance and tire conditions.

3. Traffic Patterns:

- **Peak Hours:** Typically, morning hours (8:00 AM to 10:00 AM) and evening hours (5:00 PM to 7:00 PM) witness increased traffic due to commuter movements.
- **Congestion-Prone Areas:** Town centers and intersections with state highways are notable bottlenecks, particularly around local businesses and schools.

4. Assessment of Road Quality and Infrastructure:

- **Road Quality:** Varies from moderate to decent. The main highways are relatively well-maintained, but some rural roads may be worn or uneven, requiring caution.
- **Infrastructure:** Some stretches may lack proper signage or lighting, especially in rural areas.

5. Suggestions for Alternative Routes for Emergencies:

- State Highway 20 (NH-44) runs parallel to some sections and can serve as an alternative. Always cross-check real-time traffic updates and weather conditions before switching routes.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Vehicles transporting hazardous materials must adhere to specific routes and timing restrictions, primarily avoiding residential and densely populated areas.
- Necessary permits and safety equipment checks are mandatory before transit.

7. Overview of Historical Incidents: While specific data may vary, the region has seen occasional truck-related incidents due to driver fatigue and mechanical failures. Hazardous material spills are rare but have highlighted the need for rigorous checks and adherence to safety protocols.

8. Environmental Considerations and Sensitive Areas:

- Agricultural zones: Drivers should be cautious around farmland to prevent spills.
- Proximity to water bodies: Requires additional caution as accidents could impact local ecosystems.

9. Analysis of Communication Coverage:

- Generally good coverage along major highways and urban centers.
- Potential dead zones in rural and less populated stretches; drivers should plan communication checks accordingly.

10. Estimated Emergency Response Times for Different Route Segments:

- Urban areas and along major highways: 30-45 minutes.
- Rural stretches: 60-90 minutes, depending on accessibility and road conditions.

11. Overall Summary of Risk Assessment: While the route is relatively short, it demands careful attention to weather conditions, road quality, and peak-hour traffic. Regulations regarding hazardous material transport must be strictly followed to mitigate risks. Preparation for communication challenges and emergency scenarios is crucial, especially in rural segments. Continuous monitoring and route planning based on real-time data are recommended for enhanced safety.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	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	Blind Spot	Blind Spot	11.44029, 77.87544	10 KM/Hr
5	Turn	High	11.37868, 77.89498	15 KM/Hr
6	Turn	High	11.37850, 77.89453	15 KM/Hr
7	Turn	Medium	11.35759, 77.89191	30 KM/Hr
8	Turn	Medium	11.33071, 77.88660	30 KM/Hr
9	Turn	High	11.33065, 77.88650	15 KM/Hr
10	Turn	Medium	11.32155, 77.88499	30 KM/Hr
11	Turn	Medium	11.32130, 77.88484	30 KM/Hr
12	Turn	Medium	11.31205, 77.88131	30 KM/Hr
13	Turn	Medium	11.31151, 77.88008	30 KM/Hr
14	Turn	Medium	11.30805, 77.87934	30 KM/Hr
15	Turn	High	11.29763, 77.87710	15 KM/Hr
16	Turn	High	11.29668, 77.87515	15 KM/Hr
17	Turn	Medium	11.29620, 77.87503	30 KM/Hr
18	Turn	High	11.29585, 77.87457	15 KM/Hr
19	Turn	High	11.29549, 77.87464	15 KM/Hr
20	Turn	Medium	11.27590, 77.87354	30 KM/Hr
21	Turn	Medium	11.27057, 77.86827	30 KM/Hr
22	Turn	High	11.26017, 77.85606	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
23	Turn	High	11.25802, 77.85511	15 KM/Hr
24	Turn	High	11.24384, 77.86689	15 KM/Hr
25	Turn	High	11.24100, 77.86030	15 KM/Hr
26	Turn	High	11.22377, 77.83980	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Tiruchengode, Goverment Hospital	11.3903328, 77.8920627	30 km/h	Medium
1	hospital	SPM Medical Centre,Tiruchengode	11.3881331, 77.8931963	30 km/h	Medium
5	hospital	T.C.A Hospital Tiruchengode	11.3791885, 77.8965774	30 km/h	Medium
6	hospital	Soorya Multispecialty Hospital	11.3786429, 77.8931912	30 km/h	Medium
7	clinic	Kongu Nursing Home	11.3783065, 77.8961134	30 km/h	Medium
8	hospital	Tiruchengode Government Hospital	11.37645, 77.89426	30 km/h	Medium
9	hospital	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
10	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
13	police	கரட்டுப்பாளையம் காவல் நிலையம்	11.357586, 77.8922539	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
2	school	அரசு ஆண்கள் மேல்நிலைப் பள்ளி	11.3850439, 77.8948279	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
3	school	அரசு பெண்கள் மேல்நிலைப் பள்ளி	11.3844247, 77.8949053	30 km/h	Medium
4	marketplace	திருச்செங்கோடு தினசரி காய்கறி சந்தை	11.3833608, 77.8970145	30 km/h	Medium
11	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
12	school	MDV School	11.3719843, 77.8915244	30 km/h	Medium

Route Photos of Risky Spots

Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.38395, 77.89480

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.44029, 77.87544

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37868, 77.89498

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37850, 77.89453

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.35759, 77.89191

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33071, 77.88660

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.33065, 77.88650

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32155, 77.88499

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32130, 77.88484

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31205, 77.88131

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31151, 77.88008

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30805, 77.87934

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29763, 77.87710

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27590, 77.87354

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27057, 77.86827

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.26017, 77.85606

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.25802, 77.85511

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24384, 77.86689

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24100, 77.86030

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.22377, 77.83980