JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO EDCCWS ERODE RING ROAD

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

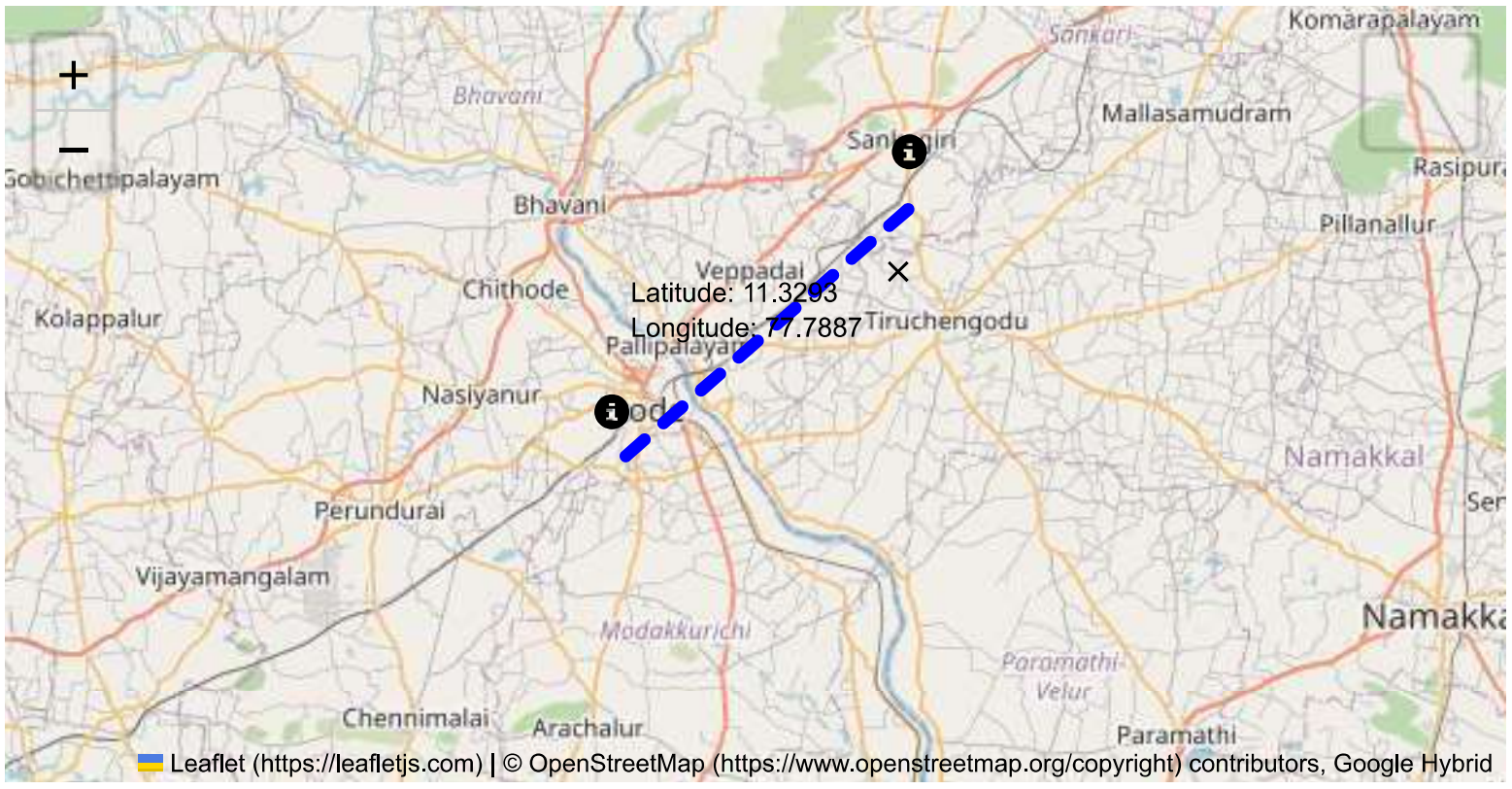
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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.

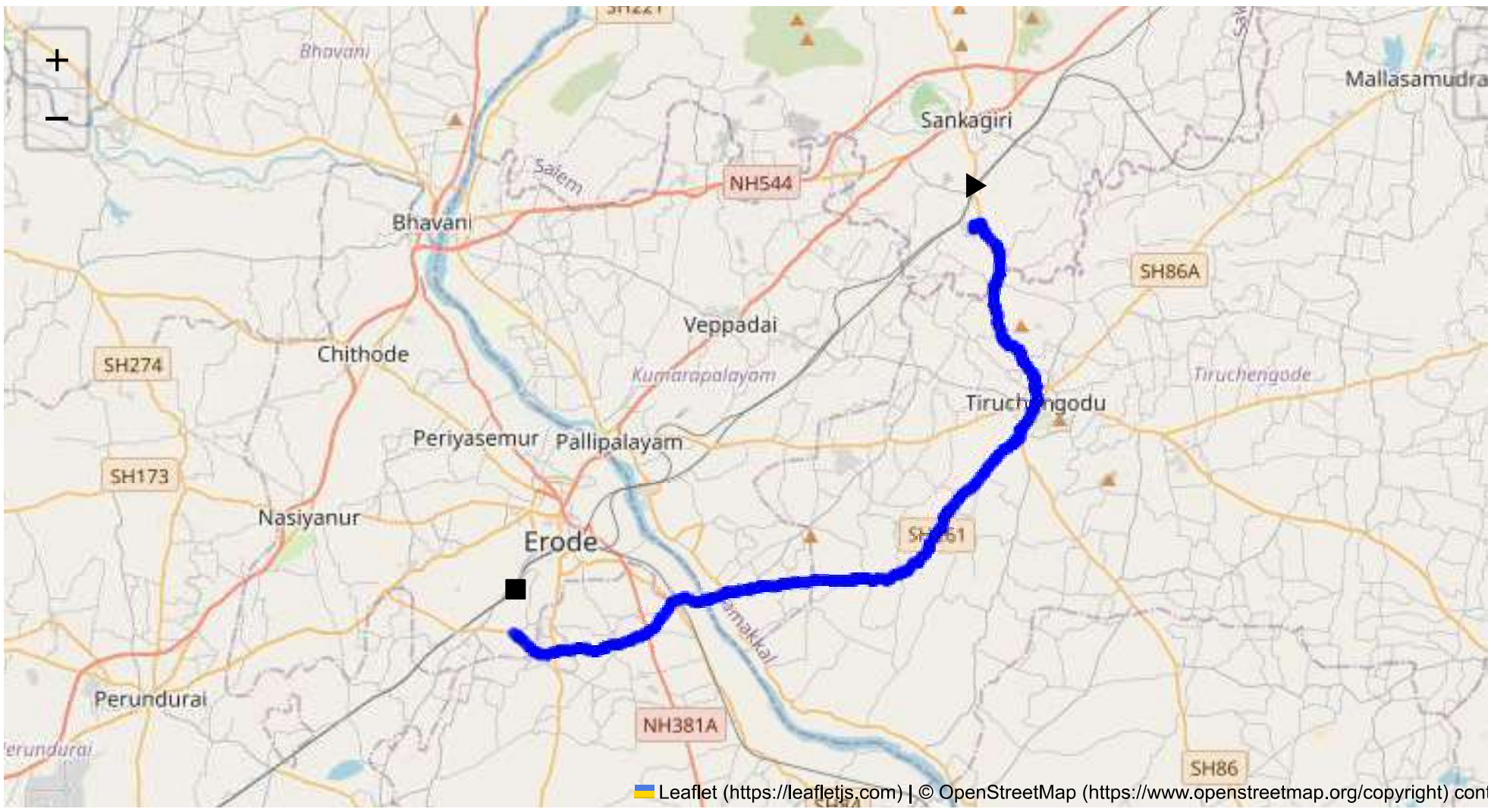
Compliance with Government Directives

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: 32.88 km
Estimated Duration: 0.9 hours
Adjusted Duration (Heavy Vehicle): 1.1 hours
Start: (11.4381, 77.8734)
End: (11.2986664, 77.7108153)



Welcome to the Journey Risk Management Study

To perform a comprehensive analysis of the route from Sangagiri to Periyasadayampalayam Lake in Tamil Nadu, let us break down each requested point.

1. **Overview of the Route Map:**
    - This route connects Sangagiri to Periyasadayampalayam Lake via Erode, primarily covering rural roads with sections of state highways. The drive is approximately 32.88 kilometers and typically

takes about 50 minutes for heavy vehicles carrying hazardous materials, depending on traffic and weather conditions.

2. **Typical Weather Conditions and Potential Weather-Related Hazards:**
    - Tamil Nadu generally experiences a tropical climate with hot summers and mild winters. Peak monsoon season is from October to December, with the potential for heavy rains leading to waterlogged roads and reduced visibility. Drivers should be prepared for sudden rainfall and ensure vehicles are outfitted with effective wipers and lights.
3. **Analysis of Traffic Patterns:**
    - Traffic in this region is typically light to moderate. Congestion may occur around Erode, especially during morning and evening peak hours (8-10 AM and 5-7 PM) due to local businesses and marketplaces. Highways may experience increased traffic on weekends or holidays.
4. **Assessment of Road Quality and Infrastructure:**
    - The roads are generally in fair condition with some sections that may exhibit potholes or uneven surfaces, especially following monsoon rains. Regular maintenance checks on the vehicle are advised. Signage and road markings should be monitored for clarity, as rural roads may have less distinct markings.
5. **Suggestions for Alternative Routes for Emergencies:**
    - In case of an obstruction on the main route, alternative paths through local village roads can be considered, though they may not be suitable for heavy vehicles due to narrow paths and lower-grade road conditions. It is advisable to plan for urban detours through Erode if needed.
6. **Summary of Local Regulations Affecting Hazardous Material Transport:**
    - Transport of hazardous materials through Tamil Nadu requires adherence to national safety regulations, including appropriate placarding, documentation, and route plans. The driver must also comply with any local permits or checks at state borders or toll booths.
7. **Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials:**
    - Historical data indicates a moderate frequency of road incidents involving heavy vehicles in the area, mainly from driver error or mechanical failure rather than hazardous material spills. It highlights the importance of driver training and vehicle maintenance.
8. **Environmental Considerations and Sensitive Areas:**
    - The route passes through areas with agricultural and small water bodies, which could be sensitive to chemical spills. Drivers should be made aware of the environmental impact and reporting procedures in case of spillage.
9. **Analysis of Communication Coverage:**
    - Network coverage is generally reliable throughout most of the route, with potential dead zones in more remote areas. It is advisable to have secondary communication devices or offline navigation tools.
10. **Estimated Emergency Response Times for Different Route Segments:**
    - Emergency response times can vary, ranging from 20 to 40 minutes depending on proximity to Erode, where emergency services are more centrally located. Local villages may require longer

response times due to their rural nature.

11. **Overall Summary of Risk Assessment:**

    - The route presents a moderate level of risk associated with typical rural and suburban travel with added considerations for heavy and hazardous carriages. Preparations should include weather readiness, awareness of high-traffic areas, communication alternatives, and robust vehicle checks. Adherence to local and national transport regulations should mitigate many risks, though environmental sensitivity remains an important consideration.

In conclusion, the successful navigation of this route requires careful planning, consistent communication, and strict adherence to safety protocols to manage the juxtaposition of rural roads and urban congestion effectively.

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	High	11.36604, 77.88887	15 KM/Hr
8	Turn	Medium	11.33882, 77.86218	30 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

	type	name	coordinates	speed_limit	risk_level
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

Crowded Spots

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

Speed Limit: 15 KM/Hr

Coordinates: 11.36604, 77.88887

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33882, 77.86218