JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to Annur Lorry Owners Association

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

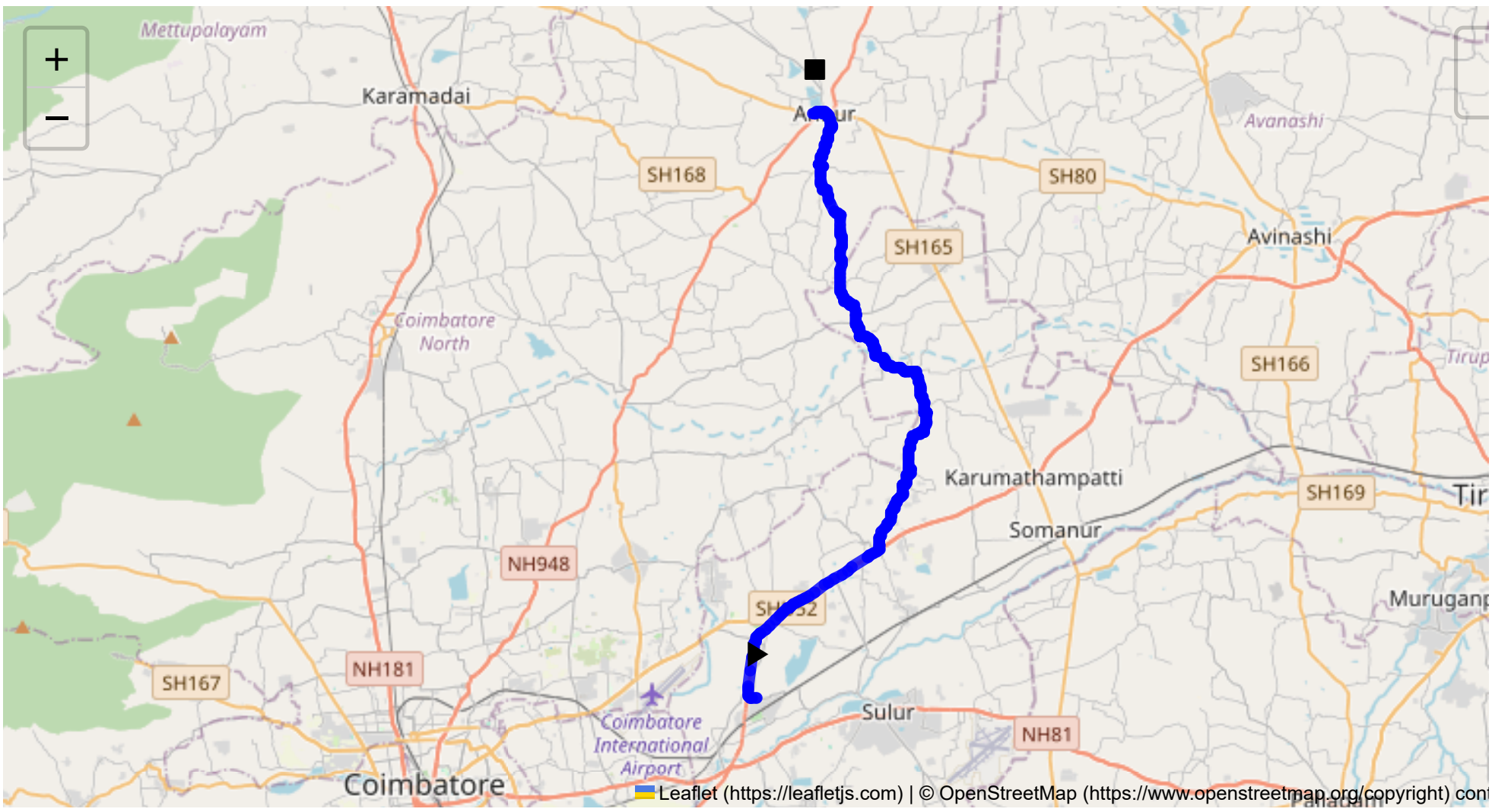
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 29.17 km
Estimated Duration: 0.8 hours
Adjusted Duration (Heavy Vehicle): 1.0 hours
Start: (11.0315, 77.0797)
End: (11.23272, 77.099646)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Athappagoundenpudur to near IndianOil via Varappillaiyar and Valayanthottam is approximately 29.17 kilometers. It traverses through a mix of rural and semi-urban areas, moving in the direction of the eastern part of Coimbatore. Key points include passage through residential areas and significant intersections that connect with other local roads.

2. Typical Weather Conditions and Potential Weather-related Hazards

This region of Tamil Nadu generally experiences tropical weather. During the monsoon months (June to September), heavy rainfall can lead to waterlogging and slippery road conditions. Dry months might also result in dust accumulation, affecting visibility. High temperatures during summer can be a concern for engine cooling.

3. Analysis of Traffic Patterns

Traffic is typically light to moderate in the rural segments but can become dense nearing urban intersections. Peak hours are generally morning (8 AM - 10 AM) and evening (5 PM - 7 PM) during the weekdays. The major congestion-prone areas are near the busier residential areas and marketplaces.

4. Assessment of Road Quality and Infrastructure

- **Road Surface:** The route primarily consists of two-lane roads which may be narrow in certain segments. Potholes and uneven surfaces are common, especially post-monsoon.
- **Signage and Lighting:** Urban areas boast adequate lighting and signage, but rural segments might be inadequately lit at night.

5. Suggestions for Alternative Routes for Emergencies

In case of emergencies or road blockages, an alternative via NH544 might offer a more direct but potentially busier route. Local roads through adjacent villages can also serve as bypasses, although they might not support heavy vehicle traffic efficiently.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Goods and materials defined as hazardous by local regulations require permits for transportation. High-risk materials are often restricted during peak traffic hours to ensure public safety. Compliance with signage and transportation standards set by regional traffic authorities is mandatory.

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

While detailed historical incident data isn't readily available, anecdotal evidence suggests occasional accidents due to narrow roads and driver errors. No significant hazardous material spill incidents have been reported recently.

8. Environmental Considerations and Sensitive Areas

Sensitive areas include residential zones and agricultural lands. The proximity to water bodies, particularly during rainy seasons, necessitates cautious driving to avoid contaminative run-off from hazardous materials.

9. Analysis of Communication Coverage

Mobile network coverage is generally good throughout the route, although rural segments might experience brief dead zones, especially in hilly or densely vegetated areas.

10. Estimated Emergency Response Times for Different Route Segments

- **Urban Areas:** Approximately 15-20 minutes due to proximity to local emergency services.
- **Rural Segments:** Up to 30-40 minutes, considering longer travel times for emergency services.

11. Overall Summary of Risk Assessment

The route poses moderate risk due to the road conditions, weather patterns, and traffic density near urban centers. Adverse weather conditions and narrow roadways are the primary concerns, especially during the monsoon. Comprehensive preparation including route familiarization, weather monitoring, and strict adherence to traffic regulations can mitigate risks involved with the transportation of hazardous materials.

It is advised that truck drivers are adequately trained, heavy vehicles are well-maintained, and all necessary permits and emergency plans are in place prior to undertaking this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.03211, 77.07640	15 KM/Hr
1	Turn	Medium	11.08056, 77.11935	30 KM/Hr
2	Turn	Medium	11.08078, 77.11942	30 KM/Hr
3	Turn	High	11.08298, 77.12274	15 KM/Hr
4	Turn	Medium	11.10521, 77.13189	30 KM/Hr
5	Turn	Medium	11.10851, 77.13208	30 KM/Hr
6	Turn	Medium	11.10863, 77.13220	30 KM/Hr
7	Turn	Medium	11.10893, 77.13334	30 KM/Hr
8	Turn	Medium	11.11054, 77.13335	30 KM/Hr
9	Turn	Medium	11.11066, 77.13307	30 KM/Hr
10	Turn	Medium	11.12966, 77.13932	30 KM/Hr
11	Turn	High	11.12982, 77.13901	15 KM/Hr
12	Turn	Medium	11.13010, 77.13890	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
13	Turn	Medium	11.13017, 77.13878	30 KM/Hr
14	Turn	Medium	11.13016, 77.13845	30 KM/Hr
15	Turn	Medium	11.13022, 77.13839	30 KM/Hr
16	Turn	Medium	11.13314, 77.13841	30 KM/Hr
17	Blind Spot	Blind Spot	11.14431, 77.13584	10 KM/Hr
18	Turn	Medium	11.14602, 77.12554	30 KM/Hr
19	Turn	Medium	11.14845, 77.12427	30 KM/Hr
20	Turn	Medium	11.14937, 77.12182	30 KM/Hr
21	Turn	Medium	11.15275, 77.12071	30 KM/Hr
22	Turn	Medium	11.15285, 77.12042	30 KM/Hr
23	Turn	Medium	11.15303, 77.12026	30 KM/Hr
24	Turn	Medium	11.15391, 77.12029	30 KM/Hr
25	Turn	High	11.15619, 77.11569	15 KM/Hr
26	Turn	Medium	11.16327, 77.11434	30 KM/Hr
27	Turn	High	11.16333, 77.11440	15 KM/Hr
28	Turn	Medium	11.16693, 77.11381	30 KM/Hr
29	Turn	Medium	11.16704, 77.11365	30 KM/Hr
30	Turn	Medium	11.16802, 77.11180	30 KM/Hr
31	Turn	Medium	11.16855, 77.11048	30 KM/Hr
32	Turn	Medium	11.17324, 77.10860	30 KM/Hr
33	Turn	Medium	11.19901, 77.10715	30 KM/Hr
34	Turn	Medium	11.20658, 77.10414	30 KM/Hr
35	Turn	Medium	11.20687, 77.10318	30 KM/Hr
36	Turn	Medium	11.21484, 77.10252	30 KM/Hr
37	Turn	High	11.21497, 77.10243	15 KM/Hr
38	Turn	Medium	11.21509, 77.10174	30 KM/Hr
39	Turn	High	11.21530, 77.10157	15 KM/Hr
40	Turn	High	11.22823, 77.10600	15 KM/Hr
41	Turn	Medium	11.23306, 77.10441	30 KM/Hr
42	Blind Spot	Blind Spot	11.23322, 77.10441	10 KM/Hr
43	Turn	Medium	11.23329, 77.10305	30 KM/Hr
44	Turn	Medium	11.23339, 77.10290	30 KM/Hr
45	Turn	High	11.23311, 77.09973	15 KM/Hr
46	Turn	High	11.23290, 77.09967	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Royal Care Hospital, Coimbatore	11.059106, 77.0893479	30 km/h	Medium
4	hospital	Vagai Government Hospital	11.1443519, 77.1325092	30 km/h	Medium
6	hospital	Government Hospital, Annur	11.2325, 77.102249	30 km/h	Medium
7	hospital	NM Hospital	11.23271, 77.10187	30 km/h	Medium
8	hospital	Shanthi Medical Foundation	11.232428, 77.1016701	30 km/h	Medium
9	police	Annur Police Station	11.2315485, 77.1014321	30 km/h	Medium
10	hospital	R.G. Hospital	11.23188, 77.100705	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
1	college	PSG Institute of Technology and Applied Research	11.0677118, 77.0945744	30 km/h	Medium
2	school	GRD-CPF Matriculation Higher Secondary School	11.0610217, 77.0933504	30 km/h	Medium
3	school	M. Nanjappa Chettiar Matriculation Hr. Sec. School	11.0715394, 77.1039133	30 km/h	Medium
5	marketplace	Annur saturday market (weekly market)	11.2349165, 77.1028197	30 km/h	Medium

Route Photos of Risky Spots

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.03211, 77.07640

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08056, 77.11935

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08078, 77.11942

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08298, 77.12274

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10521, 77.13189

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10851, 77.13208

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10863, 77.13220

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10893, 77.13334

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11054, 77.13335

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11066, 77.13307

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12966, 77.13932

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.12982, 77.13901

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13010, 77.13890

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13017, 77.13878

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13016, 77.13845

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13022, 77.13839

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13314, 77.13841

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.14431, 77.13584

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14602, 77.12554

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14937, 77.12182

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15275, 77.12071

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15285, 77.12042

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15303, 77.12026

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15391, 77.12029

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15619, 77.11569

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16327, 77.11434

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.16333, 77.11440

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16693, 77.11381

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16704, 77.11365

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16802, 77.11180

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16855, 77.11048

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17324, 77.10860

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.19901, 77.10715

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.20658, 77.10414

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.20687, 77.10318

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.21484, 77.10252

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.21497, 77.10243

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.21509, 77.10174

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.21530, 77.10157

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.22823, 77.10600

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23306, 77.10441

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.23322, 77.10441

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23329, 77.10305

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23339, 77.10290

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23311, 77.09973

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23290, 77.09967