



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SENTHILVEL ENERGY FUELS

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: 97.08 km
Estimated Duration: 2.2 hours
Adjusted Duration (Heavy Vehicle): 2.8 hours
Start: (11.4381, 77.8734)
End: (10.995107, 77.292305)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map: The route begins at CVQF+23W in Sangagiri, Tamil Nadu, and ends at X7VR+VW7 in Palladam, Tamil Nadu. This journey spans approximately 97.08 kilometers, passing through key waypoints such as SH 79A, Lakshmi Nagar Bus Stop, NH544, and Tiruppur. The route predominantly travels on state highways, with NH544 being a significant national highway segment.

2. Typical Weather Conditions and Potential Weather-Related Hazards: The region experiences a tropical climate with hot summers, moderate to heavy monsoon rains from June to September, and mild winters. During the monsoon season, heavy rainfall can lead to waterlogging, reducing visibility and increasing the risk of hydroplaning. Fog can occasionally occur in winter, particularly in early mornings, posing visibility challenges.

3. Analysis of Traffic Patterns: Traffic congestion is typically observed during morning and evening peak hours, roughly between 8-10 AM and 5-7 PM, especially near major towns such as Tiruppur. NH544 is a vital commercial route and might experience significant truck traffic, leading to sporadic congestion.

4. Assessment of Road Quality and Infrastructure: The road quality is generally good as these are primary highways, but some sections, especially local roads near towns, might have potholes or uneven surfaces. Infrastructure includes well-marked lanes and adequate road signs, but narrow sections might be challenging for heavy vehicles.

5. Suggestions for Alternative Routes for Emergencies: In case of emergencies, one alternative is diverting from NH544 to NH83 which connects Tiruppur to Coimbatore, providing a parallel route to Palladam. This route can aid in avoiding congestion or blocked paths on the primary route.

6. Summary of Local Regulations Affecting Hazardous Material Transport: The transport of hazardous materials is subject to strict regulations. Vehicles must adhere to speed limits, use clearly visible hazardous material placards, and drivers require specialized training. Transport may be restricted during peak hours or through densely populated areas.

7. Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials: Historically, the region has witnessed accidents involving heavy vehicles due to over-speeding and improper overtaking. Incidents specifically involving hazardous materials are rare but underline the importance of adhering to safety protocols to prevent spillages or fire hazards.

8. Environmental Considerations and Sensitive Areas: The route crosses agricultural regions, and care must be taken to prevent contamination. NH544 runs close to forest areas, so wildlife crossings should be anticipated. Efforts should be made to minimize noise and pollution impact in these sensitive zones.

9. Analysis of Communication Coverage: Generally, communication coverage is good along NH544 and through urban areas. Potential dead zones can occur in rural stretches, especially on SH 79A. Drivers should ensure continuous communication through alternative means, such as satellite phones, if critical.

10. Estimated Emergency Response Times for Different Route Segments: Emergency response times can vary:

- Near urban centers like Tiruppur: 15-30 minutes.
- Rural sections: 30-60 minutes due to distance from major facilities. Police and medical services are more readily available near populous areas.

12. Overall Summary of Risk Assessment: The route is viable for heavy vehicles carrying hazardous materials with proper precautions. Key risks include peak hour congestion, weather disturbances, occasional road surface challenges, and varying communication reliability. Adherence to local regulations, proactive planning for alternative routes, and becoming familiar with emergency contacts are critical to ensuring safety. Overall, with adequate preparation and vigilance, the route is considered low to medium risk for transporting hazardous materials.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	U-Turn	High	10.9945918, 77.29213399999999	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	High	11.45350, 77.85700	15 KM/Hr
5	Turn	Medium	11.45845, 77.85141	30 KM/Hr
6	Turn	Medium	11.45889, 77.85136	30 KM/Hr
7	Turn	High	11.46303, 77.84945	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
8	Turn	Medium	11.46317, 77.84906	30 KM/Hr
9	Turn	Medium	11.44971, 77.77586	30 KM/Hr
10	Turn	Medium	11.44950, 77.77365	30 KM/Hr
11	Turn	Medium	11.43175, 77.67757	30 KM/Hr
12	Turn	Medium	11.23724, 77.50686	30 KM/Hr
13	Turn	High	11.23704, 77.50676	15 KM/Hr
14	Turn	Medium	11.23685, 77.50236	30 KM/Hr
15	Turn	High	11.23675, 77.50215	15 KM/Hr
16	Turn	Medium	11.23622, 77.50210	30 KM/Hr
17	Turn	Medium	11.23363, 77.50059	30 KM/Hr
18	Turn	Medium	11.23329, 77.49966	30 KM/Hr
19	Turn	Medium	11.18329, 77.46249	30 KM/Hr
20	Turn	Medium	11.17851, 77.46169	30 KM/Hr
21	Turn	Medium	11.17497, 77.45961	30 KM/Hr
22	Turn	Medium	11.17383, 77.45750	30 KM/Hr
23	Turn	Medium	11.17133, 77.45590	30 KM/Hr
24	Turn	Medium	11.16959, 77.44438	30 KM/Hr
25	Turn	Medium	11.16950, 77.44376	30 KM/Hr
26	Turn	Medium	11.16364, 77.43649	30 KM/Hr
27	Turn	Medium	11.16259, 77.43103	30 KM/Hr
28	Turn	Medium	11.14985, 77.42215	30 KM/Hr
29	Turn	Medium	11.14892, 77.42022	30 KM/Hr
30	Turn	Medium	11.13893, 77.41649	30 KM/Hr
31	Turn	Medium	11.13578, 77.41299	30 KM/Hr
32	Turn	Medium	11.13007, 77.40331	30 KM/Hr
33	Turn	Medium	11.12475, 77.38681	30 KM/Hr
34	Turn	Medium	11.12251, 77.38307	30 KM/Hr
35	Turn	Medium	11.10807, 77.34103	30 KM/Hr
36	Turn	High	11.10780, 77.34080	15 KM/Hr
37	Turn	Medium	11.10310, 77.34634	30 KM/Hr
38	Turn	High	11.10126, 77.34666	15 KM/Hr
39	Turn	High	11.10153, 77.34809	15 KM/Hr
40	Turn	Medium	11.08637, 77.34607	30 KM/Hr
41	Turn	Medium	11.06210, 77.33854	30 KM/Hr
42	Turn	Medium	11.06062, 77.33735	30 KM/Hr
43	Turn	Medium	10.99547, 77.29288	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
44	Blind Spot	Blind Spot	10.99456, 77.29200	10 KM/Hr
45	Turn	High	10.99499, 77.29231	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
4	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
5	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
7	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
8	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
9	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
10	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
11	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
13	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
15	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
16	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
18	hospital	Aravind Eye Care Hospital	11.1729469, 77.4574467	30 km/h	Medium
19	clinic	Sri Maha Annai Clinic	11.1707162, 77.4536498	30 km/h	Medium
20	hospital	Ram Doctor Hospital	11.1709391, 77.4532808	30 km/h	Medium
21	clinic	Kumaran Clinic	11.1697553, 77.451543	30 km/h	Medium
22	hospital	Sri Aravindhar Hospital	11.1697756, 77.4448276	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
23	clinic	Dr. Raja Clinic	11.1278464, 77.3927768	30 km/h	Medium
24	hospital	Sakthi Sugam Hospital - Tiruppur	11.1151517, 77.3621541	30 km/h	Medium
25	hospital	AG Hospital, Tiruppur	11.1090267, 77.3528045	30 km/h	Medium
26	hospital	Nallini Hospital	11.1091685, 77.353517	30 km/h	Medium
27	clinic	S R Nursing Home, Tiruppur	11.111432, 77.3489019	30 km/h	Medium
28	clinic	Immuno Lab & Health Care	11.1136966, 77.3487122	30 km/h	Medium
29	police	TIRUPPUR NORTH	11.107892, 77.3450511	30 km/h	Medium
30	police	Tiruppur North	11.1066254, 77.3427939	30 km/h	Medium
31	hospital	Tirupur Medical Foundation (P) Limited	11.1090003, 77.3449825	30 km/h	Medium
34	hospital	Lotus Eye Hospital	11.1031666, 77.3474352	30 km/h	Medium
35	clinic	Ramasamy Skin Clinic	11.104714, 77.348272	30 km/h	Medium
36	hospital	Sankara Hospital , Tiruppur	11.0996262, 77.3440224	30 km/h	Medium
38	hospital	Vimal Hospital - Tiruppur	11.09742, 77.349707	30 km/h	Medium
39	clinic	Eswaran Poly Clinic	11.097679, 77.3470729	30 km/h	Medium
40	hospital	K N Children Hospital	11.0964068, 77.3495315	30 km/h	Medium
41	hospital	NSK Hospital, Tiruppur	11.0961562, 77.3494699	30 km/h	Medium
42	hospital	RJR Herbal Hospitals	11.096753, 77.346988	30 km/h	Medium
43	clinic	Miracle Healing Zone	11.0972324, 77.3470134	30 km/h	Medium
44	hospital	AMC Super Speciality Hospital	11.0963178, 77.3490793	30 km/h	Medium
45	hospital	Ideal Homeo care	11.0966359, 77.3498083	30 km/h	Medium
46	clinic	Sree Shanthoshi gastro clinic	11.0954216, 77.3511899	30 km/h	Medium
47	hospital	PN Hospital - Tiruppur	11.09041, 77.348581	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
48	hospital	Ars Hospitals - Tirupur	11.0880071, 77.3469948	30 km/h	Medium
49	hospital	Divya Hospital, Tiruppur	11.0874791, 77.3471518	30 km/h	Medium
50	hospital	Life Guard, Tiruppur	11.07895, 77.34231	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
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
6	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
12	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium
14	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
17	college	Sasurie Engineering College	11.2171482, 77.4898552	30 km/h	Medium
32	school	Nanjappa Boys Higher Secondary School	11.1044446, 77.3399245	30 km/h	Medium
33	school	St.Joseph's Matriculation School	11.1046832, 77.3422087	30 km/h	Medium
37	school	KSC Boys High School	11.0995669, 77.3505782	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: U-Turn

Risk Level: High

Speed Limit: 10 KM/Hr

Coordinates: 10.9945918, 77.29213399999999



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: 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

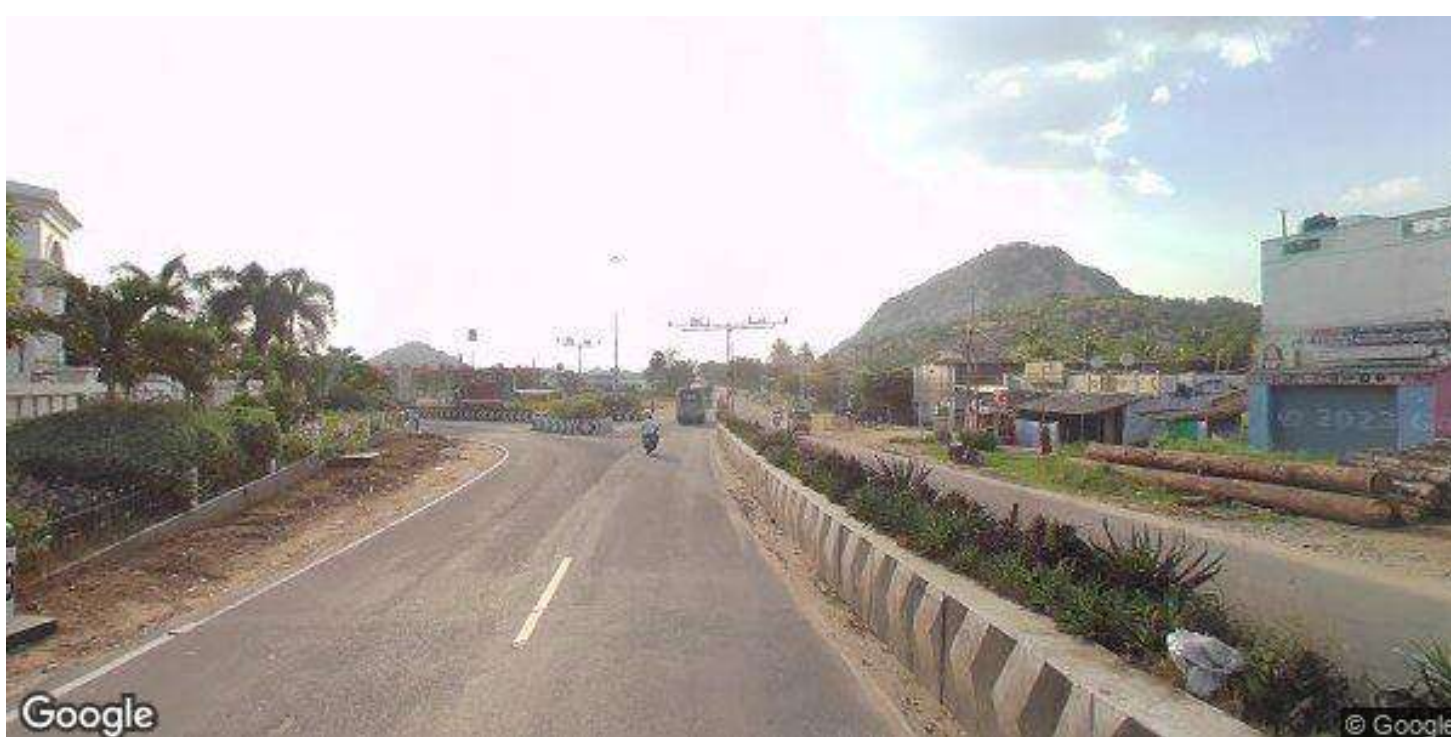


Risk Type: Turn

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: 11.44971, 77.77586



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.44950, 77.77365



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: 11.23724, 77.50686



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23704, 77.50676



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23685, 77.50236



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23675, 77.50215



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23622, 77.50210



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23363, 77.50059



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23329, 77.49966



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18329, 77.46249



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17851, 77.46169



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17497, 77.45961



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17383, 77.45750



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17133, 77.45590



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16959, 77.44438



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16950, 77.44376



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16364, 77.43649



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16259, 77.43103



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14985, 77.42215



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14892, 77.42022



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13893, 77.41649



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13578, 77.41299



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13007, 77.40331



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12475, 77.38681



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12251, 77.38307



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10807, 77.34103



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10780, 77.34080



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10310, 77.34634



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10126, 77.34666



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10153, 77.34809



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08637, 77.34607



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.06210, 77.33854



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.06062, 77.33735



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.99547, 77.29288



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.99456, 77.29200



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.99499, 77.29231
