



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO J K K M 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: 65.73 km
Estimated Duration: 1.4 hours
Adjusted Duration (Heavy Vehicle): 1.7 hours
Start: (11.4381, 77.8734)
End: (11.505888, 77.397898)



Welcome to the Journey Risk Management Study

Route Safety Analysis Report

1. Overview of the Route Map

The route from CVQF+23W, Sangagiri to G94X+C7C, Punjaithuraiyampalayam is approximately 65.73 kilometers long and typically takes about 1.37 hours for heavy vehicles. The route predominantly follows

state highways and local roads, passing through a mix of rural and semi-urban areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu experiences a tropical climate with distinct wet and dry seasons. The route may face the following weather-related hazards:

- **Monsoon Threats (June to September & October to December):** Heavy rainfall can lead to waterlogging and reduced visibility. Roads may be more slippery and prone to flooding.
- **Summer Heat (March to June):** High temperatures might lead to road surface deterioration and tire blowouts.
- **Fog:** Possible early morning fog, particularly in rural and or isolated areas, can reduce visibility.

3. Analysis of Traffic Patterns

- **Peak Hours:** The mornings (8:00 AM to 10:00 AM) and evenings (5:00 PM to 7:00 PM) may experience increased traffic due to local commuting patterns.
- **Congestion-Prone Areas:** Traffic tends to build up at village crossings and the entrance/exit points of Sangagiri and Punjaithuraiyampalayam.

4. Assessment of Road Quality and Infrastructure

- **Road Quality:** The state highways are generally well-maintained, but local roads may have patches and require caution due to uneven surfaces.
- **Signage and Lighting:** Some rural stretches may lack proper signage and lighting, requiring drivers to remain attentive, especially at night.

5. Suggestions for Alternative Routes for Emergencies

Potential alternatives include:

- Diverting via NH44 to bypass congested or problematic areas.
- Using well-maintained local roads that run parallel to the primary route as detours, though these may be longer.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials is subject to the Motor Vehicles Act and must comply with regulations concerning safety equipment, permissible materials, and emergency protocols. Vehicles should carry adequate documentation and ensure that all safety measures are rigorously observed.

7. Overview of Historical Incidents

There are occasional reports of accidents involving heavy vehicles, often attributed to sharp turns, fog, or excessive speed. However, there is limited data on incidents specifically involving hazardous materials in this region.

8. Environmental Considerations and Sensitive Areas

The route passes near some agricultural lands and water bodies, which could be sensitive to contamination. Precautions should be taken to prevent leaks or spills.

9. Communication Coverage

Mobile network coverage along the route is generally reliable; however, remote rural sections might experience brief dead zones. Pre-trip communication checks are advisable.

10. Estimated Emergency Response Times

- Urban / Semi-Urban Areas:** Around 15-30 minutes due to proximity to emergency services.
- Rural Areas:** Approximately 30-45 minutes, influenced by road conditions and distance to service centers.

11. Overall Summary of Risk Assessment

The route is moderately safe provided that weather conditions and peak traffic times are observed. Drivers should remain vigilant for potential road quality issues, maintain communication readiness, and adhere to local hazardous material regulations. Regular updates on road conditions and weather forecasts should be utilized for maximum safety.

Recommendations:

- Thorough pre-trip inspections and adherence to a safe driving plan can mitigate risks.
- Consider equipping vehicles with GPS and real-time weather monitoring systems.
- Training for emergency response protocols should be emphasized for all drivers.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	Medium	11.43822, 77.87348	30 KM/Hr
1	Turn	High	11.43968, 77.87345	15 KM/Hr
2	Turn	High	11.44029, 77.87544	15 KM/Hr
3	Turn	High	11.44898, 77.87410	15 KM/Hr
4	Turn	Medium	11.45357, 77.85789	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
5	Turn	High	11.45352, 77.85698	15 KM/Hr
6	Turn	Medium	11.45847, 77.85140	30 KM/Hr
7	Turn	Medium	11.46303, 77.84945	30 KM/Hr
8	Turn	Medium	11.46314, 77.84928	30 KM/Hr
9	Turn	Medium	11.45509, 77.81383	30 KM/Hr
10	Turn	High	11.40046, 77.65371	15 KM/Hr
11	Turn	High	11.40035, 77.65383	15 KM/Hr
12	Turn	High	11.39829, 77.65233	15 KM/Hr
13	Turn	Medium	11.42079, 77.56127	30 KM/Hr
14	Turn	High	11.45789, 77.40555	15 KM/Hr
15	Turn	Medium	11.46338, 77.40572	30 KM/Hr
16	Turn	Medium	11.46384, 77.40579	30 KM/Hr
17	Turn	High	11.46411, 77.40607	15 KM/Hr
18	Turn	High	11.46407, 77.40674	15 KM/Hr
19	Turn	Medium	11.46623, 77.40809	30 KM/Hr
20	Turn	Medium	11.47161, 77.41054	30 KM/Hr
21	Turn	Medium	11.47227, 77.41004	30 KM/Hr
22	Turn	Medium	11.47530, 77.41073	30 KM/Hr
23	Turn	Medium	11.47645, 77.40972	30 KM/Hr
24	Turn	High	11.47810, 77.40961	15 KM/Hr
25	Turn	Medium	11.47853, 77.40893	30 KM/Hr
26	Turn	High	11.47931, 77.40858	15 KM/Hr
27	Turn	Medium	11.48056, 77.41082	30 KM/Hr
28	Turn	Medium	11.48073, 77.41092	30 KM/Hr
29	Turn	Medium	11.48096, 77.41087	30 KM/Hr
30	Turn	Medium	11.48168, 77.40998	30 KM/Hr
31	Turn	Medium	11.48361, 77.40915	30 KM/Hr
32	Turn	Medium	11.48438, 77.40931	30 KM/Hr
33	Turn	Medium	11.48510, 77.41005	30 KM/Hr
34	Turn	Medium	11.48855, 77.41161	30 KM/Hr
35	Turn	High	11.49472, 77.41232	15 KM/Hr
36	Turn	High	11.49535, 77.40978	15 KM/Hr
37	Turn	High	11.50380, 77.40838	15 KM/Hr
38	Turn	High	11.50404, 77.40682	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
39	Blind Spot	Blind Spot	11.50710, 77.40661	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Government Hospital	11.4525596, 77.7749426	30 km/h	Medium
4	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
5	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
6	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
8	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
9	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
10	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
11	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
12	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
13	hospital	Naarayani Hospital	11.4157401, 77.5773087	30 km/h	Medium
14	hospital	P K Hospital	11.4175923, 77.5640962	30 km/h	Medium
15	hospital	Dharun Hospital	11.4223638, 77.5597735	30 km/h	Medium
16	hospital	Dr. Ramaswamy Hospital	11.4249065, 77.5535658	30 km/h	Medium
17	hospital	Dakshin Trauma Centre	11.454593, 77.4461819	30 km/h	Medium
18	hospital	Dakshin Hospital	11.4546301, 77.445905	30 km/h	Medium
19	hospital	Sri Varahi Herbal Research Centre and Hospital	11.4539333, 77.4427438	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
20	clinic	Germen Homeopathy Clinic	11.4536305, 77.4394692	30 km/h	Medium
21	hospital	JP Hospital	11.454765, 77.438257	30 km/h	Medium
22	hospital	KKS Hospital	11.4551792, 77.4392927	30 km/h	Medium
24	hospital	Siranjeeve Hospitals	11.453132, 77.4344382	30 km/h	Medium
25	clinic	Anandhan Clinic	11.4548037, 77.4349074	30 km/h	Medium
26	hospital	Ramachandran Hospital	11.452242, 77.434641	30 km/h	Medium
27	hospital	Kumaran Hospital	11.4533971, 77.4349621	30 km/h	Medium
28	hospital	Dr. Rathinasamy Hospital	11.457562, 77.4327752	30 km/h	Medium
29	hospital	Gobi Neuro Mind Care	11.4548344, 77.434649	30 km/h	Medium
30	hospital	Hariharan Hospital	11.4523578, 77.4299287	30 km/h	Medium
31	hospital	Vasanth Hospital	11.4526864, 77.4292173	30 km/h	Medium
32	hospital	KKRS Hospital	11.45417, 77.430584	30 km/h	Medium
33	clinic	Jeeva Nursing Home	11.4533031, 77.4294145	30 km/h	Medium
34	hospital	Sathya Hospital	11.4561856, 77.4298694	30 km/h	Medium
35	hospital	S K Hospital	11.4540106, 77.430108	30 km/h	Medium
36	hospital	Sivakami Hospital	11.4531846, 77.4299288	30 km/h	Medium
37	clinic	Sri Sudha Physiotherapy Clinic	11.4559915, 77.4300217	30 km/h	Medium
38	hospital	Arun Hospital	11.4538121, 77.4305743	30 km/h	Medium
39	clinic	Sairam Clinic	11.4560122, 77.4306716	30 km/h	Medium
40	hospital	Best Hospital	11.4543558, 77.4263617	30 km/h	Medium
41	clinic	Anand Nursing Home	11.4553169, 77.4296248	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
42	clinic	Kanmani Child Care Clinic	11.4545273, 77.428668	30 km/h	Medium
43	hospital	Rajasekaran Hospital	11.454463, 77.4262	30 km/h	Medium
44	hospital	Samuel Hospital	11.4542555, 77.4271194	30 km/h	Medium
45	hospital	Sivasakthi Hospital	11.4544711, 77.4297229	30 km/h	Medium
46	hospital	SS Children's Hospital	11.4555386, 77.4296357	30 km/h	Medium
47	hospital	SP Dhanapal Hospital	11.4559935, 77.4304406	30 km/h	Medium
48	clinic	Gobi Siddha Health Centre	11.455616, 77.4307062	30 km/h	Medium
49	clinic	Sri Dhanvantari Siddha Clinic	11.4561216, 77.4295797	30 km/h	Medium
50	hospital	Neha Hospital	11.4560138, 77.4270219	30 km/h	Medium
51	hospital	M.S Children's Hospital	11.4556012, 77.4301006	30 km/h	Medium
52	hospital	Gobi Diabetic Hospital	11.455394, 77.4301181	30 km/h	Medium
53	clinic	Dr. Ramesh Babu Clinic	11.4560871, 77.4296353	30 km/h	Medium
54	hospital	Sankareswari Eye Hospital	11.4572997, 77.428765	30 km/h	Medium
55	hospital	SP Hospital	11.456607, 77.430302	30 km/h	Medium
58	hospital	Government Hospital	11.4565126, 77.4288768	30 km/h	Medium
59	hospital	Sri Chakra Hospital	11.4544464, 77.4228363	30 km/h	Medium
60	hospital	U M Hospital	11.4544151, 77.4240386	30 km/h	Medium
61	hospital	Dr. Gopal Hospital	11.455258, 77.422901	30 km/h	Medium
62	clinic	VG Ortho Centre	11.4550504, 77.4225102	30 km/h	Medium
63	hospital	Arun Hospital	11.4548852, 77.4250314	30 km/h	Medium
64	clinic	Palaniappa Clinic	11.4555925, 77.4202828	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
65	hospital	Abi SK Hospital	11.457163, 77.412487	30 km/h	Medium
66	clinic	Nalam Vazh S.K Siddha and Varma Clinic	11.457576, 77.412164	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
7	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
23	school	Shree Vidyalaya Matric Higher Secondary School	11.4536114, 77.4383163	30 km/h	Medium
56	school	Diamond Jubilee Higher Secondary School	11.4529541, 77.4280306	30 km/h	Medium
57	school	CKK Palaniammal School	11.4569211, 77.4276828	30 km/h	Medium

Route Photos of Risky Spots



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: 11.44898, 77.87410



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45357, 77.85789



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.45352, 77.85698



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45847, 77.85140



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46303, 77.84945



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46314, 77.84928



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45509, 77.81383



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.40046, 77.65371



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.40035, 77.65383



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.39829, 77.65233



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.42079, 77.56127



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45789, 77.40555



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46338, 77.40572



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46384, 77.40579



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.46411, 77.40607



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.46407, 77.40674



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46623, 77.40809



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.47161, 77.41054



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.47227, 77.41004



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.47530, 77.41073



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.47645, 77.40972



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.47810, 77.40961



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.47853, 77.40893



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.47931, 77.40858



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48056, 77.41082



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48073, 77.41092



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48096, 77.41087



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48168, 77.40998



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48361, 77.40915



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48438, 77.40931



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48510, 77.41005



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48855, 77.41161



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.49472, 77.41232



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.49535, 77.40978



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.50380, 77.40838



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.50404, 77.40682

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.50710, 77.40661