



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to TSA ENTERPRISES UNIT II COCO PERUN

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

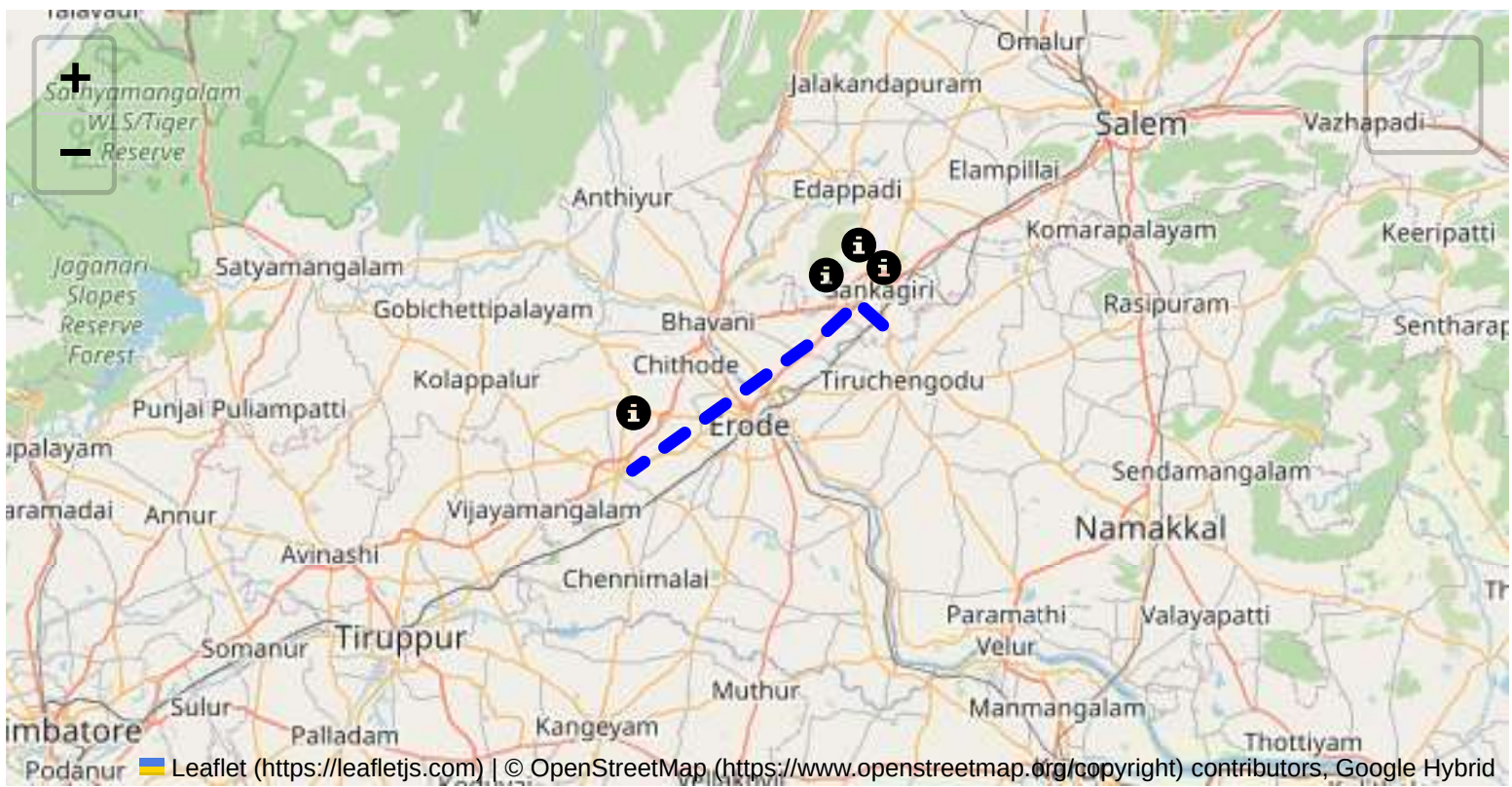
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental 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: 41.14 km
Estimated Duration: 1.1 hours
Adjusted Duration (Heavy Vehicle): 1.3 hours
Start: (11.4381, 77.8734)
End: (11.281604, 77.598242)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from CVQF+23W, Sangagiri to 1-A, Vengamedu, Erode, via Sankari West and Padaiveedu covers approximately 41.14 kilometers. Starting from Sangagiri in the east, the route progresses westward towards Perundurai. The main roads are generally well-traveled with a significant mix of local and long-distance traffic.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu experiences a tropical climate with hot and dry summers (March to June), a monsoon season (July to September), and mild winters (October to February). During monsoon, heavy rainfall can lead to waterlogging and reduced visibility along the route. Heatwaves in the summer may potentially cause road surface degradation.

3. Analysis of Traffic Patterns

- **Peak Hours:** Traffic volume tends to increase significantly between 8:00-10:00 AM and 5:00-7:00 PM due to local commute and business operations.
- **Congestion-Prone Areas:** The towns of Sankari West and Padaiveedu may experience congestion due to narrow road sections and local market activities.

4. Assessment of Road Quality and Infrastructure

The primary roads along this route are generally in fair condition but may suffer occasional wear and tear, especially during and after the monsoon. Bridges and culverts are present and functional, though some may be narrow for heavy vehicle passage. Constraints such as potholes and uneven surfaces might be encountered, particularly in less urbanized sections.

5. Suggestions for Alternative Routes for Emergencies

- **Alternative Route 1:** Via SH 86 and NH544, which might be slightly longer but generally offers better infrastructure.
- **Alternative Route 2:** Bypass local townships by using connecting village roads, although these may not be suitable for heavy vehicles due to road conditions.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- **Permits:** Special permits are required for transporting hazardous materials.
- **Timed Restrictions:** Some zones might restrict heavy vehicle movement during peak hours, particularly near schools and market areas.
- **Safety Protocols:** Mandatory placards and documentation as per state regulations.

7. Overview of Historical Incidents

Historically, the route has seen occasional incidents involving heavy vehicles, usually due to overloading or speeding, with a few notable spills affecting the environment and leading to road closures. However, these are not frequent and are well-managed by local authorities.

8. Environmental Considerations and Sensitive Areas

- **Water Bodies:** The route intersects several small rivers and streams, which are sensitive to chemical spills.
- **Wildlife and Vegetation:** Limited wildlife corridors, though caution is advised to avoid disturbing local flora and fauna during transport mishaps.

9. Analysis of Communication Coverage

- **Network Coverage:** Most of the route has stable cellular coverage. However, there may be brief dead zones near dense foliage or rural stretches.
- **Connectivity Infrastructure:** Major service providers offer consistent coverage in urban areas and along main highways.

10. Estimated Emergency Response Times

- **Urban Areas:** Approximately 15-20 minutes for emergency services like police, fire, and medical response.
- **Rural Areas:** The response time may extend to 30-45 minutes due to distance and road conditions.

11. An Overall Summary of Risk Assessment

This route from Sangagiri to Perundurai is generally moderate in risk for transporting hazardous materials. Key considerations include potential delays due to traffic congestion, weather impacts during the monsoon, and minor infrastructural challenges. Adequate planning, adherence to local transport regulations, and emergency preparedness can mitigate most transportation risks associated with heavy vehicle movement. Enhanced caution is advised near sensitive environmental zones and during peak traffic periods or adverse weather conditions. Overall, the route is manageable with due diligence and proper route management strategies.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	Turn	Medium	11.43822, 77.87348	30 KM/Hr
2	Turn	High	11.43968, 77.87345	15 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	Medium	11.44898, 77.87410	30 KM/Hr
5	Turn	Medium	11.45357, 77.85789	30 KM/Hr
6	Turn	Medium	11.45352, 77.85698	30 KM/Hr
7	Turn	Medium	11.46048, 77.85036	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
8	Turn	Medium	11.46303, 77.84945	30 KM/Hr
9	Turn	Medium	11.46318, 77.84913	30 KM/Hr
10	Turn	Medium	11.46302, 77.84874	30 KM/Hr
11	Turn	Medium	11.34172, 77.72823	30 KM/Hr
12	Blind Spot	Blind Spot	11.33920, 77.72902	10 KM/Hr
13	Turn	Medium	11.32279, 77.68016	30 KM/Hr
14	Turn	Medium	11.28883, 77.61276	30 KM/Hr
15	Blind Spot	Blind Spot	11.28193, 77.59812	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	hospital	Cheran Hospital	11.3680302, 77.7481976	30 km/h	Medium
2	pharmacy	Pharmacy	11.3652161, 77.7486375	30 km/h	Medium
3	hospital	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
4	hospital	Sri Kumaran E N T Hospital	11.3657814, 77.7477763	30 km/h	Medium
5	hospital	Sri Krishna Hospital	11.3656648, 77.7477783	30 km/h	Medium
6	police	Police Station	11.3630177, 77.7476505	30 km/h	Medium
7	hospital	Government Hospital	11.3608508, 77.747453	30 km/h	Medium
9	hospital	Sri Hari Sakthivel Hospital	11.3526901, 77.7323055	30 km/h	Medium
10	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
11	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
12	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
13	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
15	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
16	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
17	hospital	City Hospital	11.3451151, 77.7300887	30 km/h	Medium
18	clinic	K.B.N. Nursing Home	11.344835, 77.7310771	30 km/h	Medium
19	clinic	Kpn Nursing Home	11.3437022, 77.7304525	30 km/h	Medium
20	hospital	Kaviraj Ayurveda Hospital	11.3400349, 77.7298199	30 km/h	Medium
21	hospital	Dr Kokilasekar Nursing Hospital	11.3395874, 77.7269838	30 km/h	Medium
22	clinic	M.R Nursing Home	11.3386746, 77.7294262	30 km/h	Medium
24	hospital	Government Maternity Hospital, Agathiar	11.33716, 77.727075	30 km/h	Medium
25	clinic	Naseer Nursing Home	11.3364485, 77.7271691	30 km/h	Medium
26	clinic	Dr. R Kumaraswamy Sexologist Clinic	11.3396057, 77.7221701	30 km/h	Medium
27	clinic	Newlife Fertility Centre	11.3389396, 77.7213358	30 km/h	Medium
28	hospital	Guhan ENT Hospital	11.339489, 77.721001	30 km/h	Medium
29	clinic	Janet Nursing Home	11.3396455, 77.7203698	30 km/h	Medium
30	hospital	Dr. Pondiperumal Hospital	11.3390924, 77.7205408	30 km/h	Medium
31	hospital	Universal Hospital	11.3411046, 77.7185217	30 km/h	Medium
32	hospital	Duraisamy Hospital	11.3391625, 77.7187054	30 km/h	Medium
33	hospital	Srimathi Murugeshan Hospital	11.3389205, 77.7187791	30 km/h	Medium
34	hospital	Abisek Medical Centre	11.3415975, 77.7191789	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
35	hospital	Sri Vijaya Hitech Hospital	11.3400011, 77.7192251	30 km/h	Medium
36	hospital	Suriya Hospital	11.340248, 77.7186452	30 km/h	Medium
37	hospital	Bharath Hospital	11.3370288, 77.7186516	30 km/h	Medium
38	hospital	Abitha Eye Hospital	11.34021, 77.7187589	30 km/h	Medium
39	hospital	Shri Vijaiah Trauma Care Hospital	11.3418935, 77.7193036	30 km/h	Medium
40	hospital	Surya Hospital	11.3400026, 77.7190977	30 km/h	Medium
41	hospital	District Hospital, Eroda	11.3393048, 77.717926	30 km/h	Medium
43	hospital	Dr. Agarwal's Eye Hospital Ltd. - Erode	11.3421842, 77.7173066	30 km/h	Medium
44	hospital	L.V.S. Eye Hospital	11.3385839, 77.7156597	30 km/h	Medium
45	hospital	Erode Kidney's Centre	11.3383801, 77.7164201	30 km/h	Medium
46	hospital	Shri Preethe Hospital	11.3385944, 77.7157979	30 km/h	Medium
47	hospital	Dr Nsk Hospital	11.3381737, 77.7153821	30 km/h	Medium
48	hospital	Devi Hospital	11.34116, 77.718307	30 km/h	Medium
49	hospital	KMCH Speciality Hospital	11.33911, 77.716284	30 km/h	Medium
50	hospital	SCS Hospital And Urology Clinic	11.3410253, 77.718043	30 km/h	Medium
51	hospital	Anusha Hospital	11.3397168, 77.7166805	30 km/h	Medium
52	clinic	Vanalikaa Homoeo Centre	11.341349, 77.717987	30 km/h	Medium
53	clinic	Skin Care Clinic	11.3409042, 77.7178413	30 km/h	Medium
54	hospital	Care Hospital	11.338443, 77.716511	30 km/h	Medium
55	hospital	Ortho Life Hospital	11.3395729, 77.7167329	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
56	hospital	SRC Hospital	11.3413999, 77.7177834	30 km/h	Medium
57	hospital	Keran Hospital	11.3400456, 77.7154808	30 km/h	Medium
58	hospital	Gem Hospital	11.338106, 77.7155077	30 km/h	Medium
59	hospital	Nalan Hospital	11.3399703, 77.716773	30 km/h	Medium
60	clinic	Dr. Chandran Skin Laser Centre	11.3413527, 77.7174891	30 km/h	Medium
61	hospital	Sri Hari Hospital	11.338357, 77.7164204	30 km/h	Medium
62	hospital	Annai Ent and Head and Neck Care Center	11.3387785, 77.7149034	30 km/h	Medium
63	clinic	Madhu Surgical Clinic	11.3386602, 77.7143441	30 km/h	Medium
64	hospital	Kovai Medical Centre And Hospital, Perundurai	11.3381361, 77.7139593	30 km/h	Medium
65	hospital	Senthil Multispeciality Hospital	11.338983, 77.7138529	30 km/h	Medium
66	hospital	Kavin Hospital	11.3383568, 77.7138882	30 km/h	Medium
67	clinic	RB Kids Clinic	11.339221, 77.713915	30 km/h	Medium
68	hospital	Arun Fracture Hospital	11.3378114, 77.7152632	30 km/h	Medium
69	hospital	Srinivasa Speciality Hospital	11.337577, 77.715527	30 km/h	Medium
70	clinic	Sathyavathi Ramalingam Clinic	11.3380366, 77.7166875	30 km/h	Medium
71	hospital	Curie Hospital	11.3380517, 77.7140038	30 km/h	Medium
72	hospital	Maruthi Medical Centre(Mmch Hospital)	11.3384018, 77.7130616	30 km/h	Medium
73	clinic	Vadivu Subramanian Nursing Home	11.337507, 77.7152038	30 km/h	Medium
74	hospital	Erode Trust Hospital	11.3399422, 77.7134188	30 km/h	Medium
75	hospital	Sri Athi Sathya Hospital	11.3392651, 77.7126583	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
76	clinic	Rahat Acu Clinic	11.3378679, 77.7123699	30 km/h	Medium
77	hospital	Arc Fertility Hospital	11.3397231, 77.7130655	30 km/h	Medium
78	hospital	Velavan Hospital	11.3384075, 77.7123677	30 km/h	Medium
79	hospital	Vanjee Multispeciality Dental Centre	11.3418385, 77.7132218	30 km/h	Medium
80	hospital	Vsm Hospital Atho And Maternity Centre	11.3374641, 77.7117842	30 km/h	Medium
81	hospital	Sudha Institute of Medical Sciences Hospital	11.3371539, 77.7109247	30 km/h	Medium
82	hospital	Sri Harini Hospital	11.335935, 77.7112643	30 km/h	Medium
83	hospital	Sholai Medical Centre	11.3364905, 77.7107674	30 km/h	Medium
84	hospital	Arcees Hospital	11.3381082, 77.7110478	30 km/h	Medium
85	hospital	Sakthipriya Hospital	11.337874, 77.711363	30 km/h	Medium
86	hospital	V.S.M. Hospital	11.337176, 77.7113816	30 km/h	Medium
87	hospital	SIMS Children Hospital	11.3376687, 77.7106065	30 km/h	Medium
88	hospital	Bharani Paventhan Multi Speciality Hospital	11.3358357, 77.7081187	30 km/h	Medium
89	hospital	Kalyani Kidney Care Centre	11.3383604, 77.7080879	30 km/h	Medium
90	hospital	Gnanaganesh Hospital	11.3340114, 77.706332	30 km/h	Medium
91	hospital	Siddhvedam Siddha Hospital	11.3336526, 77.7063319	30 km/h	Medium
92	clinic	Sukeerthi Skin Care	11.3342224, 77.7051196	30 km/h	Medium
94	hospital	RKR Neuro Hospital	11.3278243, 77.6991636	30 km/h	Medium
95	hospital	TPN Hospital	11.3273279, 77.6928516	30 km/h	Medium
96	hospital	Erode Hospital	11.3279227, 77.6924918	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
97	hospital	Nalamthaa Siddha Hospital	11.3253867, 77.6901722	30 km/h	Medium
98	hospital	Care 24 Medical Centre & Hospital	11.326585, 77.688148	30 km/h	Medium
100	clinic	Vasan Eye Care	11.3223693, 77.6844101	30 km/h	Medium
108	hospital	Erode Cancer Centre	11.313682, 77.6686621	30 km/h	Medium
109	hospital	Krishna Medical Centre	11.2854479, 77.6039939	30 km/h	Medium
110	hospital	Mag Hospital	11.2804816, 77.5959817	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	Ssri Valliappa Vidhayalayam mat hr school	11.4004878, 77.7794381	30 km/h	Medium
8	marketplace	Weekly Market	11.3605669, 77.7488199	30 km/h	Medium
14	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium
23	school	E.V.R. Govt Girls Hr. Sec School	11.3371265, 77.7266283	30 km/h	Medium
42	school	Sengunthar matriculation School	11.3407075, 77.7195086	30 km/h	Medium
101	school	Bharathiya Vidya Bhavan	11.3229221, 77.6782975	30 km/h	Medium
102	school	Government Higher Secondary School	11.3200241, 77.6774475	30 km/h	Medium
103	college	Vellalar College and Schools	11.3222276, 77.6757207	30 km/h	Medium
104	school	Government Higher Secondary School	11.3196253, 77.6771687	30 km/h	Medium
105	school	Vellalar College And Schools	11.3224382, 77.6758948	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
106	school	Geethanjali All India Senior Secondary School	11.3194694, 77.6718667	30 km/h	Medium
107	school	Sri Chaitanya Techno School	11.3155178, 77.66829	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37086, 77.74828



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44029, 77.87544



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 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: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45352, 77.85698



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46048, 77.85036



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: 11.46318, 77.84913



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46302, 77.84874



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34172, 77.72823



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.33920, 77.72902



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32279, 77.68016



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28883, 77.61276



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.28193, 77.59812

