



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to THE AMARAVATHI CO-OP SUGAR MILLS LT

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.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu generally experiences a tropical climate. This route may encounter:

- **Summer Heat (March to June):** High temperatures reaching up to 40°C, possibly affecting vehicle performance.
- **Monsoon (July to September):** Heavy rains can lead to waterlogged roads or flooding, especially around rural areas and low-lying regions.
- **Winter (November to February):** Mild and dry, but occasional fog in early mornings can affect visibility.

3. Analysis of Traffic Patterns

- **Peak Hours:** Typically, 8-10 AM and 5-7 PM are the peak traffic hours, particularly near towns like Komarapalayam.
- **Congestion-Prone Areas:** Major intersections on the Salem-Kochi Highway and urban areas near Vedappatti can experience slowdowns.

4. Assessment of Road Quality and Infrastructure

- **Highways:** Generally well-maintained with occasional potholes and rough patches.
- **Rural Roads:** Less maintained, with narrow paths, uneven surfaces, and potential obstacles like roaming cattle or local traffic.

5. Suggestions for Alternative Routes

For emergencies, consider:

- **Via Erode:** Divert through Erode city, although this adds distance, it provides access to major highways.
- **Via NH544:** A detour through NH544 can be considered for faster travel during peak traffic but might not avoid all congestion.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- **Timing Restrictions:** Heavy vehicles carrying hazardous materials might have restricted entry during peak hours in populated areas.
- **Permits:** Ensure all regulatory permits are secured before transit, including requisite permissions for hazardous materials.

7. Overview of Historical Incidents

No significant record of incidents specific to this route; however, general accidents involving heavy vehicles occur sporadically, often due to driver error or mechanical failure.

8. Environmental Considerations and Sensitive Areas

- **Agricultural Land:** Transit through agricultural areas may necessitate extra caution.
- **Protected Areas:** Ensure compliance with environmental protection regulations when near sensitive zones.

9. Analysis of Communication Coverage

- **Highways:** Generally good mobile coverage.
- **Rural Areas:** Potential dead zones may exist; plan accordingly with backup communication methods like satellite phones.

10. Estimated Emergency Response Times

- **Highway Segments:** Quick response times, approximately 30-45 minutes due to proximity to major towns.
- **Rural Areas:** Longer times, potentially over an hour, depending on accessibility and the nearest responder base.

12. Overall Summary of Risk Assessment

The route presents moderate risk levels typical for heavy vehicle travel in India. The primary concerns include weather-induced hazards during the monsoon season, congestion near populated urban areas, and the quality of rural roads. Emergency preparedness, alternative planning, and rigorous compliance with transport regulations are essential for minimizing risks. Enhanced communication strategies and execution of comprehensive safety checks for vehicle and cargo integrity will further mitigate potential issues along the route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.27925, 77.58494	15 KM/Hr
1	Roundabout	High	11.00535, 77.56114	15 KM/Hr
2	Roundabout	High	10.72668, 77.52217	15 KM/Hr
3	Turn	High	11.43968, 77.87345	15 KM/Hr
4	Turn	High	11.44024, 77.87528	15 KM/Hr
5	Turn	High	11.44898, 77.87410	15 KM/Hr
6	Turn	High	11.45352, 77.85698	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
7	Turn	Medium	11.45764, 77.85219	30 KM/Hr
8	Turn	High	11.46303, 77.84945	15 KM/Hr
9	Turn	Medium	11.44965, 77.77565	30 KM/Hr
10	Turn	Medium	11.44953, 77.77344	30 KM/Hr
11	Turn	Medium	11.43171, 77.67747	30 KM/Hr
12	Turn	Medium	11.42954, 77.67558	30 KM/Hr
13	Turn	Medium	11.39773, 77.65195	30 KM/Hr
14	Turn	Medium	11.39405, 77.65138	30 KM/Hr
15	Turn	Medium	11.34595, 77.64118	30 KM/Hr
16	Turn	Medium	11.34133, 77.63235	30 KM/Hr
17	Turn	Medium	11.33910, 77.63048	30 KM/Hr
18	Turn	High	11.29111, 77.58586	15 KM/Hr
19	Turn	Medium	11.27858, 77.58408	30 KM/Hr
20	Turn	Medium	11.27695, 77.58300	30 KM/Hr
21	Turn	Medium	11.22514, 77.58058	30 KM/Hr
22	Turn	Medium	11.22019, 77.58250	30 KM/Hr
23	Turn	Medium	11.18320, 77.59627	30 KM/Hr
24	Turn	Medium	11.16580, 77.60233	30 KM/Hr
25	Turn	High	11.16525, 77.60378	15 KM/Hr
26	Turn	High	11.15870, 77.60432	15 KM/Hr
27	Turn	High	11.15535, 77.60091	15 KM/Hr
28	Turn	High	11.15259, 77.60133	15 KM/Hr
29	Turn	Medium	11.15163, 77.59988	30 KM/Hr
30	Turn	High	11.11849, 77.59659	15 KM/Hr
31	Turn	Medium	11.11644, 77.59151	30 KM/Hr
32	Turn	High	11.10721, 77.58978	15 KM/Hr
33	Turn	Medium	11.10303, 77.58341	30 KM/Hr
34	Turn	Medium	11.09978, 77.58146	30 KM/Hr
35	Turn	Medium	11.07437, 77.57959	30 KM/Hr
36	Turn	Medium	11.07279, 77.57817	30 KM/Hr
37	Turn	Medium	11.06110, 77.57532	30 KM/Hr
38	Turn	Medium	11.05298, 77.57614	30 KM/Hr
39	Turn	High	10.94694, 77.54703	15 KM/Hr
40	Turn	Medium	10.93703, 77.53642	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
41	Turn	Medium	10.93101, 77.53281	30 KM/Hr
42	Turn	Medium	10.92643, 77.53365	30 KM/Hr
43	Turn	Medium	10.89465, 77.52809	30 KM/Hr
44	Turn	Medium	10.89172, 77.52640	30 KM/Hr
45	Turn	Medium	10.83409, 77.52932	30 KM/Hr
46	Turn	High	10.77580, 77.50724	15 KM/Hr
47	Turn	Medium	10.75791, 77.51938	30 KM/Hr
48	Turn	Medium	10.73630, 77.51731	30 KM/Hr
49	Turn	Medium	10.72774, 77.52069	30 KM/Hr
50	Turn	High	10.63723, 77.40538	15 KM/Hr
51	Turn	Medium	10.63044, 77.39749	30 KM/Hr
52	Turn	Medium	10.62884, 77.38638	30 KM/Hr
53	Turn	High	10.62510, 77.37461	15 KM/Hr
54	Turn	High	10.58671, 77.36985	15 KM/Hr
55	Turn	Medium	10.58628, 77.36881	30 KM/Hr
56	Turn	Medium	10.58220, 77.36322	30 KM/Hr
57	Turn	High	10.57815, 77.36128	15 KM/Hr
58	Turn	High	10.57791, 77.35936	15 KM/Hr
59	Turn	Medium	10.57255, 77.35688	30 KM/Hr
60	Blind Spot	Blind Spot	10.57016, 77.35288	10 KM/Hr
61	Turn	Medium	10.56763, 77.36169	30 KM/Hr
62	Blind Spot	Blind Spot	10.56701, 77.36234	10 KM/Hr
63	Turn	High	10.56996, 77.35268	15 KM/Hr
64	Turn	High	10.56533, 77.34849	15 KM/Hr
65	Turn	High	10.56890, 77.33622	15 KM/Hr
66	Turn	High	10.56842, 77.33560	15 KM/Hr
67	Turn	High	10.56600, 77.33538	15 KM/Hr
68	Turn	Medium	10.56317, 77.33866	30 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	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
9	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
10	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
11	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
12	hospital	Marutham Hospital	11.2796906, 77.5864262	30 km/h	Medium
13	hospital	KMCH Hospital	11.2788797, 77.5848796	30 km/h	Medium
14	pharmacy	Nathan Medicals	11.2773384, 77.5829441	30 km/h	Medium
15	police	Police Station	11.277733, 77.5865812	30 km/h	Medium
16	clinic	Logeshwaran Homeo Clinic	11.277675, 77.583065	30 km/h	Medium
17	clinic	Ravi Clinic	11.2768201, 77.5836969	30 km/h	Medium
18	hospital	Sakthi Dental Hospital	11.2788566, 77.5849413	30 km/h	Medium
19	hospital	Sivakumar Hospital	11.2770302, 77.5852952	30 km/h	Medium
20	clinic	VP Medical Centre & Eye Foundation	11.2784922, 77.5836374	30 km/h	Medium
21	hospital	Santhi Hospital	11.2787879, 77.5872993	30 km/h	Medium
22	clinic	Dass Homoeo Clinic	11.2771706, 77.5841177	30 km/h	Medium
23	hospital	N V Nursing Home	11.2780408, 77.5848735	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
24	hospital	Anu Child Care	11.2765928, 77.5848408	30 km/h	Medium
25	clinic	Thulasi Clinic	11.2766687, 77.5869752	30 km/h	Medium
26	clinic	Avm Physiotherapy Clinic	11.2766435, 77.5842715	30 km/h	Medium
27	clinic	Gks Child Clinic	11.2759154, 77.5832766	30 km/h	Medium
28	hospital	Priya Hospital	11.2761, 77.584773	30 km/h	Medium
29	clinic	Sri Amman Clinic	11.275952, 77.5868085	30 km/h	Medium
30	clinic	Baby Dental and Poly Clinic	11.2753902, 77.5829593	30 km/h	Medium
32	hospital	Government Hospital	11.1935282, 77.5923131	30 km/h	Medium
33	hospital	Divya Hospital	11.17586, 77.600701	30 km/h	Medium
34	hospital	Herbert Brough Memorial Hospital	11.1688371, 77.601892	30 km/h	Medium
35	hospital	Shanmuga Hospital	11.1650789, 77.6036595	30 km/h	Medium
36	clinic	Senthil Clinic	11.163922, 77.601461	30 km/h	Medium
37	hospital	Dr. Palanisamy Hospital	11.161573, 77.603607	30 km/h	Medium
38	hospital	Abhirami Hospital	11.1616659, 77.6057677	30 km/h	Medium
39	hospital	Dharani Hospital	11.1616599, 77.605546	30 km/h	Medium
40	hospital	Arul Murgan Hospital	11.161705, 77.603603	30 km/h	Medium
41	hospital	Cattle Hospital	11.1597961, 77.6039276	30 km/h	Medium
42	pharmacy	Bharani medicals	11.0073077, 77.5592308	30 km/h	Medium
43	hospital	ARC Hospital	11.0056814, 77.562434	30 km/h	Medium
44	clinic	Priya Nursing Home	11.00622, 77.563094	30 km/h	Medium
45	hospital	Government Hospital	11.005636, 77.5601252	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
49	fire_station	Kangeyam Fire Station	11.0080494, 77.5613364	30 km/h	Medium
50	clinic	Senthil Dental Clinic	11.0054794, 77.5638863	30 km/h	Medium
51	hospital	Raja Children's Hospital	11.0060531, 77.5639063	30 km/h	Medium
53	hospital	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium
54	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
59	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
60	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	30 km/h	Medium
62	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	30 km/h	Medium
63	clinic	Punitha Nursing Home	10.72901, 77.520148	30 km/h	Medium
64	hospital	Ponnaiah Hospital, Dharapuram	10.72916, 77.520131	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
31	school	Kongu Vellalar Matriculation Higher Sec School	11.2722171, 77.5817369	30 km/h	Medium
46	marketplace	Daily market	11.0071223, 77.560606	30 km/h	Medium
47	marketplace	Daily market	11.0069287, 77.5604531	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
48	marketplace	Weekly Vegetable Market	11.0075738, 77.5605157	30 km/h	Medium
52	school	Panchayat Union Middle School, Kangeyam	11.006326, 77.5634525	30 km/h	Medium
55	school	Global Matriculation Higher Secondary School	10.965994, 77.5591898	30 km/h	Medium
56	college	Maharani College	10.7625655, 77.5157126	30 km/h	Medium
57	school	Sindhu Matriculation Higher Secondary School	10.7471261, 77.5182993	30 km/h	Medium
58	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium
61	school	Thenmalar Higher Secondary School	10.7333748, 77.5166481	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.27925, 77.58494



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.00535, 77.56114



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72668, 77.52217



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.44024, 77.87528



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.44898, 77.87410



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: 11.45764, 77.85219



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: 11.44965, 77.77565



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.44953, 77.77344



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43171, 77.67747



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42954, 77.67558



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39773, 77.65195



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39405, 77.65138



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.34595, 77.64118



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.34133, 77.63235



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33910, 77.63048



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29111, 77.58586



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27858, 77.58408



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27695, 77.58300



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22514, 77.58058



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22019, 77.58250



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18320, 77.59627



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16580, 77.60233



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.16525, 77.60378



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15870, 77.60432



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15535, 77.60091



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15259, 77.60133



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.15163, 77.59988



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.11849, 77.59659



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11644, 77.59151



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10721, 77.58978



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10303, 77.58341



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.09978, 77.58146



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07437, 77.57959



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07279, 77.57817



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.06110, 77.57532



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.05298, 77.57614



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.94694, 77.54703



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.93703, 77.53642



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.93101, 77.53281



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.92643, 77.53365



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.89465, 77.52809



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.89172, 77.52640



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.83409, 77.52932



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.77580, 77.50724



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75791, 77.51938



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.73630, 77.51731



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.72774, 77.52069



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.63723, 77.40538



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.63044, 77.39749



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.62884, 77.38638



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.62510, 77.37461



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.56763, 77.36169



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.56701, 77.36234



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.56533, 77.34849



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.56890, 77.33622
