

# JOURNEY RISK MANAGEMENT (JRM) STUDY

#### **IOCL Coimbatore Terminal to Star Service Station**

#### **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.



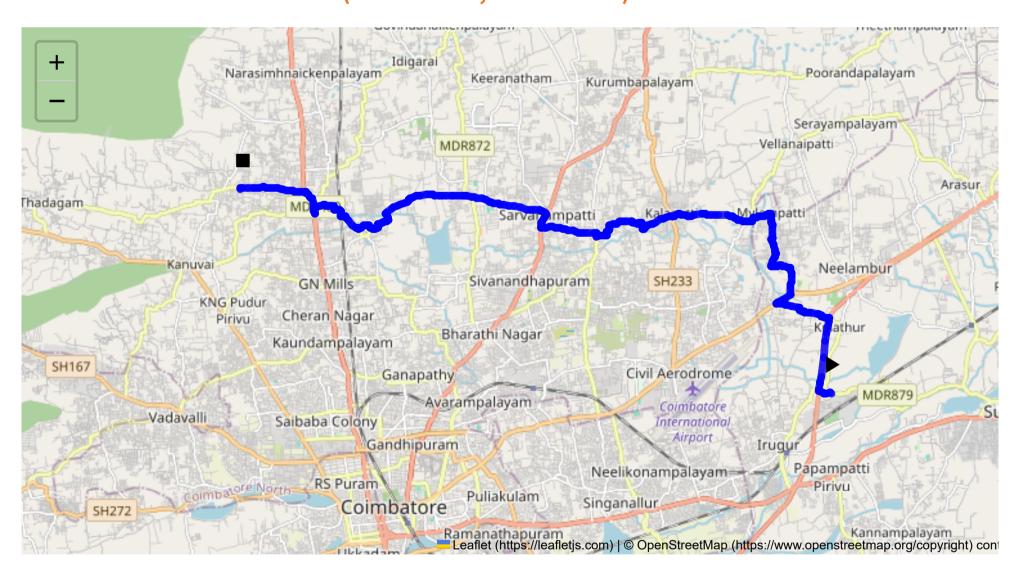
**Route Summary:** 

**Total Distance: 26.43 km** 

**Estimated Duration: 1.0 hours** 

Adjusted Duration (Heavy Vehicle): 1.3 hours

Start: (11.0315, 77.0797) End: (11.085127, 76.922005)



#### Welcome to the Journey Risk Management Study

#### 1. Overview of the Route Map

The route from Athappagoundenpudur, Coimbatore to Thadagam Main Road, Pannimadai spans approximately 26.43 kilometers. The path runs through Chinniyampalayam, GEM Nagar, and Vellakinar Village in Coimbatore, utilizing a mix of urban and semi-urban roadways. This route involves traveling primarily on state highways and city roads, which are moderate in traffic density.

# 2. Typical Weather Conditions and Potential Weather-related Hazards

Coimbatore generally experiences a tropical wet and dry climate, with monsoon rains from June to September and peak heat in April and May. During the monsoon, there is a potential for localized flooding, which can lead to road blockages or slippery surfaces. Fog can be sporadic during the early mornings in winter, which may reduce visibility.

#### 3. Analysis of Traffic Patterns

Traffic congestion is notable during morning (8:00-10:00 AM) and evening (5:30-8:00 PM) peak hours, especially near urban areas and intersections such as Chinniyampalayam and Vellakinar Village. These areas may experience slowdowns due to local commerce and residential activity. Being aware of alternate routes for these times can be beneficial.

#### 4. Assessment of Road Quality and Infrastructure

The main state highways and city roads along this route are generally well-maintained, but expect minor roads, particularly towards village areas, to be narrower and with variable maintenance levels. Potholes and uneven surfaces may occasionally occur in less trafficked zones.

#### 5. Suggestions for Alternative Routes in Emergencies

For emergencies, consider taking the following alternatives:

- Instead of passing through central Chinniyampalayam, use adjacent roads skirting the main urban congestion points.
- In case of blockage, bypass Vellakinar Village via adjacent rural routes, although they may add distance to your journey.

# 6. Summary of Local Regulations Affecting Hazardous Material Transport

Transporting hazardous materials through these routes requires compliance with local transport laws, which include designating routes and time restrictions to minimize disruption and danger in densely populated areas. Ensure adherence to regulation schedules and safety standards for hazardous freight.

#### 7. Overview of Historical Incidents

Historically, the Coimbatore region has witnessed several traffic accidents, but incidents specifically involving heavy vehicles carrying hazardous materials are relatively rare. Increased caution and adherence to prescribed routes have reduced such instances.

#### 8. Environmental Considerations and Sensitive Areas

Sensitive areas include rivers and water bodies near the route, requiring extra caution to prevent potential spills or contamination. It is crucial to follow stricter handling and detour protocols near these

#### 9. Analysis of Communication Coverage

Mobile communication coverage is generally reliable throughout most of this route. However, specific pockets near rural zones might face reduced signal strength leading to potential dead zones, especially moving away from main urban centers.

#### **10. Estimated Emergency Response Times**

- Urban segments: Response times to incidents can typically range from 20-30 minutes.
- Semi-urban and rural segments: Expect longer response times, potentially up to 45 minutes to 1 hour, depending on distance and road accessibilities.

#### 11. Overall Summary of Risk Assessment

The entire route poses moderate risks commonly associated with urban and semi-urban transport of hazardous materials involving traffic congestion, moderately maintained roads, and possible weather disruptions. Careful planning for alternate routes during peak times, awareness of local regulations involving hazardous materials, and preparing for communication dead zones will enhance safety. Efforts should be directed toward raising awareness about road conditions, quick response to weather forecasts, and staying vigilant to avoid environmental contamination near sensitive areas.

#### **Risk Assessment - Turns**

	Risk Type	Risk Level	Coordinates	Speed Limit
0	U-Turn	High	11.0549503, 77.0650284	10 KM/Hr
1	U-Turn	High	11.0788315, 76.94166009999999	10 KM/Hr
2	Turn	High	11.03211, 77.07640	15 KM/Hr
3	Turn	High	11.05129, 77.07919	15 KM/Hr
4	Turn	High	11.05181, 77.07696	15 KM/Hr
5	Turn	High	11.05222, 77.07690	15 KM/Hr
6	Turn	Medium	11.05343, 77.07106	30 KM/Hr
7	Turn	High	11.05351, 77.07099	15 KM/Hr
8	Turn	High	11.05411, 77.07097	15 KM/Hr
9	Turn	High	11.05529, 77.06566	15 KM/Hr
10	Turn	High	11.05495, 77.06503	15 KM/Hr
11	Blind Spot	Blind Spot	11.05507, 77.06496	10 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
12	Turn	High	11.05751, 77.06875	15 KM/Hr
13	Turn	High	11.06437, 77.06865	15 KM/Hr
14	Turn	High	11.06490, 77.06371	15 KM/Hr
15	Turn	Medium	11.06501, 77.06366	30 KM/Hr
16	Turn	Medium	11.07201, 77.06366	30 KM/Hr
17	Turn	Medium	11.07209, 77.06370	30 KM/Hr
18	Turn	Medium	11.07220, 77.06393	30 KM/Hr
19	Turn	Medium	11.07232, 77.06400	30 KM/Hr
20	Blind Spot	Blind Spot	11.07865, 77.06377	10 KM/Hr
21	Turn	High	11.07773, 77.05884	15 KM/Hr
22	Turn	High	11.07800, 77.03706	15 KM/Hr
23	Turn	High	11.07798, 77.03706	15 KM/Hr
24	Turn	High	11.07795, 77.03702	15 KM/Hr
25	Turn	Medium	11.07475, 77.02954	30 KM/Hr
26	Turn	Medium	11.07479, 77.02937	30 KM/Hr
27	Turn	Medium	11.07621, 77.02892	30 KM/Hr
28	Turn	Medium	11.07629, 77.02884	30 KM/Hr
29	Turn	Medium	11.07626, 77.02677	30 KM/Hr
30	Turn	Medium	11.07680, 77.02632	30 KM/Hr
31	Turn	High	11.07573, 77.02044	15 KM/Hr
32	Turn	Medium	11.07299, 77.01959	30 KM/Hr
33	Turn	High	11.07291, 77.01953	15 KM/Hr
34	Turn	High	11.07278, 77.01700	15 KM/Hr
35	Turn	Medium	11.07368, 77.01680	30 KM/Hr
36	Turn	Medium	11.07376, 77.01665	30 KM/Hr
37	Blind Spot	Blind Spot	11.07496, 77.00208	10 KM/Hr
38	Turn	High	11.07859, 77.00367	15 KM/Hr
39	Turn	Medium	11.08256, 76.96684	30 KM/Hr
40	Turn	Medium	11.08194, 76.96664	30 KM/Hr
41	Turn	Medium	11.07903, 76.96085	30 KM/Hr
42	Turn	Medium	11.07704, 76.96129	30 KM/Hr
43	Turn	Medium	11.07685, 76.96118	30 KM/Hr
44	Turn	Medium	11.07588, 76.95866	30 KM/Hr
45	Turn	Medium	11.07473, 76.95760	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
46	Turn	Medium	11.07507, 76.95643	30 KM/Hr
47	Turn	Medium	11.07576, 76.95601	30 KM/Hr
48	Turn	High	11.07511, 76.95338	15 KM/Hr
49	Blind Spot	Blind Spot	11.07471, 76.95339	10 KM/Hr
50	Turn	High	11.07799, 76.94879	15 KM/Hr
51	Turn	High	11.07937, 76.94864	15 KM/Hr
52	Turn	Medium	11.07939, 76.94847	30 KM/Hr
53	Turn	Medium	11.07943, 76.94843	30 KM/Hr
54	Turn	Medium	11.07976, 76.94830	30 KM/Hr
55	Turn	High	11.07983, 76.94703	15 KM/Hr
56	Turn	Medium	11.08071, 76.94665	30 KM/Hr
57	Turn	Medium	11.08110, 76.94430	30 KM/Hr
58	Turn	High	11.08027, 76.94161	15 KM/Hr
59	Blind Spot	Blind Spot	11.07883, 76.94166	10 KM/Hr
60	Turn	High	11.07884, 76.94157	15 KM/Hr
61	Turn	High	11.08438, 76.93915	15 KM/Hr
62	Turn	High	11.08534, 76.92186	15 KM/Hr

## **Emergency Locations**

	type	name	coordinates	speed_limit	risk_level
0	hospital	KGM, Chinniampalayam	11.0570076, 77.067239	30 km/h	Medium
1	hospital	Chinniampalayam Venkateshwara Hospital	11.0545152, 77.0652106	30 km/h	Medium
3	hospital	R V Hospital, Coimbatore	11.0546916, 77.0639178	30 km/h	Medium
4	hospital	Kamalaprakasam, Kalapatti	11.0778, 77.035681	30 km/h	Medium
5	police	Saravanampatti Police Station	11.0747296, 77.0027116	30 km/h	Medium
6	police	B9 Saravanampatty Police Station	11.0747167, 77.0027098	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
8	clinic	Sri Loga Clinic	11.072535, 77.0017429	30 km/h	Medium
11	hospital	KG Eye Hospital	11.0825506, 76.997422	30 km/h	Medium
18	hospital	Government Urban Primary Health Center	11.0827084, 76.9427442	30 km/h	Medium
19	pharmacy	thulasi pharmacy	11.0803127, 76.9427166	30 km/h	Medium
23	police	Thudiyalur Police Station	11.0820675, 76.9412411	30 km/h	Medium
24	hospital	Sri Lakshmi Hospital, Coimbatore	11.0782349, 76.9409348	30 km/h	Medium
25	hospital	bhagirathi hospital	11.0794799, 76.9409445	30 km/h	Medium
26	police	Thudiyalur Police Station	11.0819434, 76.9412392	30 km/h	Medium

### **Crowded Spots**

	type	name	coordinates	speed_limit	risk_level
2	school	Government school	11.0554435, 77.0653927	30 km/h	Medium
7	school	Saravanampatty Elementary School	11.0763477, 77.0017133	30 km/h	Medium
9	school	Ruby Matriculation School	11.0824185, 77.0017383	30 km/h	Medium
10	school	Vivekam CBSE School	11.0791972, 76.9954015	30 km/h	Medium
12	college	KGISL IIM	11.0834337, 76.99715	30 km/h	Medium
13	school	KGISL Institute of Information Management	11.0834393, 76.997046	30 km/h	Medium
14	college	Sankara Institute of Technology	11.085373, 76.9854093	30 km/h	Medium
15	school	Maharishi Vidhya Mandir	11.0814298, 76.9813641	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
17	school	coimbatore corporation thudiyalur middle school (east)	11.082246, 76.946288	30 km/h	Medium
20	marketplace	Thudiyalur weekly market	11.081423, 76.9421998	30 km/h	Medium
21	marketplace	tudiyalur cattle market	11.081311, 76.9426497	30 km/h	Medium
22	marketplace	tudiyalur daily market	11.0811865, 76.9416802	30 km/h	Medium

### **Route Photos of Risky Spots**



Risk Type: U-Turn
Risk Level: High
Speed Limit: 10 KM/Hr

**Coordinates:** 11.0549503, 77.0650284



Risk Type: U-Turn Risk Level: High **Speed Limit:** 10 KM/Hr

**Coordinates:** 11.0788315, 76.94166009999999



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.03211, 77.07640



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.05129, 77.07919



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.05181, 77.07696



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.05222, 77.07690



**Coordinates:** 11.05343, 77.07106



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.05351, 77.07099



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.05411, 77.07097



**Coordinates:** 11.05529, 77.06566



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.05495, 77.06503



Risk Type: Blind Spot Risk Level: Blind Spot Speed Limit: 10 KM/Hr

**Coordinates:** 11.05507, 77.06496



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.05751, 77.06875



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.06437, 77.06865



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.06490, 77.06371



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.06501, 77.06366



**Coordinates:** 11.07201, 77.06366



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07209, 77.06370



Risk Type. Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07220, 77.06393



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07232, 77.06400



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.07865, 77.06377



**Coordinates:** 11.07773, 77.05884



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.07798, 77.03706



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.07795, 77.03702



**Coordinates:** 11.07475, 77.02954



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07479, 77.02937



**Coordinates:** 11.07621, 77.02892



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07629, 77.02884



Risk Type. Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07626, 77.02677



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07680, 77.02632



Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.07573, 77.02044



**Coordinates:** 11.07299, 77.01959



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.07291, 77.01953



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07368, 77.01680



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07376, 77.01665



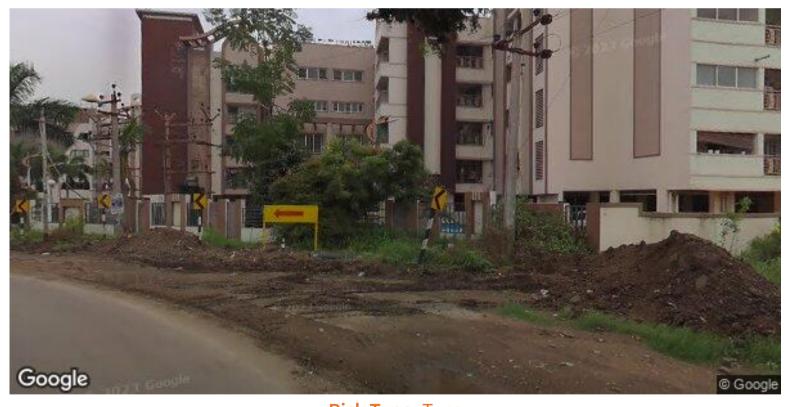
Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.07496, 77.00208



**Coordinates:** 11.07859, 77.00367



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08256, 76.96684



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08194, 76.96664



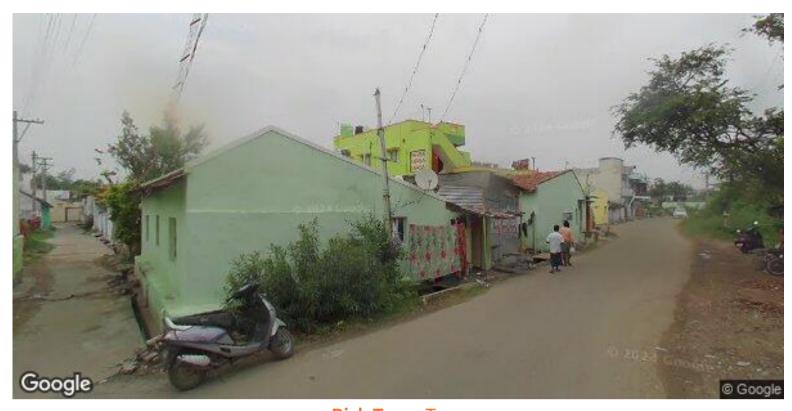
Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07903, 76.96085



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07588, 76.95866



**Coordinates:** 11.07473, 76.95760



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

**Coordinates:** 11.07507, 76.95643



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

**Coordinates:** 11.07576, 76.95601



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.07511, 76.95338



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.07471, 76.95339



**Coordinates:** 11.07799, 76.94879



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.07937, 76.94864



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

**Coordinates:** 11.07939, 76.94847



**Coordinates:** 11.07943, 76.94843



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07976, 76.94830



**Coordinates:** 11.07983, 76.94703



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08071, 76.94665



Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08110, 76.94430



**Coordinates:** 11.08027, 76.94161



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.07883, 76.94166



**Coordinates:** 11.07884, 76.94157



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.08438, 76.93915



Risk Level: High
Speed Limit: 15 KM/Hr

**Coordinates:** 11.08534, 76.92186