



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to SEPC Power Private
Ltd

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

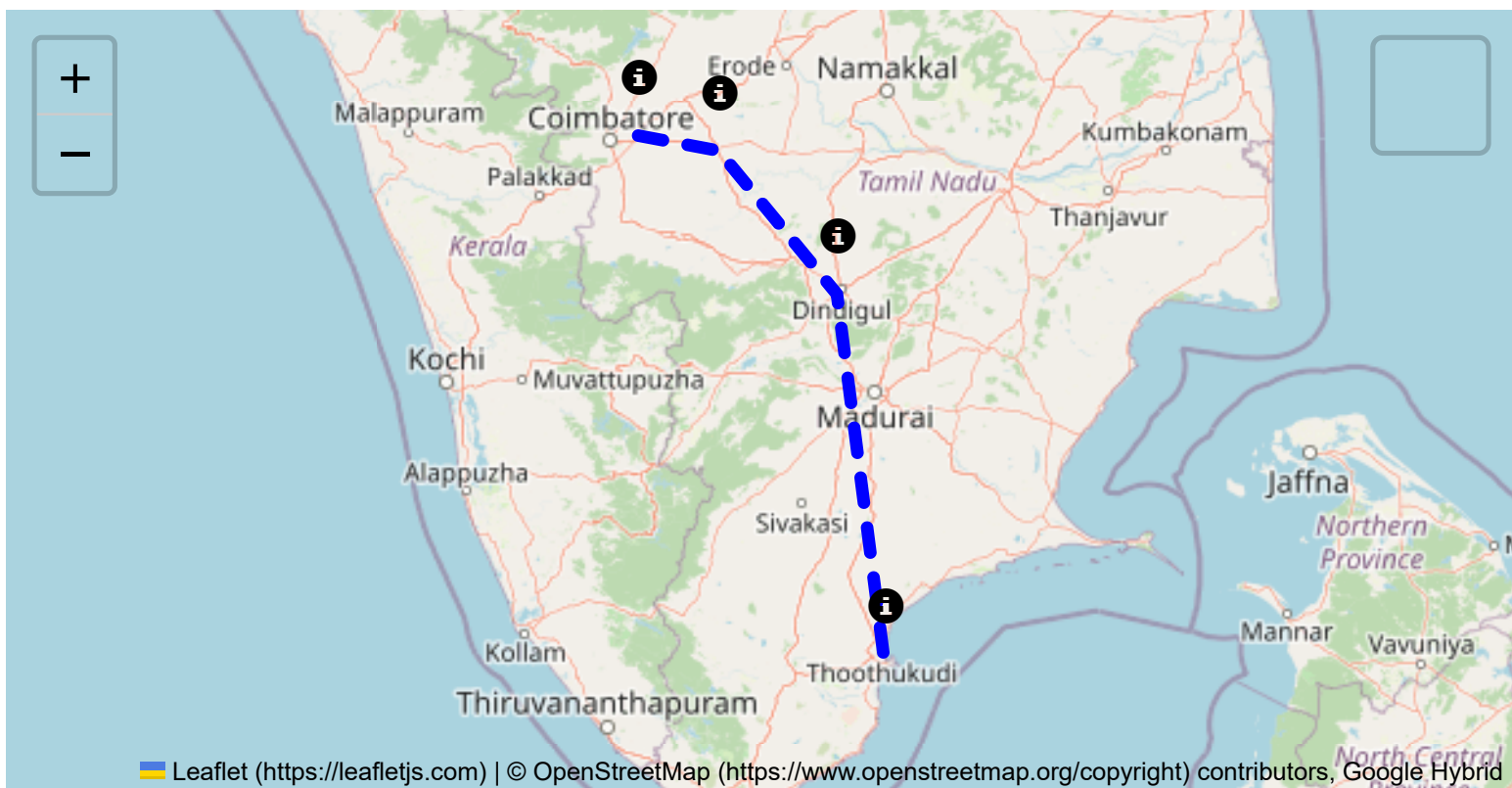
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental impacts during transport.

Journey Risk Mitigation

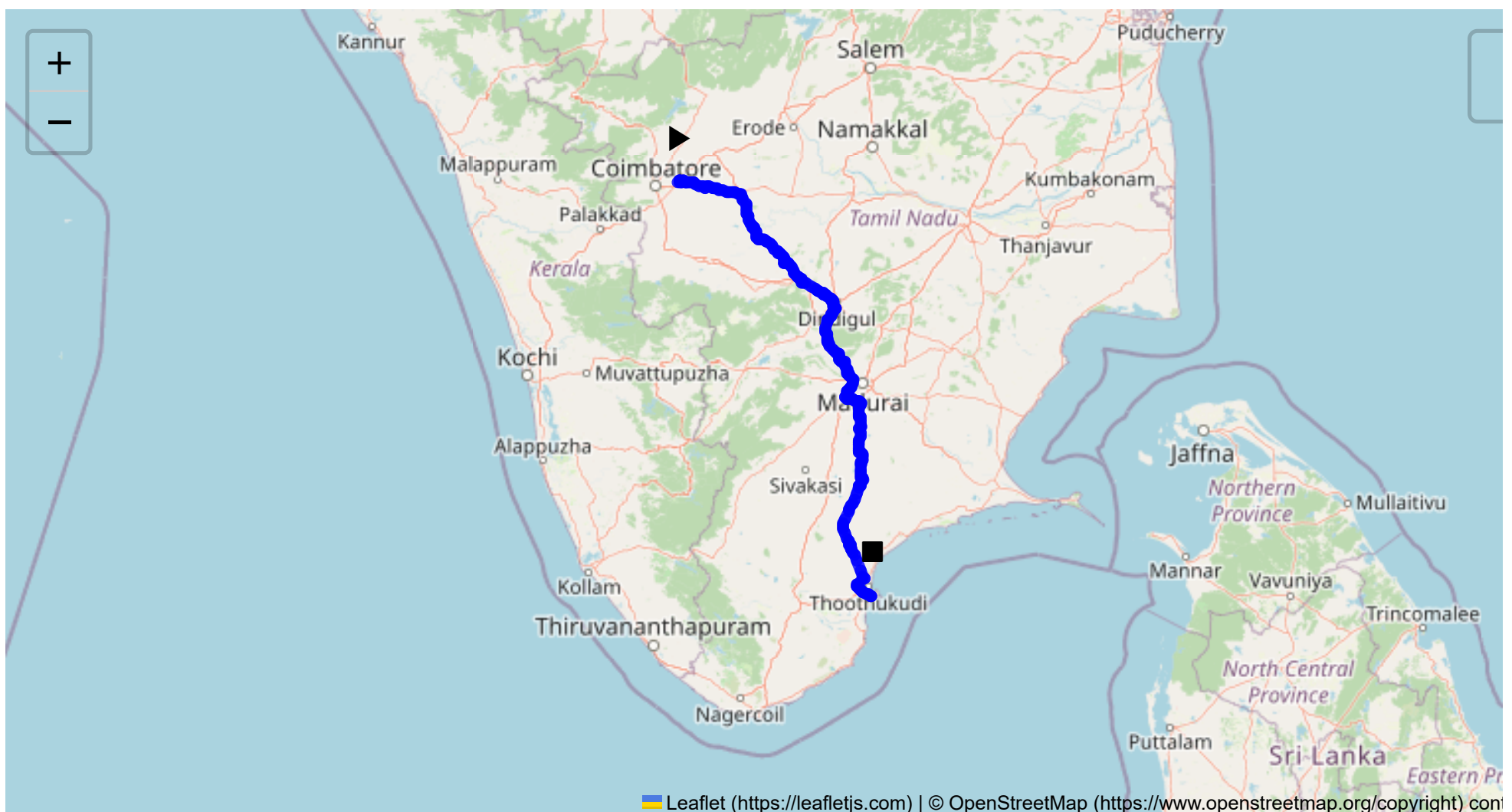
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 349.27 km
Estimated Duration: 5.8 hours
Adjusted Duration (Heavy Vehicle): 7.3 hours
Start: (11.0315, 77.0797)
End: (8.757103, 78.155381)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map:

- The route begins in Athappagoundenpudur, Coimbatore, traverses through Palladam and Pallapatti on NH 44, and terminates in Thoothukudi at the VOC Road near the harbor. The journey spans approximately 349.27 kilometers, predominantly along highways and arterial roads.

2. Typical Weather Conditions and Potential Weather-Related Hazards:

- Tamil Nadu experiences a tropical climate. The monsoon season (June to September) can lead to heavy rains, causing slippery roads and flooding, especially in low-lying areas. The route passes through regions that might face occasional dense fog in the early mornings during the winter months (December to February), reducing visibility.

3. Analysis of Traffic Patterns:

- Heavy congestion is typically seen around major junctions and towns, such as Coimbatore, Palladam, and Dindigul, especially during peak hours (morning: 8-10 AM; evening: 5-7 PM). NH 44, being a major arterial road, can experience heavy truck traffic.

4. Assessment of Road Quality and Infrastructure:

- The road quality is generally good on NH 44 and other significant highways, with toll plazas ensuring maintenance. However, some stretches might have potholes or uneven surfaces, particularly after the monsoon season. Infrastructure like rest areas and fuel stations are adequately present but can be sparse in rural sections.

5. Suggestions for Alternative Routes for Emergencies:

- An alternative route includes using smaller state highways parallel to NH 44, though they might have lower capacity and slower travel speeds but can be less congested.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Strict checks at checkpoints and toll plazas; compliance with state and national safety regulations is mandatory. Restrictions may apply in heavily populated areas and during peak travel times for hazardous materials transport.

7. Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials:

- Past incidents include vehicle overturns, mostly due to sharp bends and drivers' fatigue. Additionally, there have been occasional instances of spillage, largely attributed to inadequate container securing or poor handling during peak traffic.

8. Environmental Considerations and Sensitive Areas:

- The route passes near ecologically sensitive areas such as forested lands in the Dindigul district. Caution must be taken to avoid any spillage or contamination. Additionally, interaction with agricultural zones requires attention to avoid disruptions.

9. Analysis of Communication Coverage:

- Generally good along NH 44 and around major towns. However, some rural stretches may have patchy mobile network coverage, impacting real-time communication and navigation.

10. Estimated Emergency Response Times for Different Route Segments:

- Emergency response times vary. Urban segments like those around Palladam and Dindigul can expect a response in approximately 30-45 minutes. Rural areas may face delays, potentially doubling response times.

11. An Overall Summary of Risk Assessment:

- The route is a well-established freight corridor with suitable infrastructure for heavy vehicle transit. However, risks related to weather, peak traffic congestion, and rural segments with less robust communication remain. Proactive measures like journey management, awareness of peak

hours, and preparedness for weather changes are essential for minimizing risks. Emergency protocols should be clear, especially concerning hazardous material transport, and contingencies for communication breakdowns and incident response must be in place.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	8.75825, 78.15559	15 KM/Hr
1	Blind Spot	Blind Spot	11.03560, 77.09403	10 KM/Hr
2	Turn	High	11.02761, 77.09723	15 KM/Hr
3	Turn	Medium	11.03353, 77.11167	30 KM/Hr
4	Turn	Medium	11.02433, 77.17315	30 KM/Hr
5	Turn	Medium	10.99888, 77.23626	30 KM/Hr
6	Turn	Medium	10.99396, 77.28249	30 KM/Hr
7	Turn	Medium	10.99516, 77.28965	30 KM/Hr
8	Turn	High	10.96804, 77.42688	15 KM/Hr
9	Turn	Medium	10.75939, 77.51873	30 KM/Hr
10	Turn	Medium	10.72939, 77.51986	30 KM/Hr
11	Turn	Medium	10.71815, 77.53530	30 KM/Hr
12	Turn	Medium	10.71759, 77.55612	30 KM/Hr
13	Turn	Medium	10.63711, 77.65004	30 KM/Hr
14	Turn	Medium	10.61129, 77.67276	30 KM/Hr
15	Turn	High	10.59879, 77.67968	15 KM/Hr
16	Turn	Medium	10.58997, 77.67631	30 KM/Hr
17	Turn	High	10.58714, 77.67695	15 KM/Hr
18	Turn	Medium	10.57167, 77.71003	30 KM/Hr
19	Turn	Medium	10.52878, 77.73242	30 KM/Hr
20	Turn	Medium	10.52420, 77.73942	30 KM/Hr
21	Turn	High	10.50490, 77.74914	15 KM/Hr
22	Turn	Medium	10.50215, 77.76396	30 KM/Hr
23	Turn	Medium	10.49415, 77.77276	30 KM/Hr
24	Turn	High	10.47989, 77.77654	15 KM/Hr
25	Turn	Medium	10.41481, 77.90230	30 KM/Hr
26	Turn	Medium	10.38511, 77.94117	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
27	Turn	Medium	10.38023, 77.94290	30 KM/Hr
28	Turn	Medium	10.37080, 77.95185	30 KM/Hr
29	Turn	Medium	10.34939, 77.94986	30 KM/Hr
30	Turn	Medium	10.33663, 77.95738	30 KM/Hr
31	Turn	Medium	10.16551, 77.91819	30 KM/Hr
32	Turn	Medium	10.16043, 77.91672	30 KM/Hr
33	Turn	Medium	10.10528, 77.94328	30 KM/Hr
34	Turn	Medium	10.08716, 77.97757	30 KM/Hr
35	Turn	Medium	10.06379, 77.98053	30 KM/Hr
36	Turn	Medium	10.04260, 78.01022	30 KM/Hr
37	Turn	Medium	9.99701, 78.02528	30 KM/Hr
38	Turn	Medium	9.99128, 78.02559	30 KM/Hr
39	Turn	Medium	9.89923, 78.04405	30 KM/Hr
40	Turn	Medium	9.88169, 78.02935	30 KM/Hr
41	Turn	Medium	9.87766, 78.03001	30 KM/Hr
42	Turn	High	9.84854, 78.01549	15 KM/Hr
43	Turn	High	9.82418, 78.09326	15 KM/Hr
44	Turn	Medium	9.81193, 78.09780	30 KM/Hr
45	Turn	Medium	9.74444, 78.09399	30 KM/Hr
46	Turn	High	9.69247, 78.10206	15 KM/Hr
47	Turn	High	9.67524, 78.08910	15 KM/Hr
48	Turn	Medium	9.65758, 78.09833	30 KM/Hr
49	Turn	Medium	9.60443, 78.09020	30 KM/Hr
50	Turn	Medium	9.55799, 78.09085	30 KM/Hr
51	Turn	Medium	9.55008, 78.09559	30 KM/Hr
52	Turn	Medium	9.48384, 78.09959	30 KM/Hr
53	Turn	Medium	9.40790, 78.10336	30 KM/Hr
54	Turn	High	9.39755, 78.11421	15 KM/Hr
55	Turn	Medium	9.37411, 78.10679	30 KM/Hr
56	Turn	Medium	9.02558, 78.04825	30 KM/Hr
57	Turn	Medium	9.01913, 78.04726	30 KM/Hr
58	Turn	High	8.85616, 78.11849	15 KM/Hr
59	Turn	Medium	8.81545, 78.08090	30 KM/Hr
60	Turn	Medium	8.80932, 78.08087	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
61	Turn	Medium	8.78933, 78.10398	30 KM/Hr
62	Turn	Medium	8.77886, 78.10966	30 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	hospital	Balaji Hospital, Sulur	11.0277947, 77.1298133	30 km/h	Medium
2	hospital	Palladam Government Hospital	10.9962561, 77.2803585	30 km/h	Medium
3	hospital	Sanjeevi Hospital, Palladam	10.9963103, 77.2800924	30 km/h	Medium
4	police	Palladam Police Station	10.9966966, 77.279193	30 km/h	Medium
5	clinic	Rajeshwari Nursing Home	10.9953069, 77.2841138	30 km/h	Medium
6	hospital	Balaji Hospital	10.9936939, 77.2849449	30 km/h	Medium
7	hospital	Ponni Hospital, Coimbatore	10.9955604, 77.2887151	30 km/h	Medium
10	hospital	Government Hospital, Koduvai	10.9421891, 77.438567	30 km/h	Medium
12	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
13	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	30 km/h	Medium
14	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	30 km/h	Medium
15	clinic	Punitha Nursing Home	10.72901, 77.520148	30 km/h	Medium
16	hospital	Ponnaiah Hospital, Dharapuram	10.72916, 77.520131	30 km/h	Medium
21	hospital	JJ Arul Hospital	10.3310469, 77.9566165	30 km/h	Medium
22	hospital	Government Hospital, Katchakatti	10.0706108, 77.9769219	30 km/h	Medium
25	hospital	Vediyal Hospital	9.3195279, 78.0805765	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	marketplace	Sulur Market	11.029887, 77.1232729	30 km/h	Medium
8	school	PVKN Higher Secondary School	10.9711766, 77.3699335	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
9	school	Pongalur Uppathiyar Venkadasamy Naidu Elementry School	10.9703113, 77.3693546	30 km/h	Medium
11	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium
17	college	P.S.N.A. College Of Engineering And Technology	10.4164768, 77.9006633	30 km/h	Medium
18	college	S S M Institute of Engineering & Technology	10.396526, 77.9203927	30 km/h	Medium
19	marketplace	Dindigul Wholesale Market	10.3721879, 77.9541993	30 km/h	Medium
20	school	Anugraha International School	10.32991, 77.9559959	30 km/h	Medium
23	school	Krishnamal Ramasubbaiyer CBSE School	9.7973299, 78.0926871	30 km/h	Medium
24	college	Subbalakshmi Lakshmipathy College of Science	9.8002021, 78.0926551	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.03560, 77.09403



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.02761, 77.09723



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03353, 77.11167



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.02433, 77.17315



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.99888, 77.23626



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.99396, 77.28249



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.99516, 77.28965

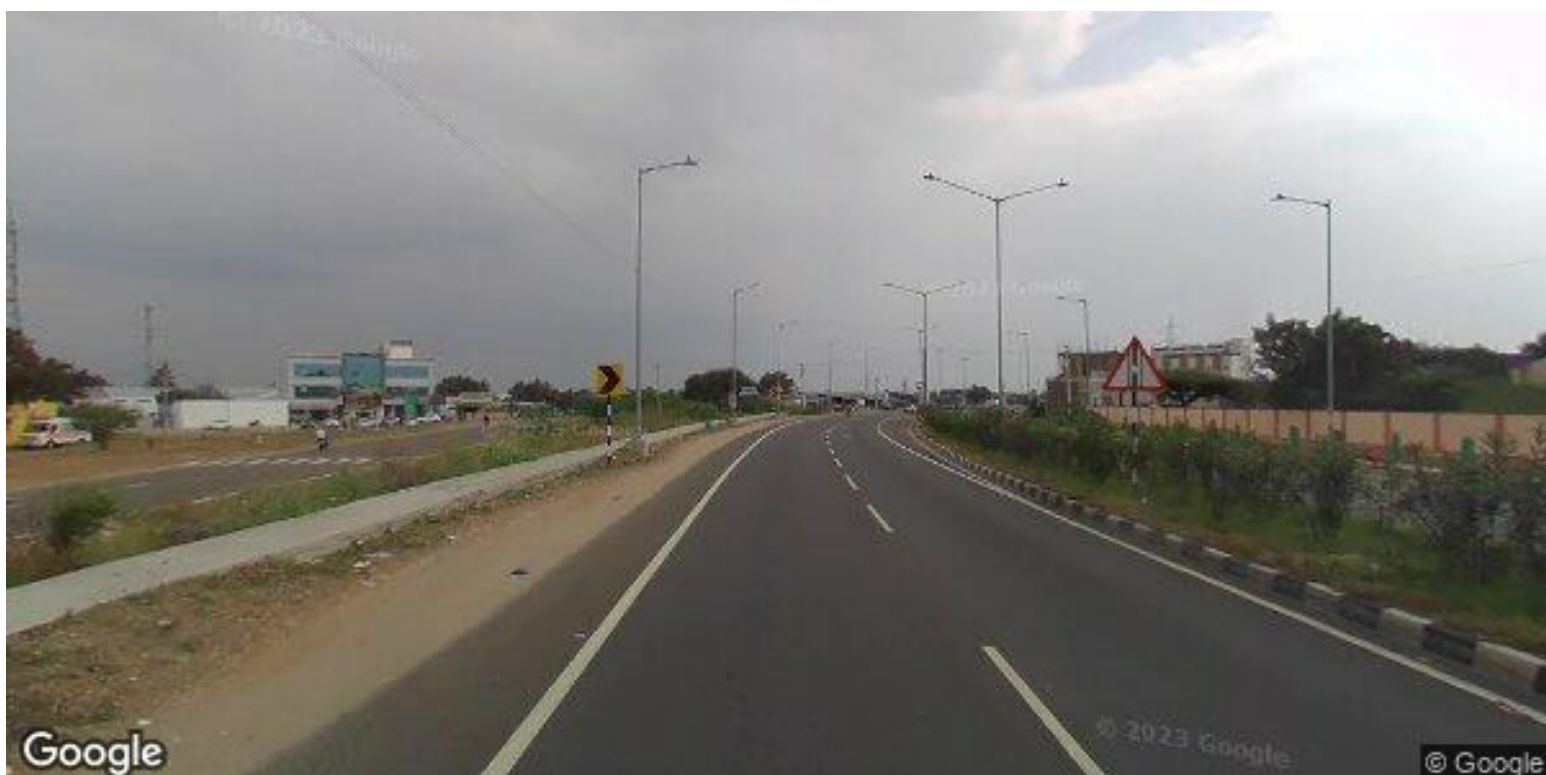


Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.96804, 77.42688



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75939, 77.51873



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.72939, 77.51986



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.71815, 77.53530

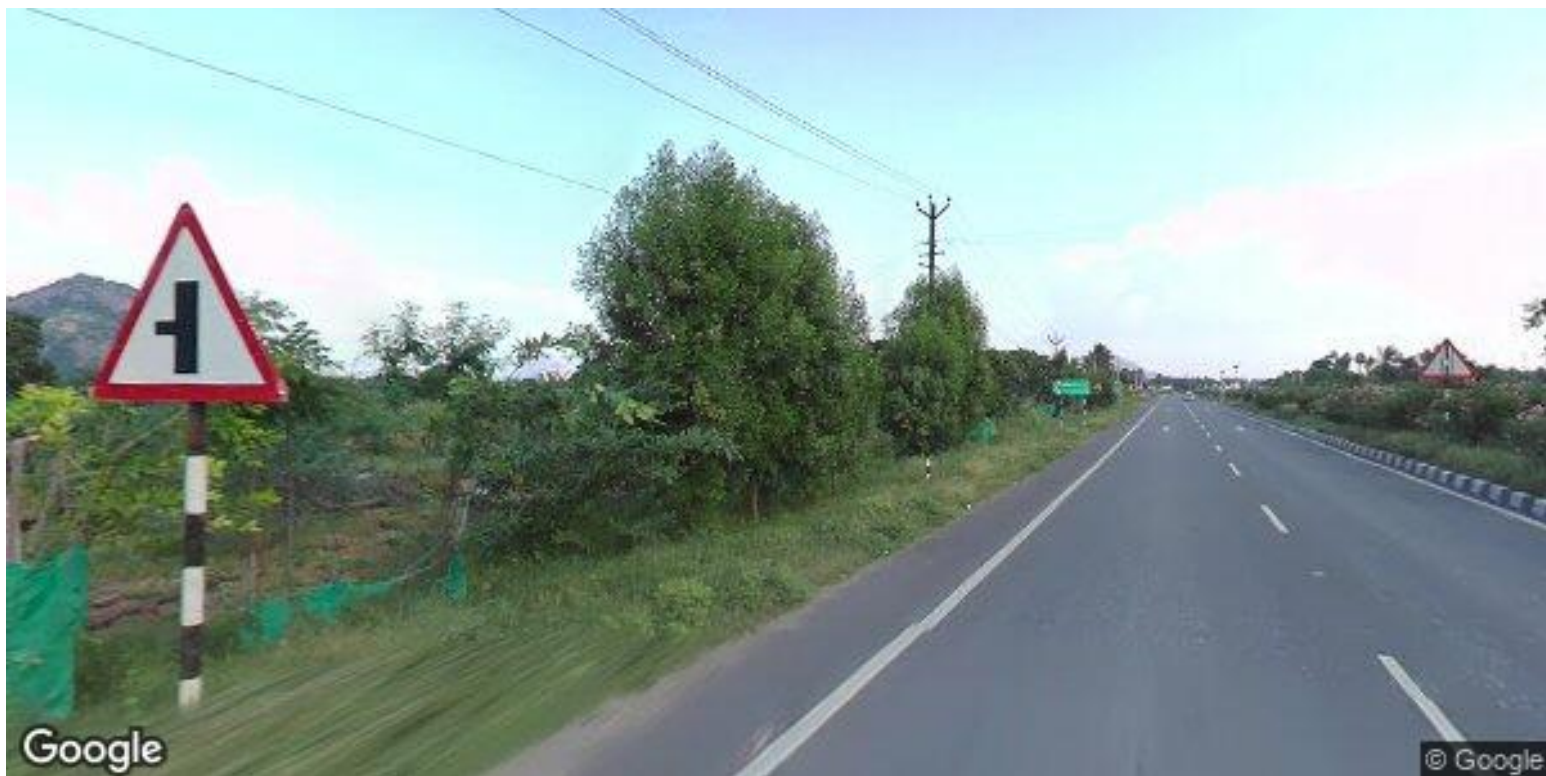


Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.71759, 77.55612



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.63711, 77.65004



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.61129, 77.67276



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.59879, 77.67968



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.58997, 77.67631



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.58714, 77.67695



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.57167, 77.71003



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.52878, 77.73242



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.52420, 77.73942



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.50490, 77.74914



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.50215, 77.76396



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.47989, 77.77654



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.41481, 77.90230



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.38511, 77.94117



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.38023, 77.94290



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.37080, 77.95185



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.34939, 77.94986



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.33663, 77.95738



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.16551, 77.91819



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.16043, 77.91672



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.10528, 77.94328



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.08716, 77.97757



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.06379, 77.98053



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.04260, 78.01022



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 9.99701, 78.02528



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.99128, 78.02559



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.89923, 78.04405



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 9.88169, 78.02935



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 9.87766, 78.03001



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 9.84854, 78.01549

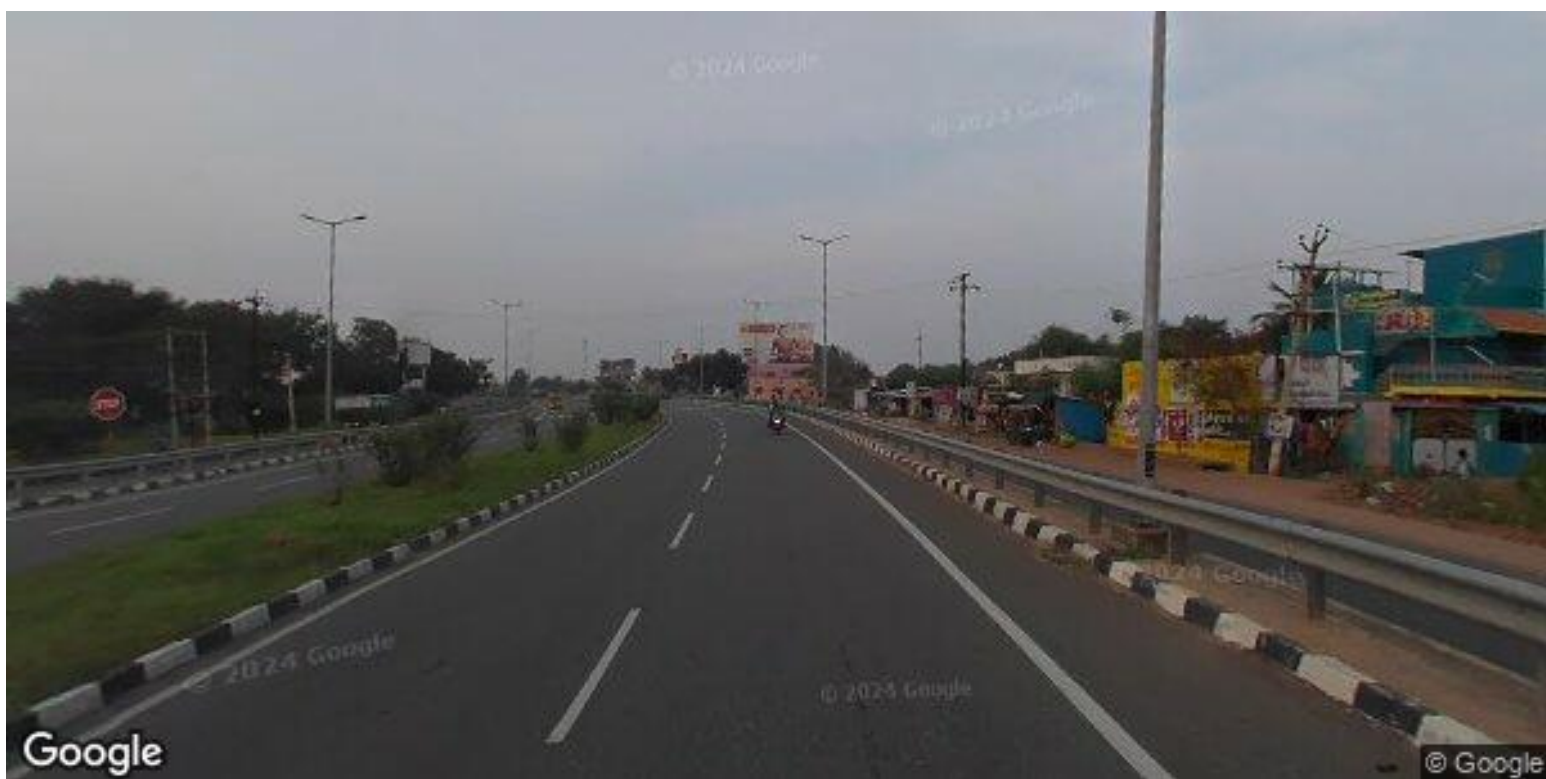


Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 9.82418, 78.09326



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.81193, 78.09780



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 9.74444, 78.09399



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 9.69247, 78.10206



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 9.67524, 78.08910



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.65758, 78.09833



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.55799, 78.09085



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 9.55008, 78.09559



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 9.48384, 78.09959



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 9.39755, 78.11421



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.37411, 78.10679



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.02558, 78.04825



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 9.01913, 78.04726



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 8.85616, 78.11849



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 8.81545, 78.08090



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 8.80932, 78.08087



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 8.78933, 78.10398
