JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to Pon Muthu Sivam Autos

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

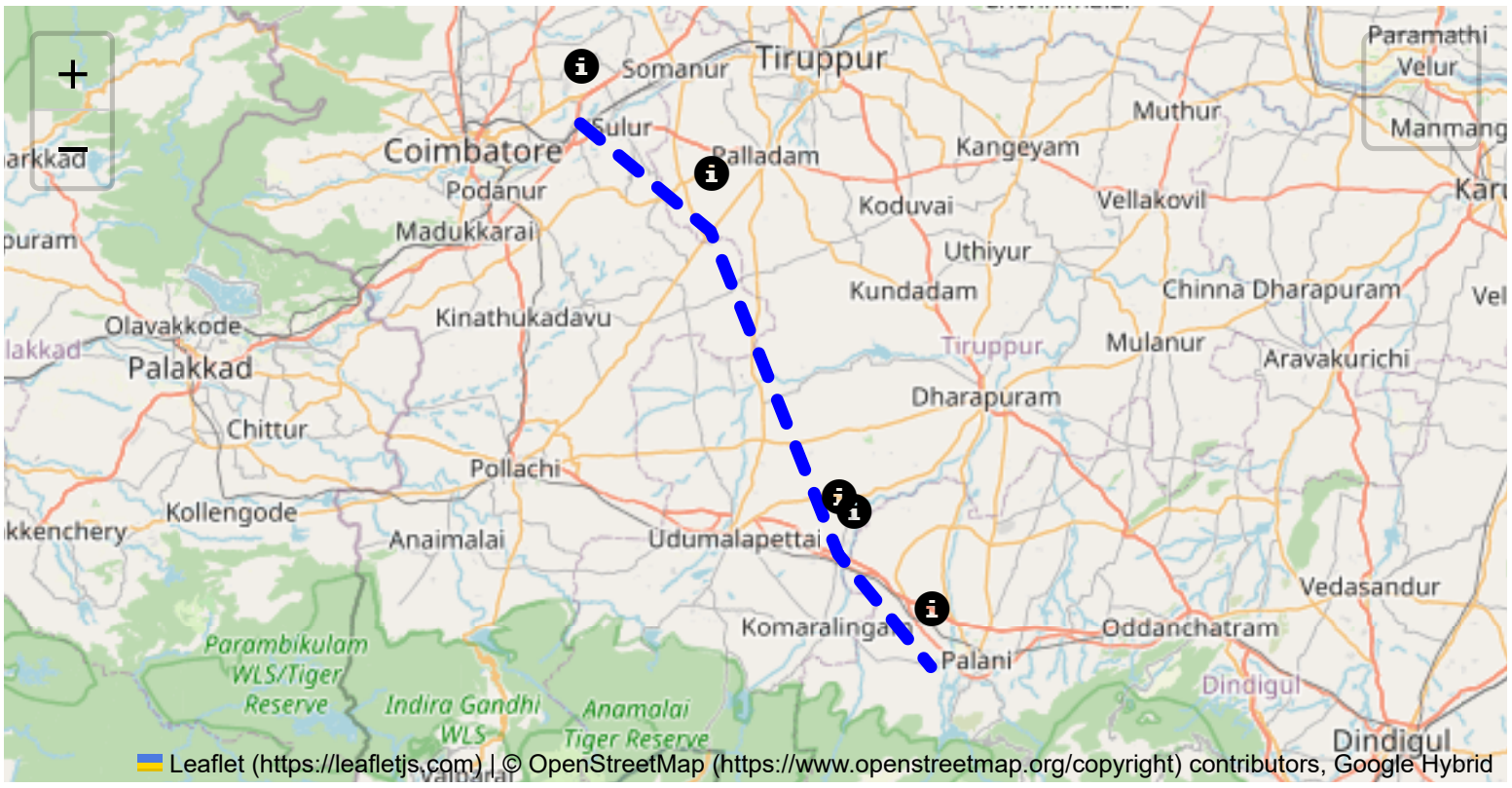
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

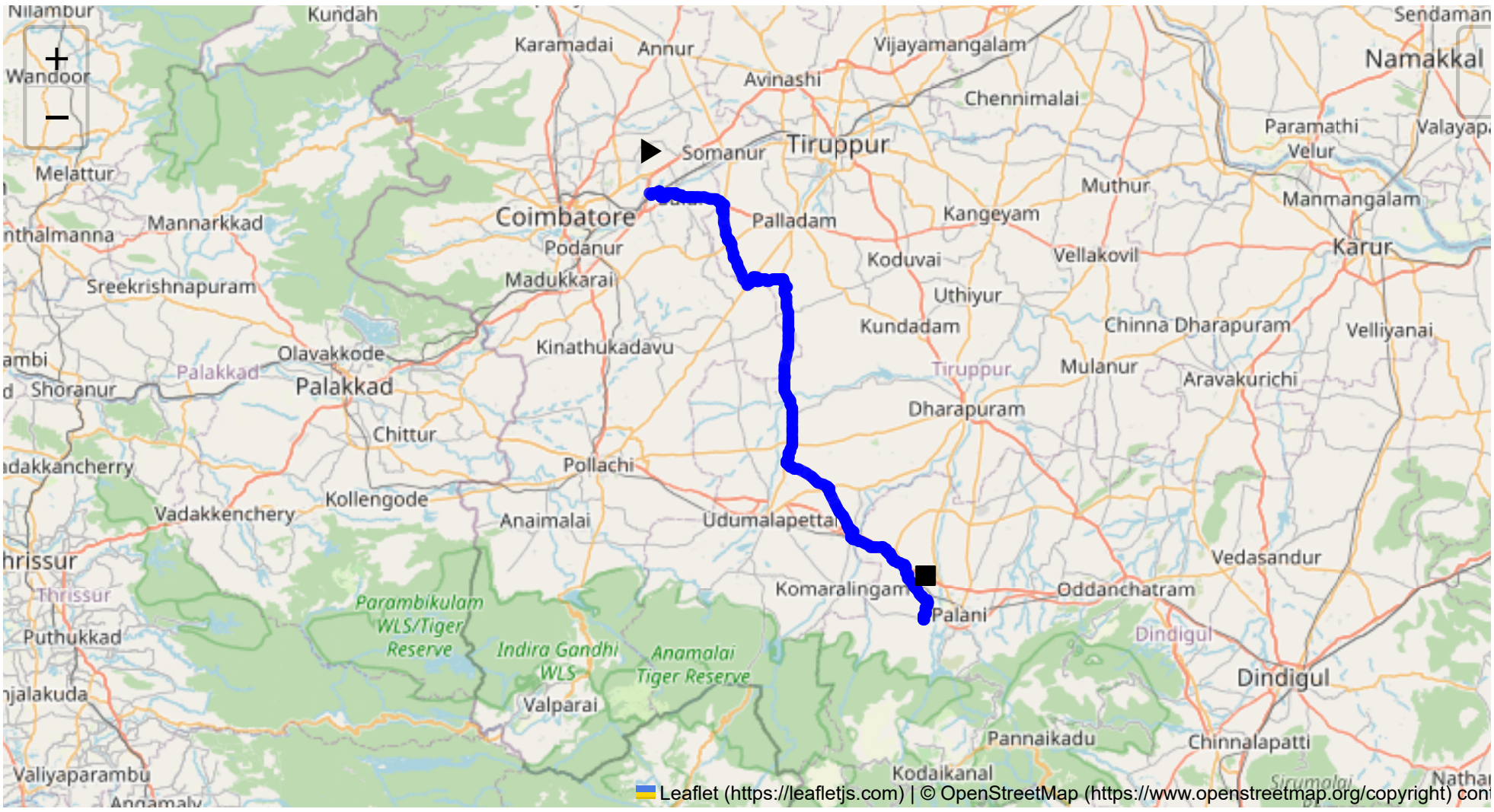
Compliance with Government Directives

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: 97.78 km
Estimated Duration: 2.3 hours
Adjusted Duration (Heavy Vehicle): 2.8 hours
Start: (11.0315, 77.0797)
End: (10.445496, 77.464355)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Athappagoundenpudur in Coimbatore to Neikarapatti in Tamil Nadu, via KamanaickenPalayam, Kalukarai, and V G Nagar, covers approximately 97.78 kilometers. The route passes through a mix of rural and small urban areas, with a combination of state highways and smaller roads.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate, with the monsoon season from June to September bringing heavy rains that can lead to flooding and reduced visibility. During the summer (March to May), high temperatures can cause asphalt roads to become soft, potentially affecting heavy vehicles. Fog is occasionally present during winter mornings, particularly in rural areas.

3. Analysis of Traffic Patterns

Traffic is generally moderate, with peak congestion observed during morning (8:00-10:00 a.m.) and evening (5:00-7:00 p.m.) hours around town centers. Agricultural vehicles and slow-moving traffic are common obstacles in rural stretches.

4. Assessment of Road Quality and Infrastructure

Road conditions vary along the route. While the state highways are generally well-maintained, the smaller roads, especially in rural areas, may have potholes and uneven surfaces. Watch for narrow bridges and sharp turns in these areas.

5. Suggestions for Alternative Routes for Emergencies

Consider state highways or nearest routes leading to major towns like Coimbatore or Dindigul for emergencies, as they provide better access to medical and mechanical support facilities. Use NH-83 for a faster and more direct link between Coimbatore and Dindigul, bypassing smaller roads.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials is subject to state and federal regulations, including restrictions on carriage through residential areas and the need for proper labeling. Night travel of hazardous materials is often restricted to reduce accident risks.

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

While specific data on incidents along this exact route is limited, Tamil Nadu has reported accidents involving heavy vehicles, often due to speeding, driver fatigue, and road conditions. The focus should be on safe driving practices and adherence to speed limits.

8. Environmental Considerations and Sensitive Areas

The route passes near agricultural lands and small natural reserves. It is advisable to avoid spillages and ensure low noise levels in sensitive areas to protect the local ecology.

9. Analysis of Communication Coverage

Rural segments may experience occasional communication dead zones, especially in areas with dense vegetation or near hills. Ensure that GPS and mobile networks are fully charged and consider carrying alternative communication devices like radios.

10. Estimated Emergency Response Times for Different Route Segments

Emergency support is more readily available closer to urban centers, with response times around 20-30 minutes. In rural areas, response times can extend to an hour or more due to distance and road conditions.

11. Overall Summary of Risk Assessment

The primary risks along this route include weather-induced hazards, road quality variability, and potential communication breakdowns in remote areas. Proper planning, adherence to regulations regarding hazardous material transport, and reliance on alternative routes during emergencies are crucial to ensuring safety. Regular updates on road and weather conditions can significantly enhance driver readiness and risk mitigation strategies.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.03174, 77.08443	15 KM/Hr
1	Turn	High	11.03231, 77.08448	15 KM/Hr
2	Turn	Medium	11.03306, 77.08758	30 KM/Hr
3	Blind Spot	Blind Spot	11.03364, 77.08947	10 KM/Hr
4	Blind Spot	Blind Spot	11.03267, 77.08951	10 KM/Hr
5	Turn	High	11.03560, 77.09403	15 KM/Hr
6	Turn	Medium	11.03521, 77.09439	30 KM/Hr
7	Turn	Medium	11.03106, 77.09486	30 KM/Hr
8	Turn	Medium	11.03057, 77.09537	30 KM/Hr
9	Turn	Medium	11.02939, 77.09572	30 KM/Hr
10	Turn	Medium	11.02927, 77.09595	30 KM/Hr
11	Turn	Medium	11.02777, 77.09694	30 KM/Hr
12	Turn	Medium	11.02727, 77.09847	30 KM/Hr
13	Turn	Medium	11.03323, 77.11422	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
14	Turn	High	11.03352, 77.11509	15 KM/Hr
15	Turn	Medium	11.03154, 77.11673	30 KM/Hr
16	Turn	Medium	11.03146, 77.11854	30 KM/Hr
17	Turn	Medium	11.02970, 77.12192	30 KM/Hr
18	Turn	High	11.02928, 77.12212	15 KM/Hr
19	Turn	Medium	11.02950, 77.12393	30 KM/Hr
20	Turn	High	11.01759, 77.18426	15 KM/Hr
21	Turn	High	10.96625, 77.19239	15 KM/Hr
22	Turn	High	10.96628, 77.19310	15 KM/Hr
23	Blind Spot	Blind Spot	10.90680, 77.21854	10 KM/Hr
24	Turn	Medium	10.90926, 77.22051	30 KM/Hr
25	Turn	High	10.91679, 77.22642	15 KM/Hr
26	Turn	Medium	10.91599, 77.22755	30 KM/Hr
27	Turn	High	10.91570, 77.22991	15 KM/Hr
28	Turn	Medium	10.91277, 77.23112	30 KM/Hr
29	Turn	High	10.91255, 77.23148	15 KM/Hr
30	Turn	Medium	10.91283, 77.23208	30 KM/Hr
31	Turn	High	10.91412, 77.23606	15 KM/Hr
32	Turn	Medium	10.91382, 77.24112	30 KM/Hr
33	Turn	High	10.91530, 77.26625	15 KM/Hr
34	Turn	High	10.65984, 77.27186	15 KM/Hr
35	Turn	Medium	10.56755, 77.36194	30 KM/Hr
36	Blind Spot	Blind Spot	10.56667, 77.36500	10 KM/Hr
37	Turn	High	10.56629, 77.36483	15 KM/Hr
38	Blind Spot	Blind Spot	10.56689, 77.36242	10 KM/Hr
39	Turn	High	10.55909, 77.36238	15 KM/Hr
40	Turn	High	10.54455, 77.40563	15 KM/Hr
41	Turn	High	10.54531, 77.40636	15 KM/Hr
42	Turn	Medium	10.51951, 77.43664	30 KM/Hr
43	Turn	Medium	10.51911, 77.43693	30 KM/Hr
44	Turn	High	10.51884, 77.43690	15 KM/Hr
45	Turn	Medium	10.51816, 77.43823	30 KM/Hr
46	Turn	Medium	10.46933, 77.46918	30 KM/Hr
47	Turn	Medium	10.45119, 77.46552	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
48	Blind Spot	Blind Spot	10.44511, 77.46363	10 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	Government Hospital Karadivavi	10.961828, 77.1943977	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

Route Photos of Risky Spots

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.03174, 77.08443

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.03231, 77.08448

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03306, 77.08758

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.03364, 77.08947

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.03267, 77.08951

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.03560, 77.09403

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03521, 77.09439

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

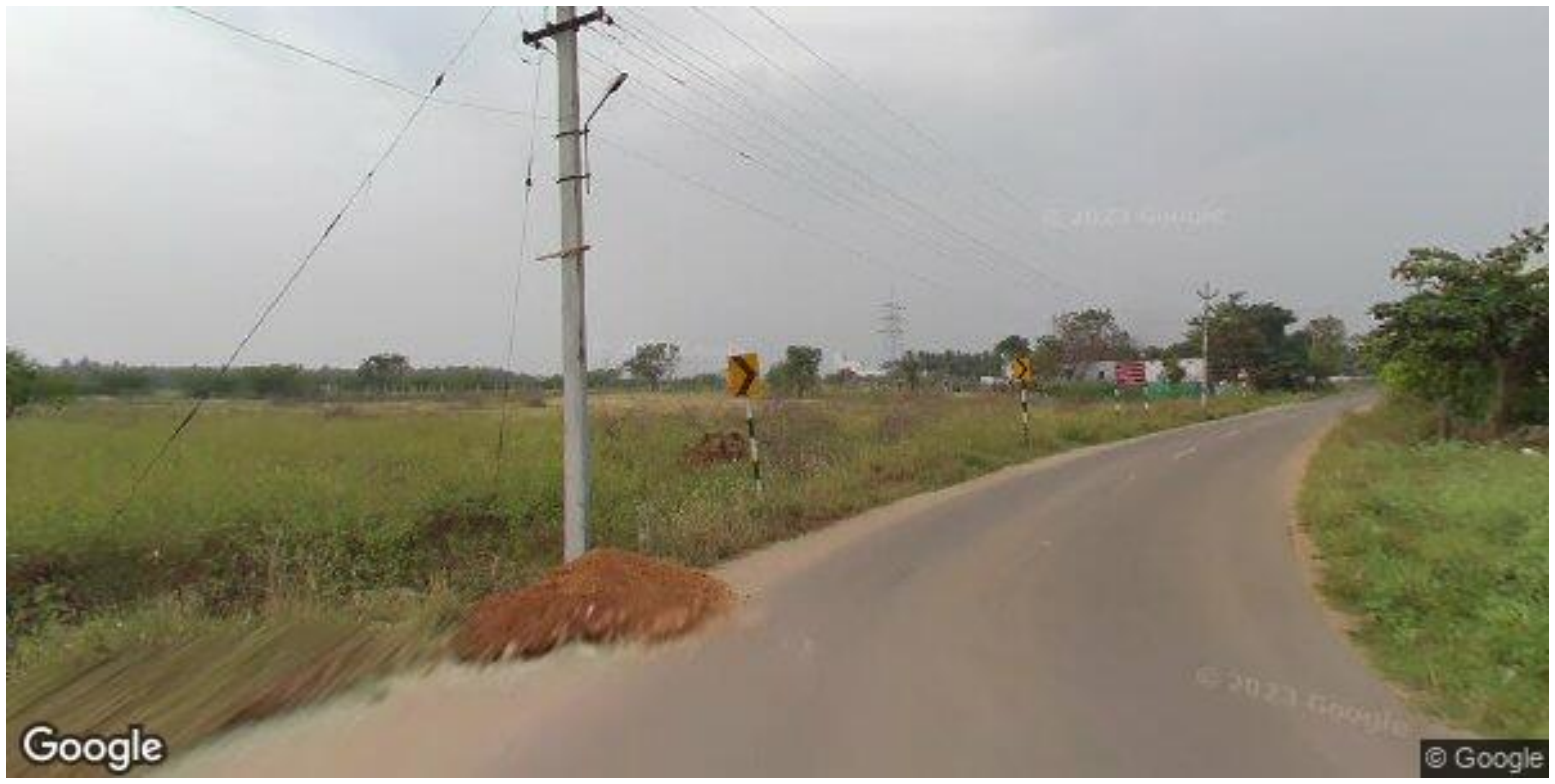
Coordinates: 11.03106, 77.09486

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03057, 77.09537



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.02939, 77.09572

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.02927, 77.09595

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.02777, 77.09694

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.02727, 77.09847

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03323, 77.11422

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.03352, 77.11509

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03154, 77.11673

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03146, 77.11854

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.02970, 77.12192

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.02928, 77.12212

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.02950, 77.12393

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.01759, 77.18426

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.96625, 77.19239

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.96628, 77.19310

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.90680, 77.21854

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.90926, 77.22051

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.91679, 77.22642

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.91599, 77.22755

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.91570, 77.22991

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.91277, 77.23112

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.91255, 77.23148

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.91283, 77.23208

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.91412, 77.23606

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.91382, 77.24112

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.91530, 77.26625

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.65984, 77.27186

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.56755, 77.36194

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.56689, 77.36242

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.55909, 77.36238

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.54455, 77.40563

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.51951, 77.43664

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.51911, 77.43693

Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.51884, 77.43690

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.51816, 77.43823

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.46933, 77.46918

Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.45119, 77.46552

Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.44511, 77.46363