



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to TNSTC Sathy CBE Div II

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

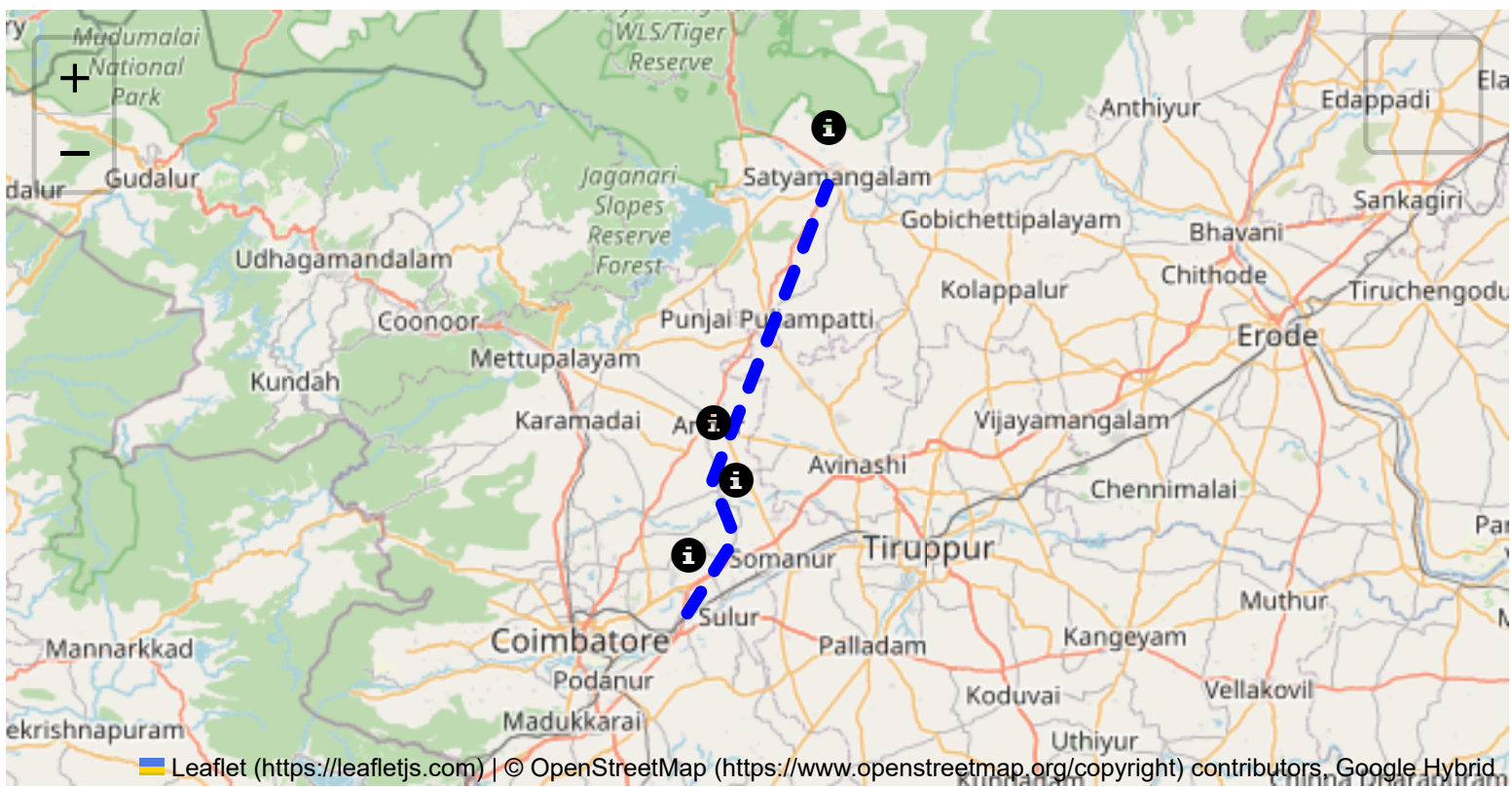
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

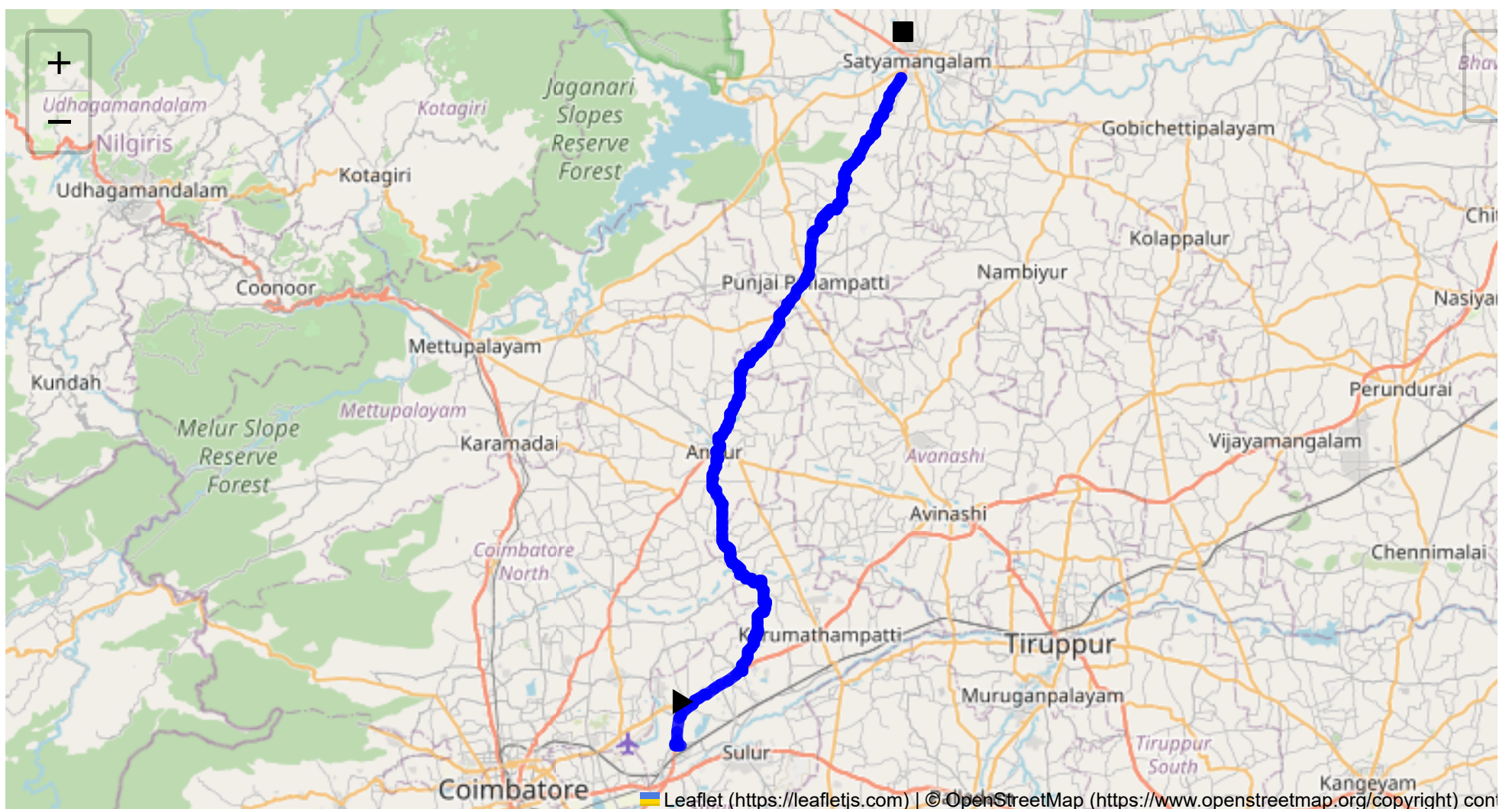
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 62.64 km
Estimated Duration: 1.4 hours
Adjusted Duration (Heavy Vehicle): 1.8 hours
Start: (11.0315, 77.0797)
End: (11.490542, 77.23411)



Welcome to the Journey Risk Management Study

Overview of the Route Map

The route from Athappagoundenpudur in Coimbatore to the Government School in Rangasamudram passes primarily through rural and semi-urban areas of Tamil Nadu. It traverses notable points such as Karumathampatti and runs along the Thennampalayam - Annur road. The journey spans approximately

62.64 kilometers, with an estimated travel time of about 1.42 hours for trucks carrying hazardous materials.

Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate with distinct wet and dry seasons. The monsoon period, typically from June to September, can lead to heavy rainfall, which may cause flooding or waterlogging in low-lying areas. In contrast, the period from March to May can be very hot, affecting vehicle performance.

Analysis of Traffic Patterns

Traffic congestion is generally low along this route, given its semi-rural nature. However, areas near Karumathampatti and Thennampalayam can experience traffic build-up during peak hours, typically between 8-10 AM and 5-7 PM due to local business activities and schools.

Assessment of Road Quality and Infrastructure

The road quality varies along the route, with stretches of well-maintained highways interspersed with smaller, narrower roads that may have uneven surfaces and potholes. Infrastructure such as lighting may be sparse in rural sections, and signage might not be comprehensive.

Suggestions for Alternative Routes for Emergencies

In case of roadblocks or emergencies, alternative routes include:

- Utilizing nearby state highways that connect through larger townships like Annur.
- Accessing bypass roads in Coimbatore that can loop back onto the NH 47 corridor towards the destination.

Summary of Local Regulations Affecting Hazardous Material Transport

Tamil Nadu has strict regulations regarding the transport of hazardous materials, requiring special permits and compliance with safety standards. Timing restrictions often apply in populated areas, necessitating off-peak travel for such loads.

Overview of Historical Incidents

Though detailed data is limited, sporadic incidents involving trucks in the region are often related to driver error or equipment failure. There's less data on incidents specifically involving hazardous materials, suggesting relative safety but also a lack of comprehensive reporting.

Environmental Considerations and Sensitive Areas

The route passes near agricultural lands that may require careful environmental consideration to prevent contamination. There are no significant wildlife sanctuaries in the immediate vicinity, but water bodies

should be protected from potential spillages.

Analysis of Communication Coverage

Mobile network coverage is generally robust along the route due to proximity to urban centers. However, remote segments, particularly in rural stretches, may experience signal drop-offs, creating temporary communication dead zones.

Estimated Emergency Response Times

Response times may vary across segments:

- In urban areas near Coimbatore or Karumathampatti, expect emergency response times of 30-45 minutes.
- Rural areas might experience longer waits, potentially upwards of 60 minutes, due to distance and accessibility.

Overall Summary of Risk Assessment

The route is moderately safe for the movement of heavy vehicles carrying hazardous materials, provided all safety protocols are adhered to. Potential risks include weather-related disruptions, traffic congestion at town junctions, and variable road conditions. Preparedness for communication issues and the understanding of local regulations will be crucial for safe transit.

Overall, with appropriate caution, logistical planning, and awareness of environmental and regulatory factors, the route can be navigated securely by truck drivers transporting hazardous materials.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.03211, 77.07640	15 KM/Hr
1	Turn	High	11.08298, 77.12274	15 KM/Hr
2	Turn	Medium	11.09526, 77.12689	30 KM/Hr
3	Turn	High	11.10456, 77.13099	15 KM/Hr
4	Turn	Medium	11.10504, 77.13143	30 KM/Hr
5	Turn	High	11.10521, 77.13189	15 KM/Hr
6	Turn	High	11.10855, 77.13210	15 KM/Hr
7	Turn	Medium	11.10885, 77.13326	30 KM/Hr
8	Turn	High	11.11024, 77.13351	15 KM/Hr
9	Turn	Medium	11.11094, 77.13301	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	Medium	11.12179, 77.13475	30 KM/Hr
11	Turn	Medium	11.12295, 77.13756	30 KM/Hr
12	Turn	High	11.12966, 77.13932	15 KM/Hr
13	Turn	Medium	11.12977, 77.13912	30 KM/Hr
14	Turn	High	11.13017, 77.13878	15 KM/Hr
15	Turn	High	11.13016, 77.13845	15 KM/Hr
16	Turn	Medium	11.13333, 77.13837	30 KM/Hr
17	Turn	Medium	11.13832, 77.13729	30 KM/Hr
18	Blind Spot	Blind Spot	11.14431, 77.13584	10 KM/Hr
19	Turn	Medium	11.14404, 77.13127	30 KM/Hr
20	Turn	Medium	11.14576, 77.12599	30 KM/Hr
21	Turn	Medium	11.14602, 77.12554	30 KM/Hr
22	Turn	Medium	11.14845, 77.12427	30 KM/Hr
23	Turn	High	11.14937, 77.12182	15 KM/Hr
24	Turn	High	11.15275, 77.12071	15 KM/Hr
25	Turn	High	11.15285, 77.12042	15 KM/Hr
26	Turn	Medium	11.15408, 77.12021	30 KM/Hr
27	Turn	Medium	11.15604, 77.11805	30 KM/Hr
28	Turn	High	11.15619, 77.11569	15 KM/Hr
29	Turn	Medium	11.16078, 77.11422	30 KM/Hr
30	Turn	High	11.16693, 77.11381	15 KM/Hr
31	Turn	Medium	11.16744, 77.11212	30 KM/Hr
32	Turn	Medium	11.16789, 77.11187	30 KM/Hr
33	Turn	Medium	11.16873, 77.11036	30 KM/Hr
34	Turn	Medium	11.17312, 77.10864	30 KM/Hr
35	Turn	High	11.19791, 77.10874	15 KM/Hr
36	Turn	High	11.20658, 77.10414	15 KM/Hr
37	Turn	Medium	11.20702, 77.10300	30 KM/Hr
38	Turn	High	11.21497, 77.10243	15 KM/Hr
39	Blind Spot	Blind Spot	11.21522, 77.10162	10 KM/Hr
40	Turn	Medium	11.22780, 77.10523	30 KM/Hr
41	Turn	High	11.22823, 77.10600	15 KM/Hr
42	Turn	Medium	11.23306, 77.10441	30 KM/Hr
43	Blind Spot	Blind Spot	11.23316, 77.10440	10 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
44	Turn	Medium	11.23317, 77.10504	30 KM/Hr
45	Turn	Medium	11.23356, 77.10594	30 KM/Hr
46	Turn	Medium	11.23578, 77.10737	30 KM/Hr
47	Turn	Medium	11.27860, 77.12093	30 KM/Hr
48	Turn	Medium	11.29452, 77.12759	30 KM/Hr
49	Turn	Medium	11.29626, 77.12833	30 KM/Hr
50	Turn	High	11.29733, 77.12809	15 KM/Hr
51	Turn	Medium	11.29806, 77.12866	30 KM/Hr
52	Turn	Medium	11.29846, 77.13026	30 KM/Hr
53	Turn	Medium	11.30473, 77.13652	30 KM/Hr
54	Turn	Medium	11.32061, 77.14834	30 KM/Hr
55	Turn	Medium	11.34917, 77.16622	30 KM/Hr
56	Turn	Medium	11.38755, 77.17810	30 KM/Hr
57	Turn	Medium	11.39072, 77.17785	30 KM/Hr
58	Turn	Medium	11.39412, 77.17872	30 KM/Hr
59	Turn	Medium	11.39567, 77.18065	30 KM/Hr
60	Turn	Medium	11.39966, 77.18519	30 KM/Hr
61	Turn	High	11.39993, 77.18889	15 KM/Hr
62	Turn	High	11.40343, 77.19017	15 KM/Hr
63	Turn	Medium	11.40432, 77.19235	30 KM/Hr
64	Turn	Medium	11.41995, 77.19489	30 KM/Hr
65	Turn	Medium	11.42116, 77.19387	30 KM/Hr
66	Turn	Medium	11.42213, 77.19390	30 KM/Hr
67	Turn	Medium	11.43270, 77.20219	30 KM/Hr
68	Turn	Medium	11.43853, 77.20507	30 KM/Hr
69	Turn	Medium	11.44181, 77.20796	30 KM/Hr
70	Turn	Medium	11.45128, 77.21536	30 KM/Hr
71	Turn	Medium	11.46199, 77.21848	30 KM/Hr
72	Turn	Medium	11.46251, 77.21943	30 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Royal Care Hospital, Coimbatore	11.059106, 77.0893479	30 km/h	Medium
3	hospital	Vagai Government Hospital	11.1443519, 77.1325092	30 km/h	Medium
5	hospital	Government Hospital, Annur	11.2325, 77.102249	30 km/h	Medium
6	hospital	NM Hospital	11.23271, 77.10187	30 km/h	Medium
7	hospital	Shanthi Medical Foundation	11.232428, 77.1016701	30 km/h	Medium
8	clinic	Sri Saravana Clinic	11.351058, 77.1670823	30 km/h	Medium
9	hospital	Thangam Health Care Hospital	11.3484244, 77.1652678	30 km/h	Medium
10	hospital	Muthu Hospital	11.3512958, 77.1671183	30 km/h	Medium
11	clinic	Mani Nursing Home	11.3525705, 77.1662763	30 km/h	Medium
12	hospital	Vishnu Nursing Home	11.351926, 77.165558	30 km/h	Medium
13	hospital	Arunachalam Hospital	11.3546609, 77.1698426	30 km/h	Medium
14	hospital	Government Hospital	11.3560512, 77.1689477	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
1	college	PSG Institute of Technology and Applied Research	11.0677118, 77.0945744	30 km/h	Medium
2	school	M. Nanjappa Chettiar Matriculation Hr. Sec. School	11.0715394, 77.1039133	30 km/h	Medium
4	marketplace	Annur saturday market (weekly market)	11.2349165, 77.1028197	30 km/h	Medium

Route Photos of Risky Spots



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: 11.08298, 77.12274



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.09526, 77.12689



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.10456, 77.13099



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10504, 77.13143



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10521, 77.13189



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10855, 77.13210



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10885, 77.13326



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.11024, 77.13351



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11094, 77.13301



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12179, 77.13475



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12295, 77.13756



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.12966, 77.13932



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.12977, 77.13912



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.13017, 77.13878



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.13016, 77.13845



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13333, 77.13837



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13832, 77.13729



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.14431, 77.13584



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14404, 77.13127

Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.14937, 77.12182



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15275, 77.12071



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15285, 77.12042



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15408, 77.12021



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15604, 77.11805



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15619, 77.11569



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16078, 77.11422



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.16693, 77.11381



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16744, 77.11212



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16789, 77.11187



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16873, 77.11036



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17312, 77.10864



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.19791, 77.10874



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.20658, 77.10414



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.20702, 77.10300



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.21497, 77.10243



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.21522, 77.10162



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.22780, 77.10523



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.22823, 77.10600



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23306, 77.10441



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.23316, 77.10440



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23317, 77.10504



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23356, 77.10594



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23578, 77.10737



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27860, 77.12093



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.29452, 77.12759



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.29626, 77.12833



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29733, 77.12809



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29806, 77.12866



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29846, 77.13026



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30473, 77.13652



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32061, 77.14834



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34917, 77.16622



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.38755, 77.17810



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39072, 77.17785



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39412, 77.17872



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39567, 77.18065



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39966, 77.18519



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.39993, 77.18889



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.40343, 77.19017



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.40432, 77.19235



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.41995, 77.19489



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42116, 77.19387



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42213, 77.19390



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43270, 77.20219



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43853, 77.20507



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.44181, 77.20796

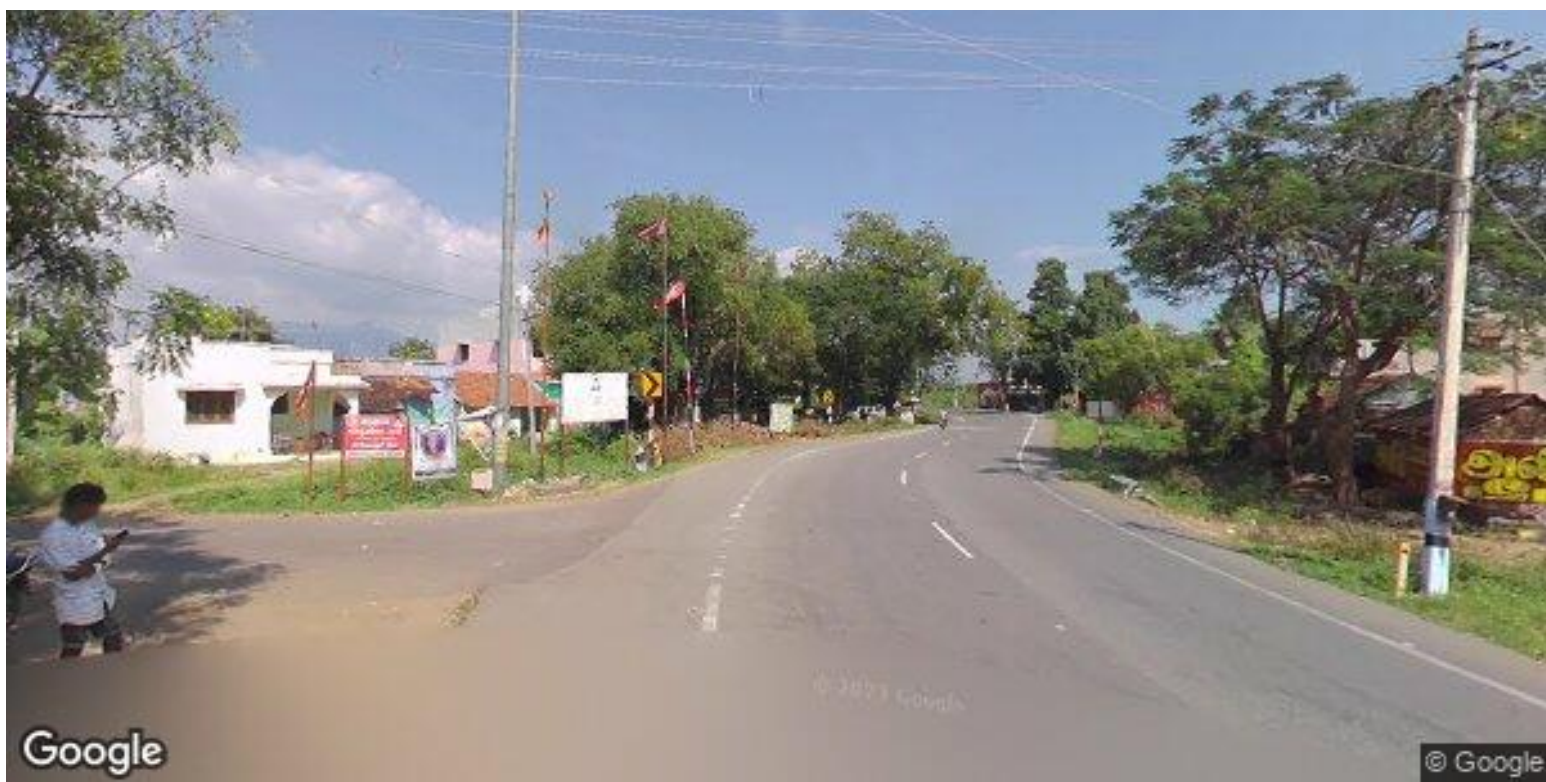


Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45128, 77.21536



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46199, 77.21848



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46251, 77.21943
