



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to Tamil Nadu Newsprint & Paper 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

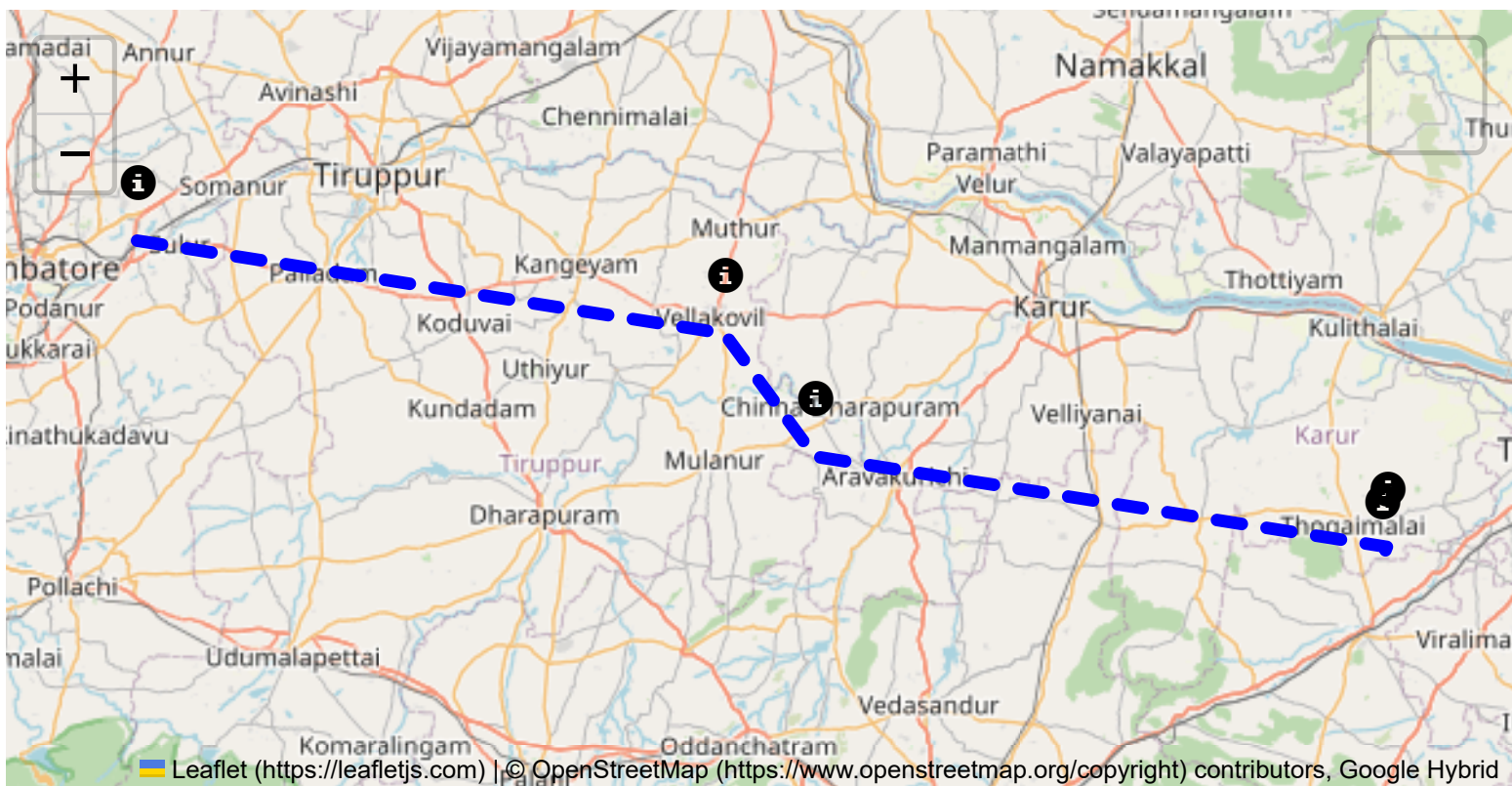
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

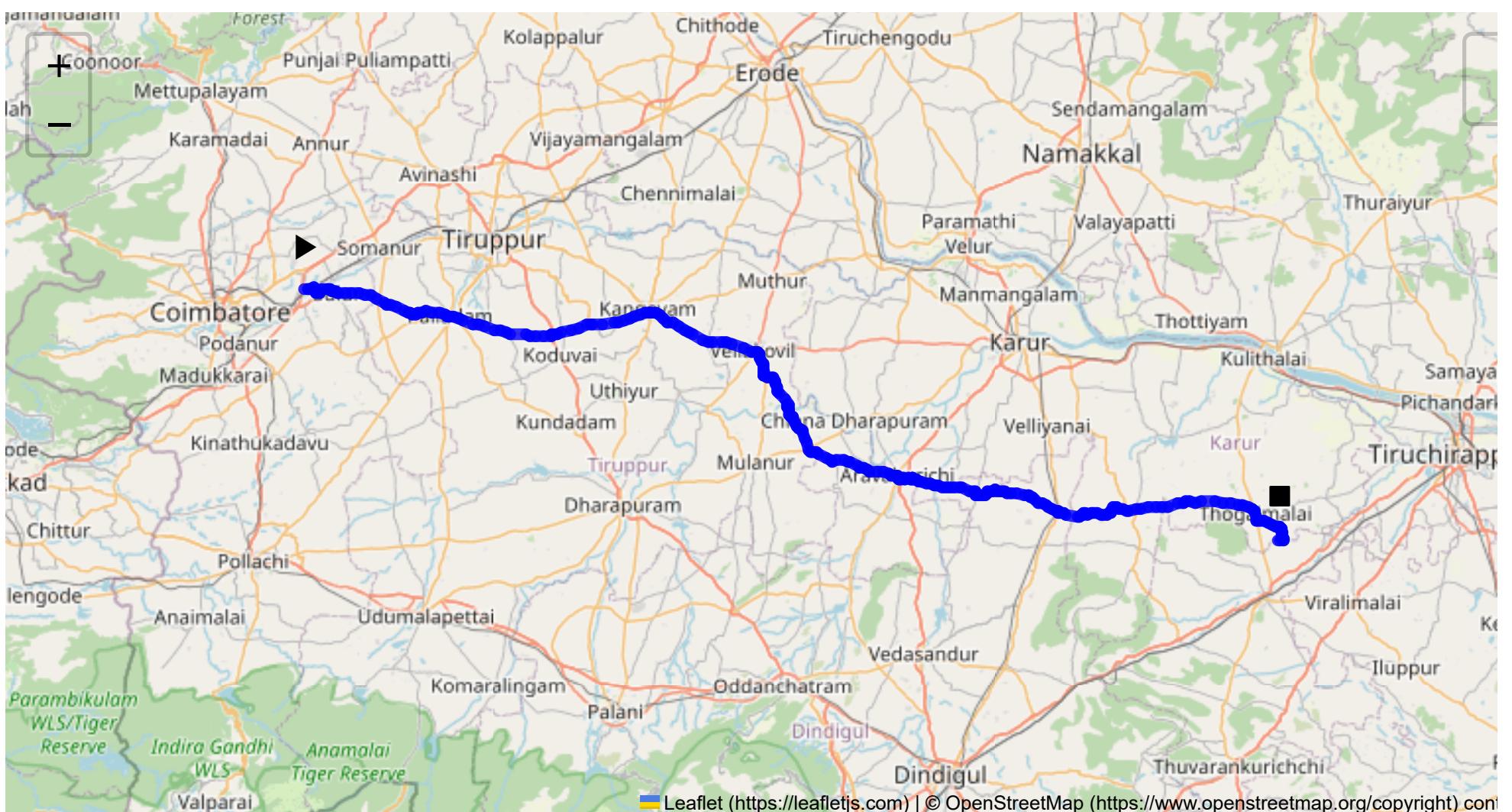
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 177.27 km
Estimated Duration: 4.0 hours
Adjusted Duration (Heavy Vehicle): 5.0 hours
Start: (11.0315, 77.0797)
End: (10.68703, 78.44206)



Welcome to the Journey Risk Management Study

1. **Overview of the Route Map:** The route begins in Athappagoundenpudur, Coimbatore, and proceeds toward Mandipatti, Tamil Nadu. The journey traverses the key intersections of 335, Mulanur Rd, Vellakoil, Dharapuram Rd, and Karuppur, spanning approximately 177 kilometers. This route encompasses various terrains, including rural roads and small towns, potentially involving a mix of narrow and broad sections along highways and local roads.

2. **Typical Weather Conditions and Potential Weather-Related Hazards:** The region experiences a tropical climate with heavy rainfall during the monsoon seasons (June-November) and high temperatures in summer (March-May). Hazards may include waterlogging during monsoons, reduced visibility due to fog in winters, and potential for tire blowouts in high temperatures. Therefore, preparedness for such conditions is crucial, particularly during adverse weather seasons.
3. **Analysis of Traffic Patterns:** The route's traffic patterns are heavily influenced by local commuter traffic and agricultural activities. Peak hours typically align with morning (8:00 AM to 10:00 AM) and evening (5:00 PM to 7:00 PM) commutes. Congestion is possible in Vellakoil and Dharapuram due to local market traffic and narrow roads in certain sections. Planning travel outside these peak times is advisable to minimize delays.
4. **Assessment of Road Quality and Infrastructure:** The road quality varies along the route. Sections of the highways are generally well-maintained, but rural roads can have potholes and uneven surfaces. Infrastructure is generally adequate but may be lacking in remote areas. Careful navigation through less maintained sections is necessary to prevent vehicular damage.
5. **Suggestions for Alternative Routes for Emergencies:** In case of emergencies or roadblocks, detouring via NH 81 or NH 544 towards bigger towns like Erode or Karur could provide better facilities and alternative routes to the destination. It is essential to maintain updated maps or GPS to follow the fastest alternative routes in emergencies.
6. **Summary of Local Regulations Affecting Hazardous Material Transport:** Transporting hazardous materials requires adherence to Tamil Nadu's regulations, which include obtaining the necessary permits and following specified routes for hazardous materials. Compliance with safety norms such as suitable container labeling and appropriate safety equipment is mandatory.
7. **Overview of Historical Incidents:** There have been occasional reports of accidents involving heavy vehicles in the region, mostly due to speeding, overloading or adverse weather. These incidents stress the importance of maintaining speed limits and load regulations, particularly in sharp turns and narrow parts of the route.
8. **Environmental Considerations and Sensitive Areas:** The route passes near agricultural areas, where there is a sensitivity towards pollution. Ensuring no spillage or leakage of materials is imperative. Also, be cautious near natural reserves and water bodies to avoid ecological impact.
9. **Analysis of Communication Coverage:** There are potential dead zones along rural stretches where mobile networks can be weak or unavailable. Having alternative communication devices like satellite phones or pre-agreed check-ins at specific locations can mitigate communication issues.
10. **Estimated Emergency Response Times:** The proximity to larger towns like Vellakoil may afford quicker emergency response times (approximately 30-45 minutes), but remote areas could see delays up to 1-2 hours. Ensuring access to the nearest emergency services contacts and having a first-aid kit on board is advisable.
11. **Overall Summary of Risk Assessment:** This route poses moderate risks, with significant challenges primarily from weather-related issues, varied road quality, and potential communication dead zones. Adhering strictly to safety protocols and regulatory requirements is paramount. Comprehensive

journey planning, time management, and continual monitoring of weather and traffic conditions will greatly enhance the safety of travel along this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.03174, 77.08443	15 KM/Hr
1	Turn	Medium	11.03268, 77.08524	30 KM/Hr
2	Blind Spot	Blind Spot	11.03364, 77.08947	10 KM/Hr
3	Blind Spot	Blind Spot	11.03267, 77.08951	10 KM/Hr
4	Blind Spot	Blind Spot	11.03560, 77.09403	10 KM/Hr
5	Turn	Medium	11.02761, 77.09723	30 KM/Hr
6	Turn	High	11.02727, 77.09847	15 KM/Hr
7	Turn	Medium	11.03353, 77.11167	30 KM/Hr
8	Turn	High	11.03326, 77.11521	15 KM/Hr
9	Turn	Medium	11.03204, 77.11614	30 KM/Hr
10	Turn	Medium	11.03134, 77.11768	30 KM/Hr
11	Turn	Medium	11.03146, 77.11854	30 KM/Hr
12	Turn	Medium	11.02433, 77.17315	30 KM/Hr
13	Turn	Medium	10.99541, 77.28179	30 KM/Hr
14	Turn	High	10.99396, 77.28249	15 KM/Hr
15	Turn	Medium	10.99516, 77.28965	30 KM/Hr
16	Turn	High	10.96814, 77.42694	15 KM/Hr
17	Turn	High	10.97041, 77.42705	15 KM/Hr
18	Turn	Medium	10.95889, 77.64535	30 KM/Hr
19	Turn	Medium	10.94583, 77.71480	30 KM/Hr
20	Turn	Medium	10.94450, 77.71604	30 KM/Hr
21	Turn	High	10.91417, 77.72282	15 KM/Hr
22	Turn	Medium	10.91332, 77.72351	30 KM/Hr
23	Turn	High	10.91036, 77.73679	15 KM/Hr
24	Turn	High	10.87501, 77.75724	15 KM/Hr
25	Turn	Medium	10.87112, 77.75610	30 KM/Hr
26	Turn	Medium	10.86988, 77.75671	30 KM/Hr
27	Turn	High	10.86936, 77.75821	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
28	Turn	Medium	10.86086, 77.75933	30 KM/Hr
29	Turn	High	10.85677, 77.76179	15 KM/Hr
30	Turn	High	10.85657, 77.76371	15 KM/Hr
31	Turn	Medium	10.84265, 77.77113	30 KM/Hr
32	Turn	High	10.83985, 77.77773	15 KM/Hr
33	Turn	Medium	10.81135, 77.78610	30 KM/Hr
34	Turn	High	10.79677, 77.81972	15 KM/Hr
35	Turn	High	10.77636, 77.91010	15 KM/Hr
36	Turn	High	10.77431, 77.90996	15 KM/Hr
37	Turn	Medium	10.77216, 77.91277	30 KM/Hr
38	Turn	Medium	10.77156, 77.91597	30 KM/Hr
39	Turn	Medium	10.77292, 77.91822	30 KM/Hr
40	Turn	Medium	10.77221, 77.93130	30 KM/Hr
41	Turn	Medium	10.77276, 77.93233	30 KM/Hr
42	Turn	Medium	10.76852, 77.93961	30 KM/Hr
43	Turn	Medium	10.76394, 77.96563	30 KM/Hr
44	Turn	Medium	10.76274, 77.96692	30 KM/Hr
45	Turn	Medium	10.76162, 77.99650	30 KM/Hr
46	Turn	High	10.75436, 78.01920	15 KM/Hr
47	Turn	High	10.75115, 78.01889	15 KM/Hr
48	Turn	Medium	10.75006, 78.02207	30 KM/Hr
49	Turn	High	10.74998, 78.03363	15 KM/Hr
50	Turn	Medium	10.75161, 78.03464	30 KM/Hr
51	Turn	High	10.75418, 78.03492	15 KM/Hr
52	Turn	Medium	10.75687, 78.04681	30 KM/Hr
53	Turn	Medium	10.75443, 78.05490	30 KM/Hr
54	Turn	High	10.75543, 78.05693	15 KM/Hr
55	Turn	Medium	10.75262, 78.06347	30 KM/Hr
56	Turn	High	10.72772, 78.13536	15 KM/Hr
57	Turn	Medium	10.72578, 78.13642	30 KM/Hr
58	Turn	Medium	10.72232, 78.14640	30 KM/Hr
59	Turn	High	10.72115, 78.16618	15 KM/Hr
60	Turn	High	10.72333, 78.16679	15 KM/Hr
61	Turn	High	10.72350, 78.17024	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
62	Turn	High	10.72454, 78.17055	15 KM/Hr
63	Turn	Medium	10.72377, 78.17659	30 KM/Hr
64	Turn	Medium	10.72262, 78.19397	30 KM/Hr
65	Turn	High	10.72532, 78.20853	15 KM/Hr
66	Turn	High	10.73263, 78.21276	15 KM/Hr
67	Turn	Medium	10.72925, 78.40843	30 KM/Hr
68	Turn	Medium	10.72741, 78.41002	30 KM/Hr
69	Turn	High	10.71570, 78.41233	15 KM/Hr
70	Turn	High	10.70537, 78.44590	15 KM/Hr
71	Turn	Medium	10.70286, 78.44613	30 KM/Hr
72	Turn	High	10.69791, 78.44890	15 KM/Hr
73	Turn	Medium	10.69745, 78.44836	30 KM/Hr
74	Turn	High	10.68965, 78.44659	15 KM/Hr
75	Turn	High	10.68953, 78.44995	15 KM/Hr
76	Blind Spot	Blind Spot	10.68693, 78.45019	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	hospital	Balaji Hospital, Sular	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	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium
11	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
13	hospital	Government Hospital, Aravakurtchi	10.77208, 77.909648	30 km/h	Medium
14	hospital	Mylampatty Government Hospital	10.7320815, 78.2459642	30 km/h	Medium
15	hospital	Thogamalai, Government Hospital	10.7268532, 78.4097304	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
9	school	Pongalur Uppathiyar Venkadasamy Naidu Elementry School	10.9703113, 77.3693546	30 km/h	Medium
12	school	Carmel Girls Higher Secondary School	11.0009019, 77.5710182	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: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03268, 77.08524



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: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.03560, 77.09403



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.02761, 77.09723



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.02727, 77.09847



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.03353, 77.11167



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.03326, 77.11521



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.03204, 77.11614



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.03134, 77.11768



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: 11.02433, 77.17315



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.99541, 77.28179



Risk Type: Turn
Risk Level: High
Speed Limit: 15 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: 10.96814, 77.42694



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.97041, 77.42705



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.95889, 77.64535



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.94583, 77.71480



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.94450, 77.71604



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.91417, 77.72282



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.91332, 77.72351



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.91036, 77.73679



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.87501, 77.75724



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.87112, 77.75610



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.86988, 77.75671



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.86936, 77.75821



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.86086, 77.75933



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.85677, 77.76179



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.85657, 77.76371



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.84265, 77.77113



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.83985, 77.77773



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.81135, 77.78610



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.79677, 77.81972



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.77636, 77.91010



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.77431, 77.90996



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.77216, 77.91277



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.77156, 77.91597



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.77292, 77.91822



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.77221, 77.93130



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.77276, 77.93233



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.76852, 77.93961



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.76394, 77.96563



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.75115, 78.01889



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.75006, 78.02207



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.74998, 78.03363



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75161, 78.03464



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.75418, 78.03492



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.75687, 78.04681



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.75443, 78.05490



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.75543, 78.05693



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75262, 78.06347



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72772, 78.13536



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.72578, 78.13642



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.72232, 78.14640



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72115, 78.16618



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72333, 78.16679



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.72350, 78.17024



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.72454, 78.17055



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.72377, 78.17659



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.72262, 78.19397



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72532, 78.20853



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.73263, 78.21276



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.72925, 78.40843



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.72741, 78.41002



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.71570, 78.41233



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.70537, 78.44590



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.70286, 78.44613



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.69791, 78.44890



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.69745, 78.44836

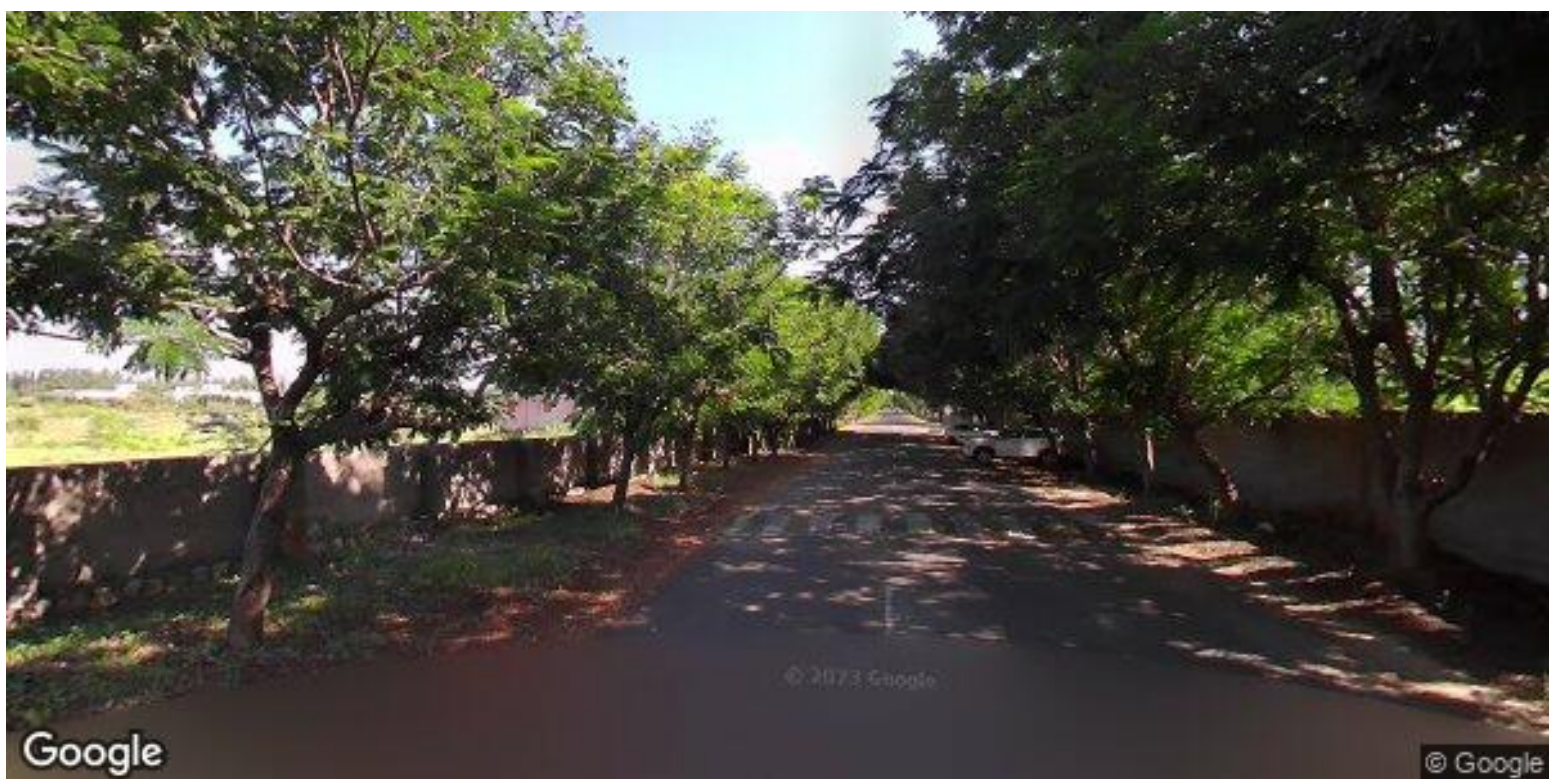


Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.68965, 78.44659



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.68953, 78.44995



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.68693, 78.45019
