



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SUPER PETROLEUM AGENCIES

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

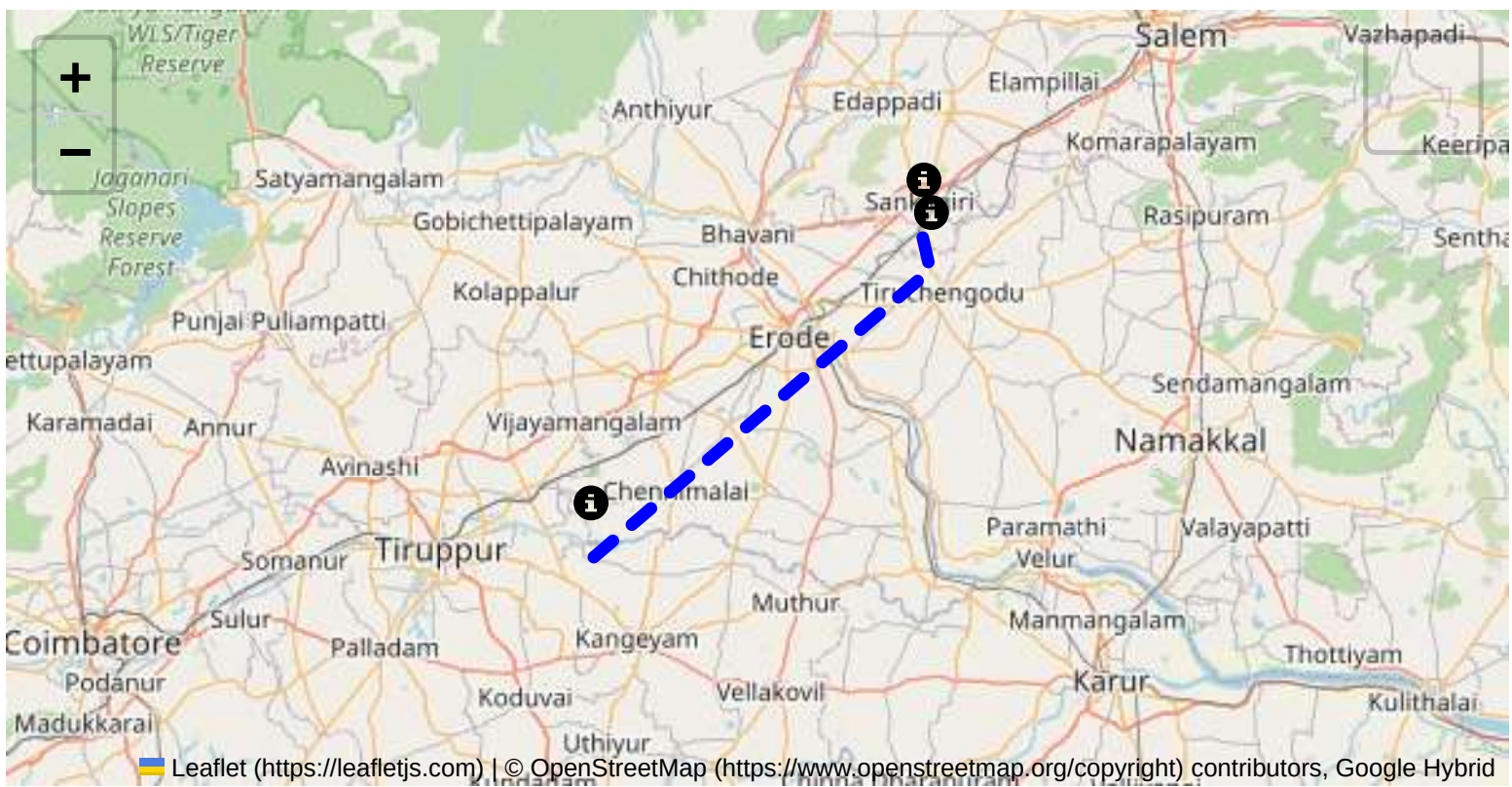
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

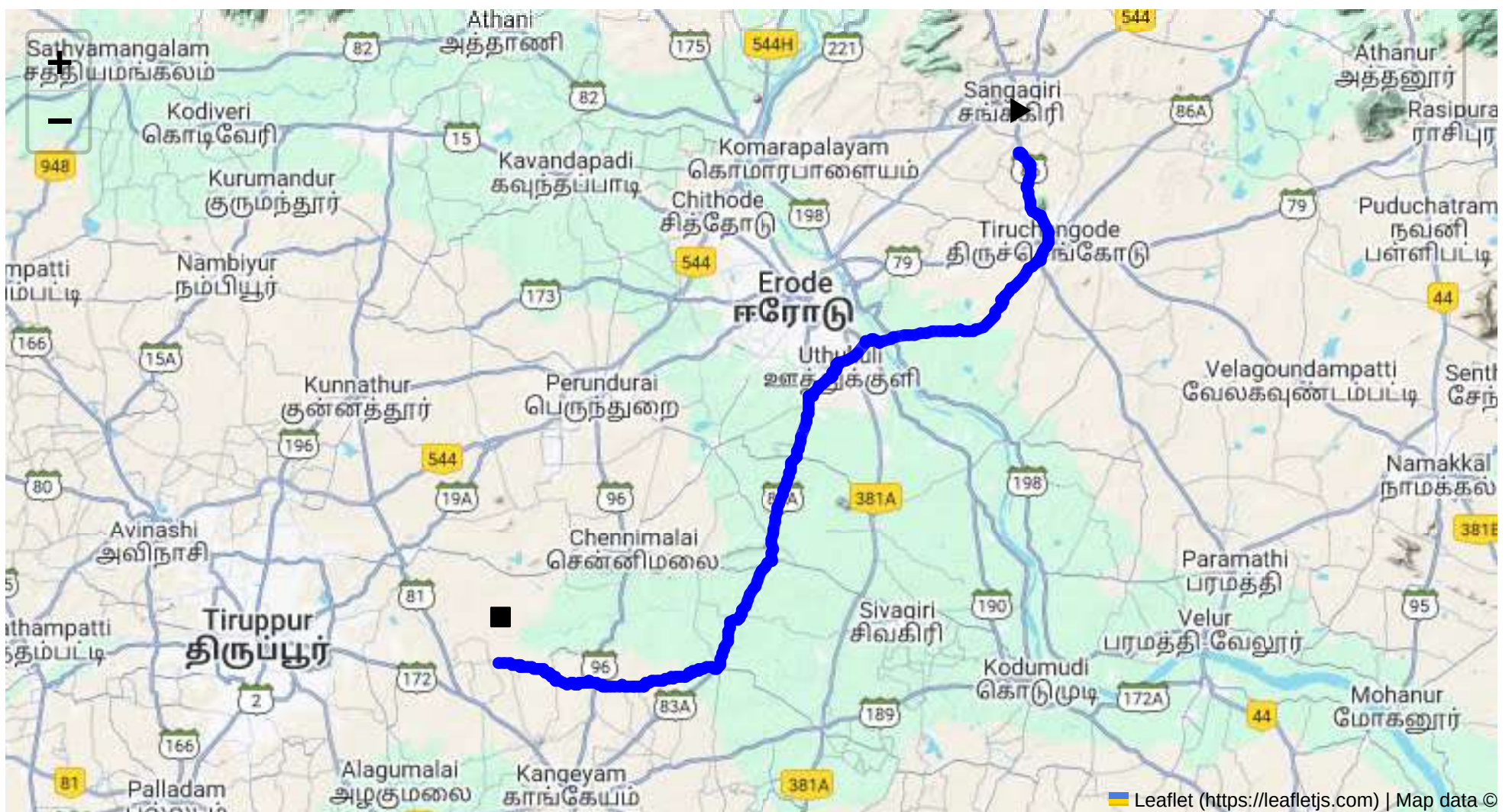
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 73.41 km
Estimated Duration: 1.8 hours
Adjusted Duration (Heavy Vehicle): 2.2 hours
Start: (11.4381, 77.8734)
End: (11.09023711, 77.50946925)



Welcome to the Journey Risk Management Study

Here's a comprehensive analysis of the route from Sangagiri, Tamil Nadu to Thammareddipalayam via Tiruchengode:

1. Overview of the Route Map

The route spans approximately 73.41 kilometers, connecting Sangagiri to Thammareddipalayam via Tiruchengode. The journey takes around 1.79 hours for heavy vehicles, incorporating a mix of state highways and rural roads. The initial stretch involves NH79 until Tiruchengode after which it transitions into local roads connecting to Thammareddipalayam.

2. Typical Weather Conditions and Potential Weather-Related Hazards

- **Weather Conditions:** The region typically experiences a tropical climate with high temperatures most of the year and significant monsoon rainfall.
- **Potential Hazards:** During monsoons (June to September), roads can become slippery and flooding may occur, particularly in low-lying areas. Visibility can be poor during heavy rains, increasing the risk of accidents.

3. Analysis of Traffic Patterns

- **Peak Hours:** Morning (7:00-9:00 AM) and evening (5:00-7:00 PM) are peak traffic times, particularly around urban areas near Sangagiri and Tiruchengode.
- **Congestion-Prone Areas:** Tiruchengode is known for congested streets during peak hours. Additionally, market days might see increased local traffic.

4. Assessment of Road Quality and Infrastructure

- **Road Quality:** While NH79 is well-maintained, local roads may have potholes and uneven surfaces. Certain stretches may lack adequate signage and lighting, particularly on rural roads.
- **Infrastructure:** Fuel stations and rest stops are available along NH79, but less frequent on rural roads post-Tiruchengode.

5. Suggestions for Alternative Routes for Emergencies

In case of roadblocks or severe congestion, an alternative is to continue on NH79 past Tiruchengode towards Namakkal and then divert eastward, though this significantly increases the journey distance.

6. Local Regulations Affecting Hazardous Material Transport

Transporting hazardous materials requires compliance with local and national regulations including permits and adherence to restricted timings, often prohibiting during busy hours on smaller roads.

7. Overview of Historical Incidents

Reports of heavy vehicle incidents are scarce, but inattentiveness, overloaded vehicles, and speeding contribute to sporadic accidents in this region. Tiruchengode has been noted for occasional heavy vehicle accidents due to narrow roads.

8. Environmental Considerations and Sensitive Areas

Limited environmental reserves along the route. However, areas such as educational institutions and populated zones in Tiruchengode are sensitive, requiring cautious driving.

9. Communication Coverage

Cellular coverage is generally robust along NH79, but spotty coverage might be encountered on rural stretches, especially in less inhabited areas.

10. Estimated Emergency Response Times

- **On NH79:** 15-30 minutes, given proximity to larger towns like Erode and Salem.
- **In Rural Areas:** Could extend to 45 minutes to an hour due to distance from major emergency services.

11. Overall Summary of Risk Assessment

The primary risks on this route for heavy vehicles include monsoon-related weather events, rural road conditions, and congestion in Tiruchengode. While the NH79 provides a reliable passage, caution is needed post-Tiruchengode where road conditions can deteriorate. Notification of local regulations for hazardous material transport is crucial, along with planning for emergency response given potential communication limitations in rural segments. Pre-trip checks and awareness of alternative routes will further mitigate risks.

This analysis should assist in preparing drivers for potential hazards and contribute to safer transport operations along this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Turn	High	11.43968, 77.87345	15 KM/Hr
2	Turn	High	11.44022, 77.87546	15 KM/Hr
3	Turn	Medium	11.39983, 77.88377	30 KM/Hr
4	Turn	Medium	11.39671, 77.88878	30 KM/Hr
5	Turn	Medium	11.37862, 77.89488	30 KM/Hr
6	Turn	Medium	11.37823, 77.89448	30 KM/Hr
7	Turn	High	11.36604, 77.88887	15 KM/Hr
8	Turn	Medium	11.34105, 77.86426	30 KM/Hr
9	Turn	Medium	11.34074, 77.86356	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	High	11.33865, 77.86216	15 KM/Hr
11	Turn	Medium	11.33794, 77.86235	30 KM/Hr
12	Turn	Medium	11.31746, 77.84231	30 KM/Hr
13	Turn	Medium	11.30951, 77.77598	30 KM/Hr
14	Turn	High	11.29473, 77.74685	15 KM/Hr
15	Turn	High	11.29128, 77.74656	15 KM/Hr
16	Turn	Medium	11.29051, 77.74482	30 KM/Hr
17	Turn	Medium	11.28859, 77.74323	30 KM/Hr
18	Turn	Medium	11.28588, 77.74287	30 KM/Hr
19	Turn	High	11.27326, 77.72991	15 KM/Hr
20	Turn	High	11.27330, 77.72720	15 KM/Hr
21	Turn	Medium	11.23062, 77.71799	30 KM/Hr
22	Turn	Medium	11.22395, 77.71387	30 KM/Hr
23	Turn	Medium	11.15951, 77.70067	30 KM/Hr
24	Turn	High	11.15942, 77.70068	15 KM/Hr
25	Turn	Medium	11.11935, 77.67790	30 KM/Hr
26	Turn	Medium	11.11716, 77.67178	30 KM/Hr
27	Turn	Medium	11.10462, 77.67055	30 KM/Hr
28	Turn	Medium	11.09494, 77.66604	30 KM/Hr
29	Turn	Medium	11.08499, 77.66196	30 KM/Hr
30	Turn	Medium	11.08497, 77.66170	30 KM/Hr
31	Turn	Medium	11.08671, 77.65529	30 KM/Hr
32	Turn	Medium	11.08597, 77.65230	30 KM/Hr
33	Turn	Medium	11.08411, 77.64613	30 KM/Hr
34	Turn	Medium	11.08016, 77.64039	30 KM/Hr
35	Turn	Medium	11.07946, 77.63656	30 KM/Hr
36	Turn	High	11.08011, 77.63502	15 KM/Hr
37	Turn	Medium	11.07494, 77.61236	30 KM/Hr
38	Turn	Medium	11.07378, 77.61177	30 KM/Hr
39	Turn	Medium	11.07352, 77.61121	30 KM/Hr
40	Turn	Medium	11.07311, 77.60692	30 KM/Hr
41	Turn	Medium	11.07405, 77.59599	30 KM/Hr
42	Turn	Medium	11.07347, 77.59477	30 KM/Hr
43	Turn	High	11.07688, 77.57263	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
44	Turn	Medium	11.07675, 77.57243	30 KM/Hr
45	Turn	Medium	11.07641, 77.57229	30 KM/Hr
46	Turn	Medium	11.07537, 77.56615	30 KM/Hr
47	Turn	Medium	11.07486, 77.56515	30 KM/Hr
48	Turn	High	11.07454, 77.56497	15 KM/Hr
49	Turn	Medium	11.07436, 77.56427	30 KM/Hr
50	Turn	High	11.07740, 77.54946	15 KM/Hr
51	Turn	High	11.08021, 77.54934	15 KM/Hr
52	Turn	Medium	11.08052, 77.54720	30 KM/Hr
53	Turn	Medium	11.08091, 77.54683	30 KM/Hr
54	Turn	High	11.08118, 77.54554	15 KM/Hr
55	Turn	Medium	11.08311, 77.54412	30 KM/Hr
56	Turn	Medium	11.08499, 77.54136	30 KM/Hr
57	Turn	High	11.08699, 77.52510	15 KM/Hr
58	Turn	High	11.08850, 77.52456	15 KM/Hr
59	Turn	Medium	11.08866, 77.52426	30 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Tiruchengode, Goverment Hospital	11.3903328, 77.8920627	30 km/h	Medium
1	hospital	SPM Medical Centre,Tiruchengode	11.3881331, 77.8931963	30 km/h	Medium
5	clinic	Kongu Nursing Home	11.3783065, 77.8961134	30 km/h	Medium
6	hospital	T.C.A Hospital Tiruchengode	11.3791885, 77.8965774	30 km/h	Medium
7	hospital	Soorya Multispecialty Hospital	11.3786429, 77.8931912	30 km/h	Medium
8	hospital	Tiruchengode Government Hospital	11.37645, 77.89426	30 km/h	Medium
9	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
10	hospital	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
13	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
2	school	அரசு ஆண்கள் மேல்நிலைப் பள்ளி	11.3850439, 77.8948279	30 km/h	Medium
3	school	அரசு பெண்கள் மேல்நிலைப் பள்ளி	11.3844247, 77.8949053	30 km/h	Medium
4	marketplace	திருச்செங்கோடு தினசரி காய்கறி சந்தை	11.3833608, 77.8970145	30 km/h	Medium
11	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
12	school	MDV School	11.3719843, 77.8915244	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.38395, 77.89480



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44022, 77.87546



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39983, 77.88377



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39671, 77.88878



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.37862, 77.89488



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.37823, 77.89448



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.36604, 77.88887



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34105, 77.86426



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.34074, 77.86356



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.33865, 77.86216



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.33794, 77.86235



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31746, 77.84231



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30951, 77.77598



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29473, 77.74685



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29128, 77.74656



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.29051, 77.74482



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28859, 77.74323



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28588, 77.74287



Coordinates: 11.27326, 77.72991



Coordinates: 11.27330, 77.72720



Coordinates: 11.23062, 77.71799



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22395, 77.71387



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15951, 77.70067



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15942, 77.70068



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11935, 77.67790



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11716, 77.67178



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10462, 77.67055



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.09494, 77.66604



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08499, 77.66196



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08497, 77.66170



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08671, 77.65529



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08597, 77.65230

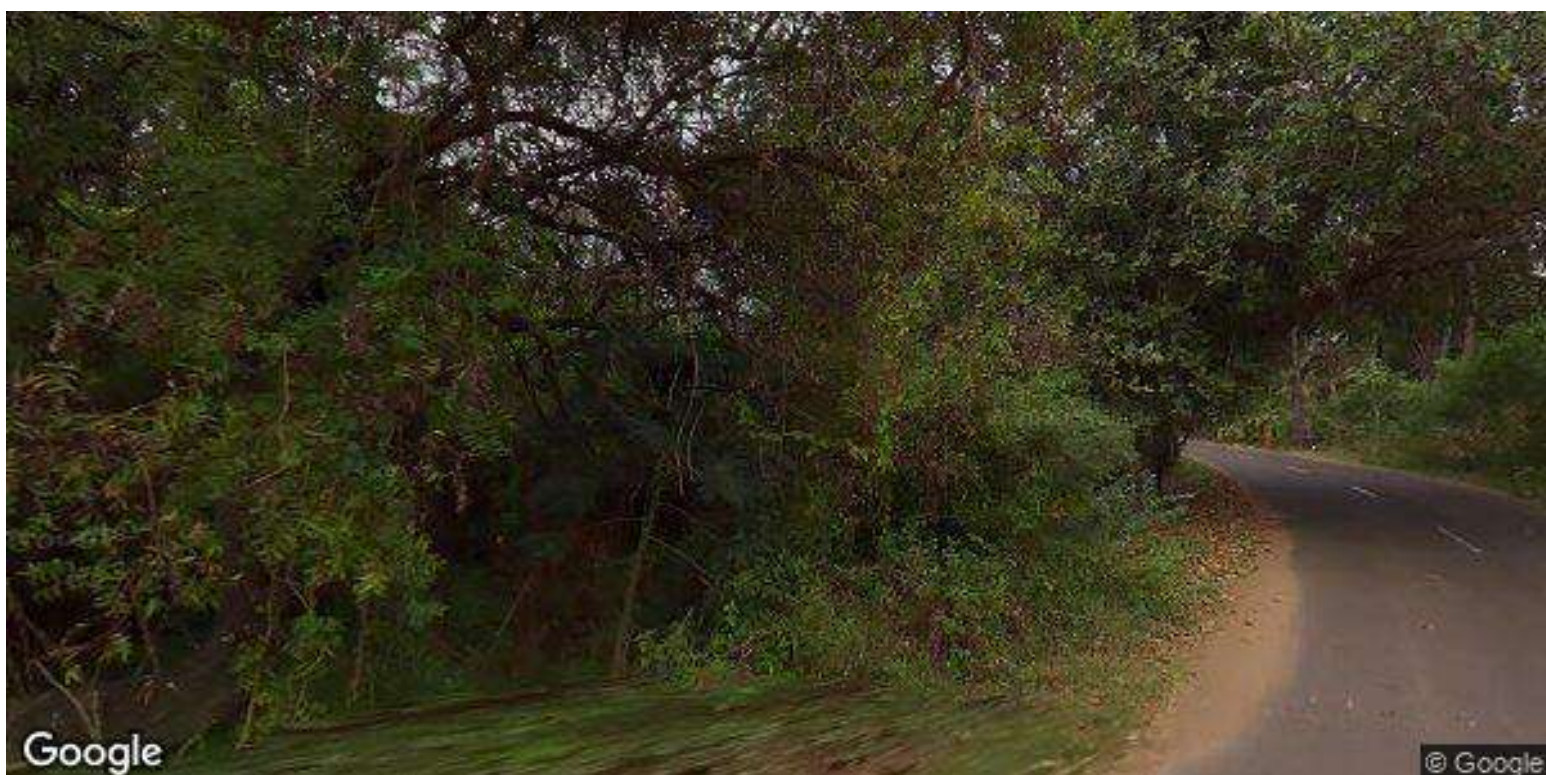


Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08411, 77.64613



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08016, 77.64039



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07946, 77.63656



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08011, 77.63502



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07494, 77.61236



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07378, 77.61177



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07352, 77.61121



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07311, 77.60692



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07405, 77.59599



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07347, 77.59477



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.07688, 77.57263



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07675, 77.57243



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07641, 77.57229



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07537, 77.56615



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.07486, 77.56515



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.07454, 77.56497



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07436, 77.56427



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.07740, 77.54946



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.08021, 77.54934



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08052, 77.54720



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08091, 77.54683



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.08118, 77.54554



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08311, 77.54412



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08499, 77.54136



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08699, 77.52510



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08850, 77.52456



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08866, 77.52426
