



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO SAKTHI MURUGAN 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

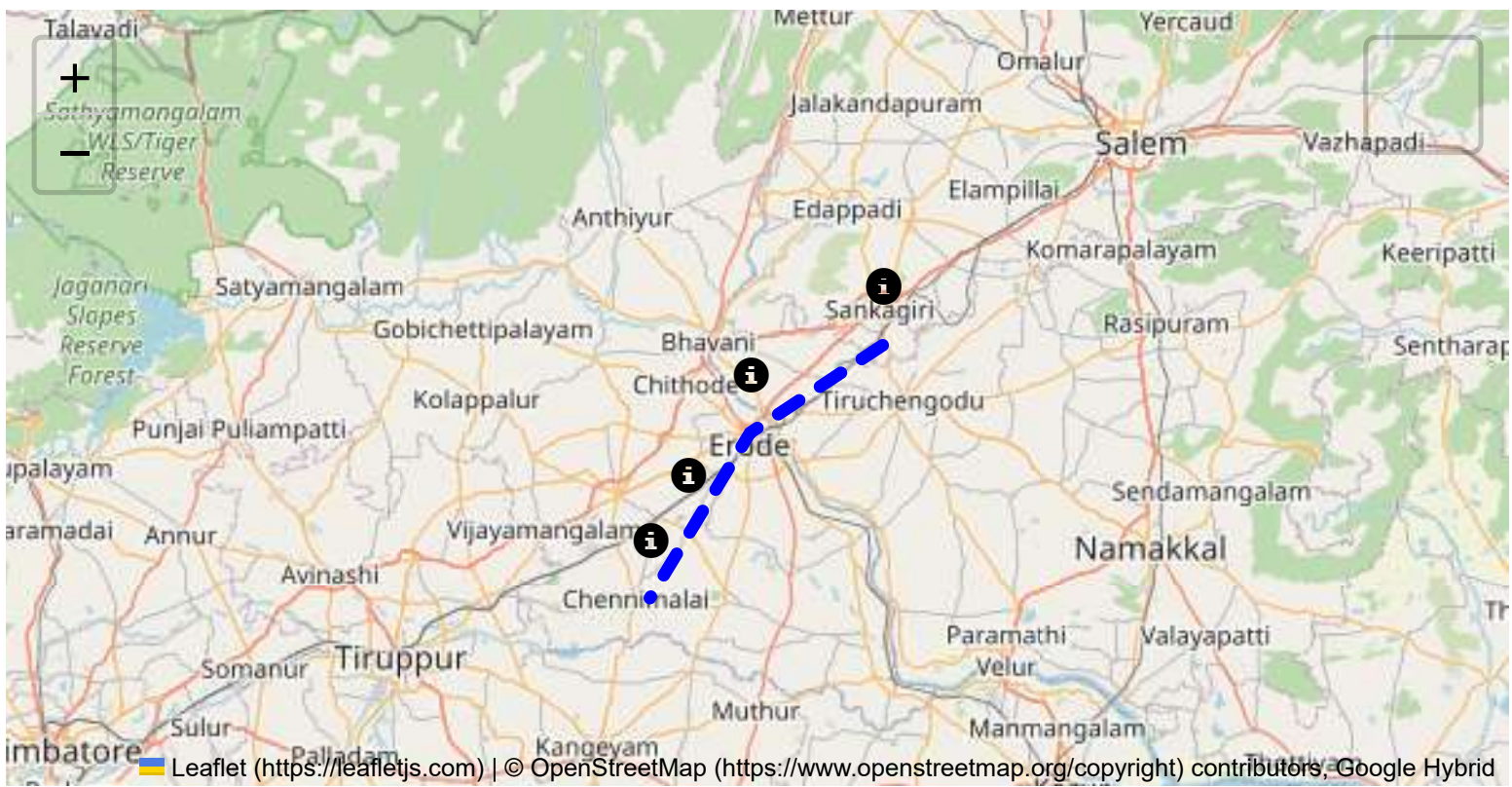
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

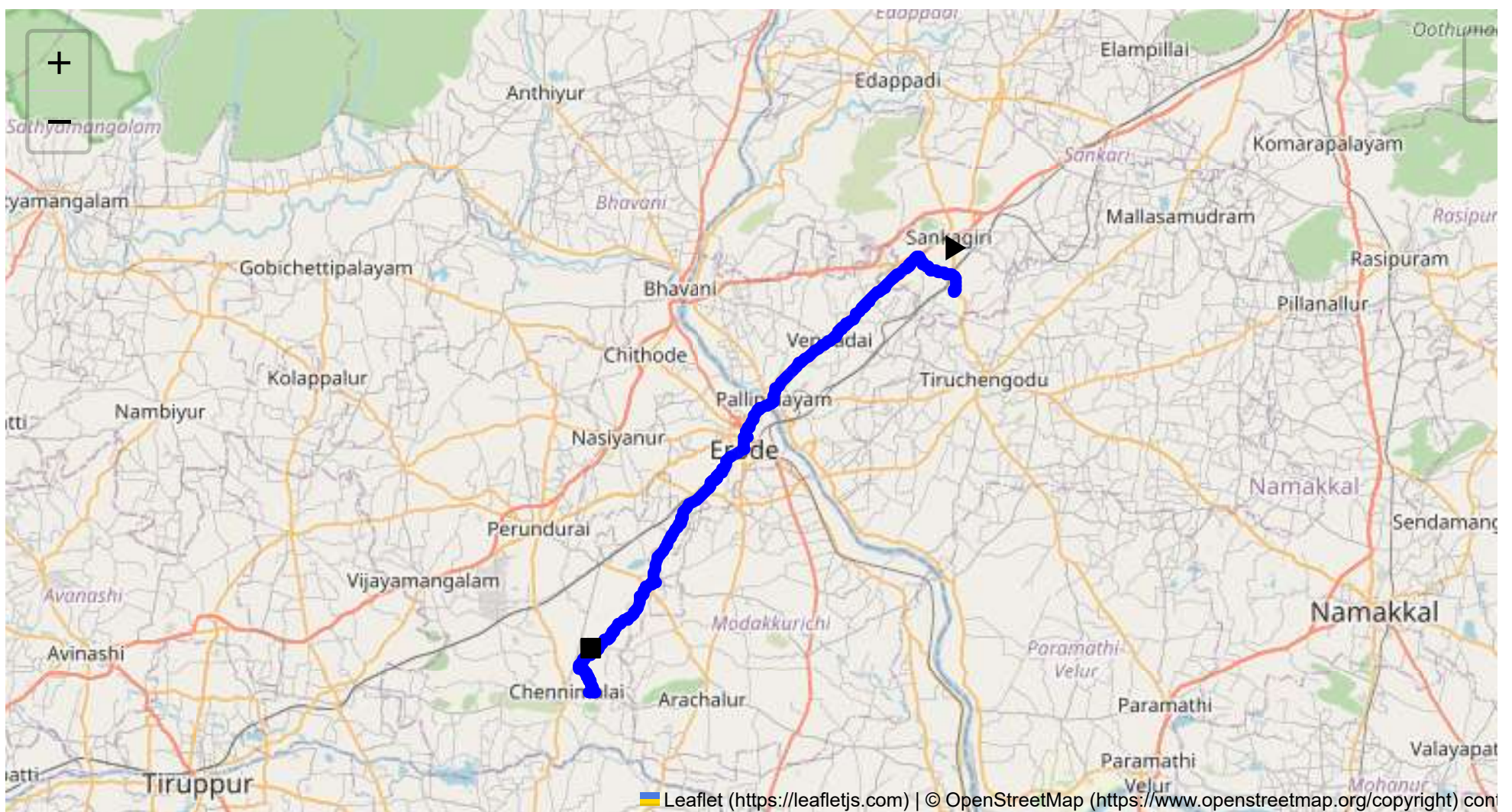
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 50.91 km
Estimated Duration: 1.4 hours
Adjusted Duration (Heavy Vehicle): 1.7 hours
Start: (11.4381, 77.8734)
End: (11.1638269, 77.6185202)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Ottapparai spans approximately 50.91 kilometers, primarily through rural and semi-urban areas. Starting from Sangagiri, you move towards Puthur, then proceed through Erode, and pass Vellode before reaching Ottapparai. Key segments include local roads in Puthur, RKV Road in Erode, and the Erode-Chennimalai Road in Vellode.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The area experiences a tropical climate with hot summers, a moderate monsoon, and mild winters. During monsoon (June to September), heavy rainfall may lead to waterlogging and slippery roads, especially in rural sections. Fog is also a concern during early mornings and late evenings in the winter months (November to February).

3. Analysis of Traffic Patterns

- **Sangagiri to Puthur:** Generally light traffic; minor congestion during morning hours (8-9 AM).
- **Puthur to Erode:** Moderate traffic, especially near market areas; peak congestion during morning (8-10 AM) and evening (5-7 PM) hours.
- **Erode town:** High congestion levels on RKV Road, particularly around busy intersections; peak hours include early morning (8-10 AM) and late afternoon (4-7 PM).
- **Erode to Vellode:** Traffic normalizes but can still experience slow movement due to local commuting.
- **Vellode to Ottapparai:** Light to moderate traffic with occasional delays due to agricultural vehicles.

4. Assessment of Road Quality and Infrastructure

The road quality varies significantly:

- Local roads in and around Puthur may have potholes and are narrow.
- RKV Rd and parts of Erode-Chennimalai Rd are better maintained but have numerous intersections and pedestrian crossings.
- Sections near Vellode may have uneven surfaces or abrupt shoulder changes.

5. Suggestions for Alternative Routes

For emergencies, a viable alternative is bypassing Erode by taking NH544 and diverting through minor state highways to reconnect with villages closer to Ottapparai.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Tamil Nadu imposes restrictions on the transportation of hazardous materials through densely populated areas during peak times. Special permits may be required, and transport should adhere to guidelines for route safety, emergency protocols, and environmental protection.

7. Overview of Historical Incidents

The stretch around Erode has had incidents involving vehicular mishaps due to pedestrian activity. However, there have been no significant hazardous material spills in recent years. The primary concern remains traffic-related incidents.

8. Environmental Considerations and Sensitive Areas

- Sensitive Areas:** The Vellode Bird Sanctuary is along the route. Noise and pollution must be minimized in this region.
- Environmental Protection:** Awareness of spill response and containment is crucial in areas with water bodies and agricultural lands nearby.

9. Analysis of Communication Coverage

While major towns like Erode have robust coverage, rural stretches between Puthur and Vellode may experience patchy network service, which could affect communication.

10. Estimated Emergency Response Times

- Sangagiri to Puthur:** 30-45 minutes, depending on local availability.
- Puthur to Erode:** 20-30 minutes; Erode having better services.
- Erode to Vellode/Ottapparai:** 30-60 minutes, longer during peak hours due to congestion.

11. Overall Summary of Risk Assessment

The route presents moderate risk due to varying road conditions, congestion in urban areas, and potential weather disruptions. Adherence to transport regulations and emergency planning is crucial, especially during peak traffic or adverse weather conditions. Close communication with local authorities and adherence to designated routes and schedules for hazardous material transport will mitigate most challenges effectively.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	Roundabout	High	11.23678, 77.65868	15 KM/Hr
2	Turn	Medium	11.43822, 77.87348	30 KM/Hr
3	Turn	High	11.43961, 77.87341	15 KM/Hr
4	Turn	High	11.44029, 77.87544	15 KM/Hr
5	Turn	Medium	11.44893, 77.87413	30 KM/Hr
6	Turn	Medium	11.45127, 77.86734	30 KM/Hr
7	Turn	Medium	11.45354, 77.85798	30 KM/Hr
8	Turn	High	11.45350, 77.85700	15 KM/Hr
9	Turn	Medium	11.45845, 77.85141	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	Medium	11.46303, 77.84945	30 KM/Hr
11	Turn	Medium	11.46311, 77.84934	30 KM/Hr
12	Turn	High	11.46312, 77.84886	15 KM/Hr
13	Turn	Medium	11.36626, 77.74788	30 KM/Hr
14	Turn	Medium	11.34172, 77.72823	30 KM/Hr
15	Blind Spot	Blind Spot	11.33920, 77.72902	10 KM/Hr
16	Turn	High	11.33914, 77.72659	15 KM/Hr
17	Turn	High	11.33890, 77.72637	15 KM/Hr
18	Turn	Medium	11.33091, 77.72748	30 KM/Hr
19	Turn	Medium	11.33084, 77.72743	30 KM/Hr
20	Turn	High	11.31165, 77.70717	15 KM/Hr
21	Turn	Medium	11.31058, 77.70776	30 KM/Hr
22	Turn	High	11.31023, 77.70780	15 KM/Hr
23	Turn	Medium	11.30807, 77.70415	30 KM/Hr
24	Blind Spot	Blind Spot	11.23903, 77.66455	10 KM/Hr
25	Turn	Medium	11.23835, 77.66233	30 KM/Hr
26	Turn	Medium	11.23742, 77.66176	30 KM/Hr
27	Turn	Medium	11.19569, 77.62600	30 KM/Hr
28	Blind Spot	Blind Spot	11.18834, 77.61521	10 KM/Hr
29	Turn	Medium	11.18714, 77.61543	30 KM/Hr
30	Turn	Medium	11.18125, 77.61202	30 KM/Hr
31	Turn	High	11.18095, 77.61172	15 KM/Hr
32	Turn	Medium	11.18002, 77.61208	30 KM/Hr
33	Turn	Medium	11.17976, 77.61377	30 KM/Hr
34	Turn	Medium	11.17501, 77.61751	30 KM/Hr
35	Turn	Medium	11.17434, 77.61737	30 KM/Hr
36	Turn	Medium	11.17380, 77.61776	30 KM/Hr
37	Turn	Medium	11.17324, 77.61785	30 KM/Hr
38	Turn	Medium	11.17229, 77.61893	30 KM/Hr
39	Turn	Medium	11.16814, 77.62089	30 KM/Hr
40	Turn	Medium	11.16335, 77.62197	30 KM/Hr
41	Blind Spot	Blind Spot	11.16326, 77.62200	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	hospital	Cheran Hospital	11.3680302, 77.7481976	30 km/h	Medium
2	pharmacy	Pharmacy	11.3652161, 77.7486375	30 km/h	Medium
3	hospital	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
4	hospital	Sri Kumaran E N T Hospital	11.3657814, 77.7477763	30 km/h	Medium
5	hospital	Sri Krishna Hospital	11.3656648, 77.7477783	30 km/h	Medium
6	police	Police Station	11.3630177, 77.7476505	30 km/h	Medium
7	hospital	Government Hospital	11.3608508, 77.747453	30 km/h	Medium
9	hospital	Sri Hari Sakthivel Hospital	11.3526901, 77.7323055	30 km/h	Medium
10	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
11	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
12	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
13	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
15	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
16	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
17	hospital	City Hospital	11.3451151, 77.7300887	30 km/h	Medium
18	clinic	K.B.N. Nursing Home	11.344835, 77.7310771	30 km/h	Medium
19	clinic	Kpn Nursing Home	11.3437022, 77.7304525	30 km/h	Medium
20	hospital	Milan Hospital	11.343591, 77.733182	30 km/h	Medium
21	hospital	Kaviraj Ayurveda Hospital	11.3400349, 77.7298199	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
22	hospital	Dr Kokilasekar Nursing Hospital	11.3395874, 77.7269838	30 km/h	Medium
23	clinic	M.R Nursing Home	11.3386746, 77.7294262	30 km/h	Medium
25	hospital	Government Maternity Hospital, Agathiar	11.33716, 77.727075	30 km/h	Medium
26	clinic	Naseer Nursing Home	11.3364485, 77.7271691	30 km/h	Medium
27	hospital	Kumarasamy Hospital	11.334273, 77.7259118	30 km/h	Medium
28	hospital	Thangam Hospital, Erode	11.3340961, 77.7262437	30 km/h	Medium
29	hospital	Vikram Hospital, Erode	11.3356411, 77.7280569	30 km/h	Medium
30	hospital	Shabeer Hospital	11.33529, 77.7285236	30 km/h	Medium
31	hospital	J.B. Clinic And Hospital	11.3351769, 77.7282031	30 km/h	Medium
32	hospital	Dr. R.M. Habibullah Hospital	11.335246, 77.7266028	30 km/h	Medium
33	hospital	Ck Hospital	11.3326562, 77.7282011	30 km/h	Medium
34	hospital	Jai Maaruthi Hospital	11.332, 77.727272	30 km/h	Medium
35	hospital	Shubiksha Hospital	11.3318174, 77.7299544	30 km/h	Medium
36	hospital	Immick Hospital	11.332617, 77.728073	30 km/h	Medium
37	fire_station	Erode District Fire Station	11.3326366, 77.7272532	30 km/h	Medium
38	hospital	JJ hospital	11.33168, 77.728823	30 km/h	Medium
39	hospital	Bethesda Hospital	11.3314183, 77.7266231	30 km/h	Medium
40	hospital	Erode Ortho Centre	11.3294487, 77.7230172	30 km/h	Medium
41	hospital	Dr. Snm Siddha Hospital	11.3306597, 77.7196144	30 km/h	Medium
42	hospital	Aditi Ent Hospital	11.3300862, 77.7236924	30 km/h	Medium
43	hospital	KRN Hospital	11.330054, 77.723136	30 km/h	Medium
44	hospital	Joseph Hospital	11.30801, 77.704584	30 km/h	Medium
47	hospital	Kavitha Hospital	11.238653, 77.663961	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
48	clinic	Chrisdella Clinic	11.1874064, 77.6118627	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	Ssri Valliappa Vidhayalayam mat hr school	11.4004878, 77.7794381	30 km/h	Medium
8	marketplace	Weekly Market	11.3605669, 77.7488199	30 km/h	Medium
14	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium
24	school	E.V.R. Govt Girls Hr. Sec School	11.3371265, 77.7266283	30 km/h	Medium
45	college	Erode Arts and Science College	11.3002956, 77.6984443	30 km/h	Medium
46	school	The Indian Public School	11.2908927, 77.6934601	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37086, 77.74828



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23678, 77.65868



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44029, 77.87544



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.44893, 77.87413



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45127, 77.86734



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45354, 77.85798



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45350, 77.85700



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45845, 77.85141



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46303, 77.84945



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46311, 77.84934



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.46312, 77.84886



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.36626, 77.74788



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34172, 77.72823



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.33920, 77.72902



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.33914, 77.72659



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.33890, 77.72637



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33091, 77.72748



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33084, 77.72743



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.31165, 77.70717



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.31058, 77.70776



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.31023, 77.70780



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30807, 77.70415



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.23903, 77.66455



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23835, 77.66233



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23742, 77.66176



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.19569, 77.62600

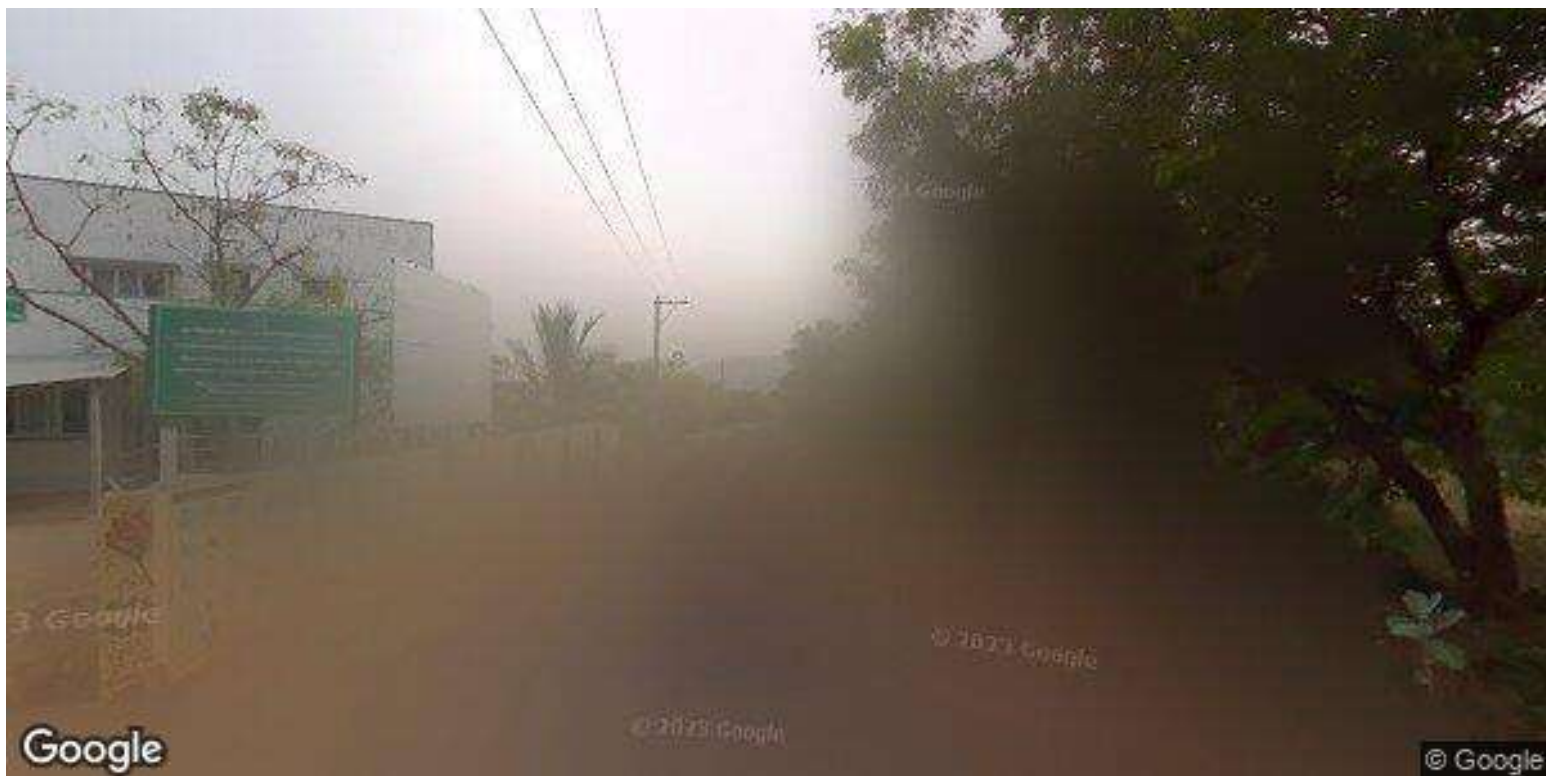


Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.18834, 77.61521



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18714, 77.61543



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18125, 77.61202



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.18095, 77.61172



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18002, 77.61208



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17976, 77.61377



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17501, 77.61751



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17434, 77.61737



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17380, 77.61776



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17324, 77.61785



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17229, 77.61893



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16814, 77.62089



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16335, 77.62197



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.16326, 77.62200