



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SRI KALYAN PERUMAL FUELS

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

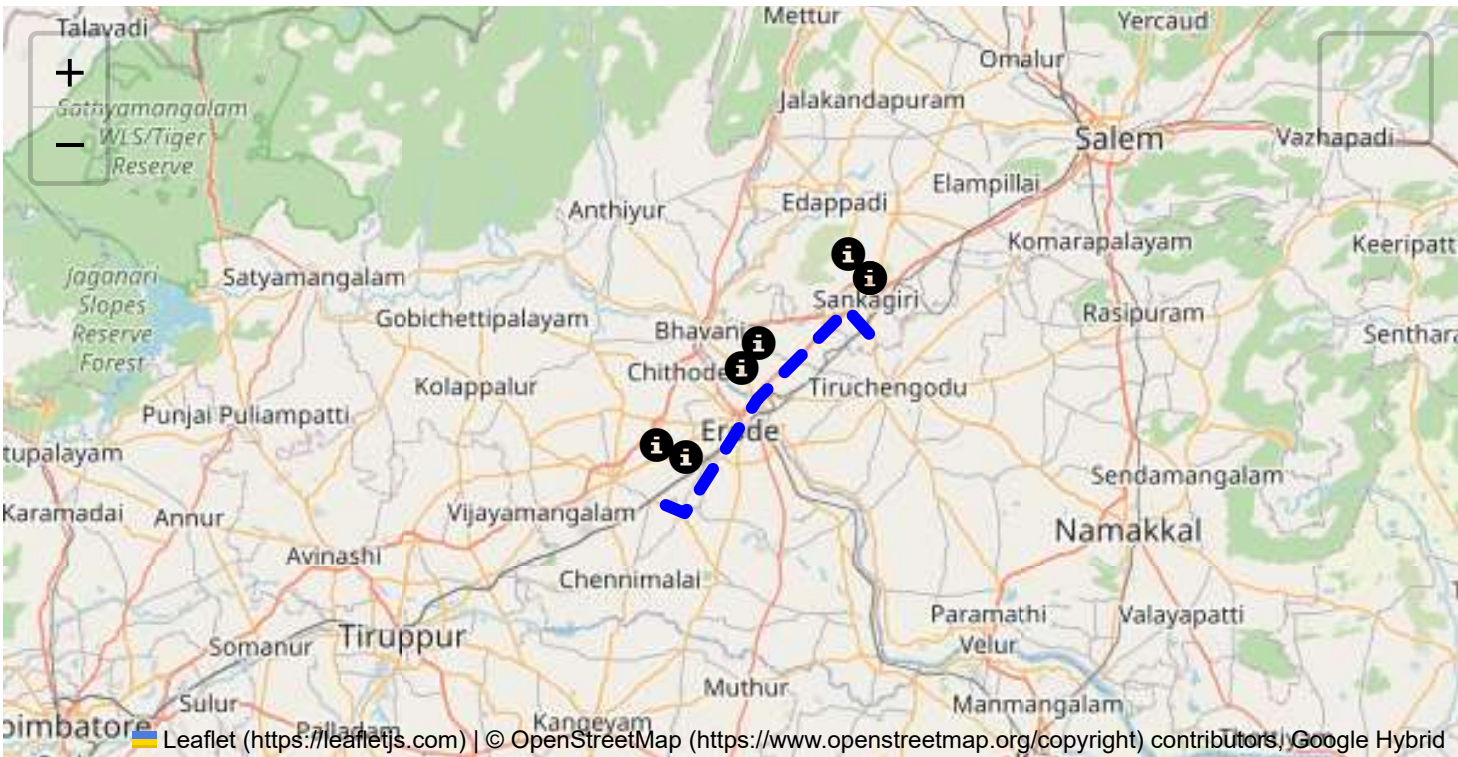
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

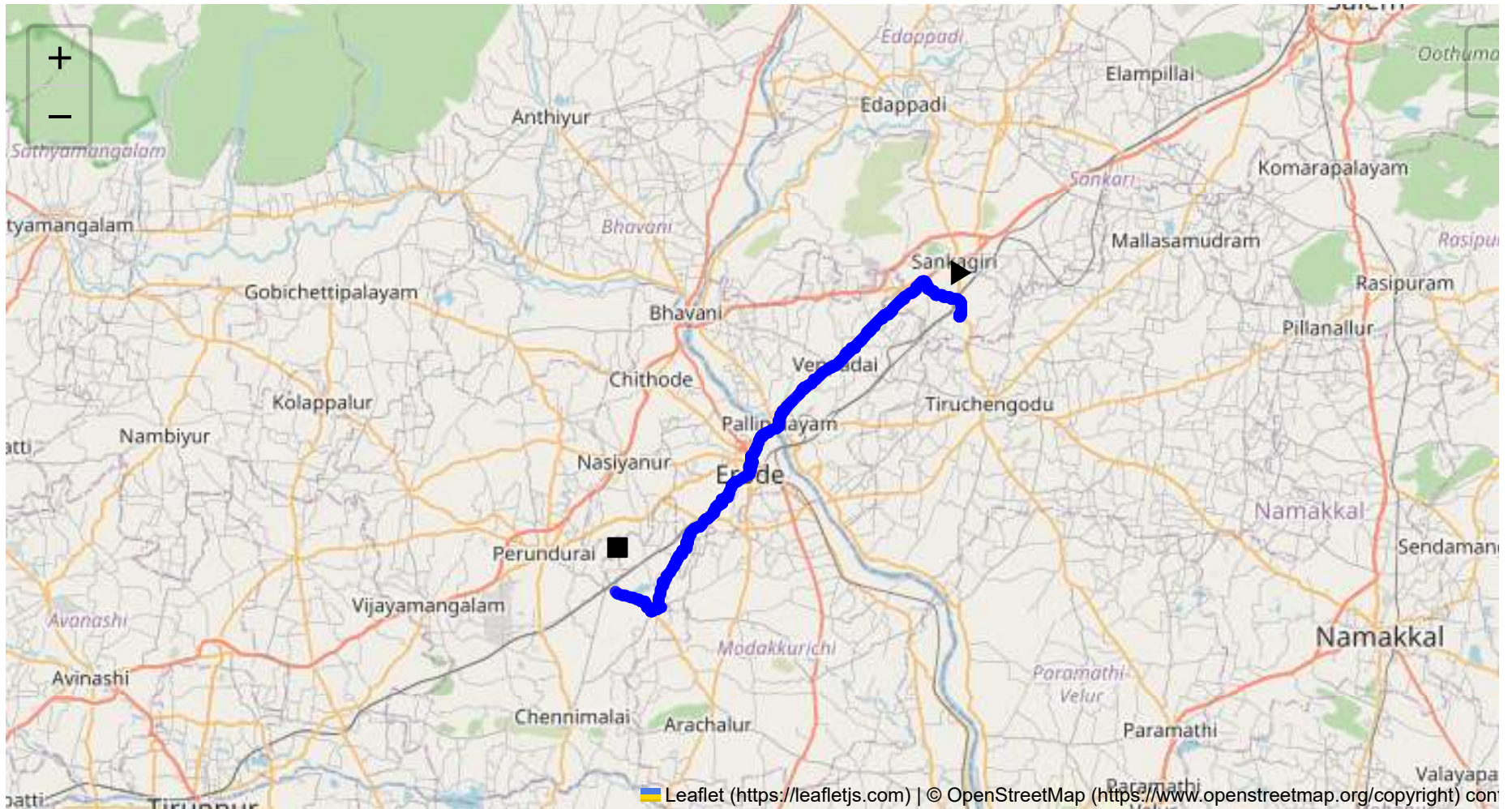
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 42.77 km
Estimated Duration: 1.2 hours
Adjusted Duration (Heavy Vehicle): 1.4 hours
Start: (11.4381, 77.8734)
End: (11.250002, 77.632954)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Vadamugam Vellode in Tamil Nadu covers approximately 42.77 kilometers. Starting from Sangagiri, the journey proceeds through notable points including SH 79A, Pallipalayam, Erode, before reaching the destination in Vadamugam Vellode. The route generally follows major highways and rural roads that connect these areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate with the hottest months typically being April to June. The monsoon season, from June to September, can bring heavy rains that may result in poor visibility and slippery road conditions. Localized flooding could occur, particularly in low-lying areas, affecting driving conditions. The post-monsoon months (October to December) can also experience unpredictable weather, though generally less intense.

3. Analysis of Traffic Patterns

Traffic congestion is common during peak hours, particularly in urban areas such as Erode and Pallipalayam. Morning peak traffic typically occurs between 8:00 AM and 10:00 AM, while the evening peak

spans from 5:30 PM to 7:30 PM. Congestion around marketplaces and intersections can further impede progress.

4. Assessment of Road Quality and Infrastructure

The road infrastructure along SH 79A and urban roads in Erode is generally well-maintained, although wear and tear, especially after the monsoon, can lead to potholes and uneven surfaces. Rural segments may experience reduced road quality and lack regular maintenance. Signage is generally adequate, but caution is advised in less illuminated areas at night.

5. Suggestions for Alternative Routes for Emergencies

In case of roadblocks or emergencies, diversions through NH 544 and NH 381A might be considered. Although these routes could extend the travel time, they provide reliable alternatives with proper facilities.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Tamil Nadu regulations mandate specific transit permits for vehicles carrying hazardous materials. Vehicular restrictions during peak hours in urban areas and near sensitive zones should be observed. Ensuring that vehicles are equipped with appropriate safety equipment such as fire extinguishers, warning signs, and first aid kits is mandatory.

7. Overview of Historical Incidents

Earlier incidents involving heavy vehicles on SH 79 and connecting roads have included overturns and collisions, primarily attributed to human error, overloading, and adverse weather conditions. Regular audits and driver training programs are recommended to minimize risks.

8. Environmental Considerations and Sensitive Areas

The route passes through several environmental and residential zones, especially near Erode. Caution is advised to mitigate noise pollution and avoid accidental spillage of hazardous materials, which could impact local water sources and ecosystems.

9. Analysis of Communication Coverage

Telecommunication networks are fairly robust in urban centers but may experience coverage gaps in rural stretches, particularly in less developed segments between cities. Drivers should ensure their communication devices are fully charged and consider carrying satellite phones for emergencies.

10. Estimated Emergency Response Times

Emergency responses in urban centers like Erode can be expected within 20-30 minutes due to proximity to hospitals and fire stations. In rural areas, response times might extend up to 45 minutes or more. It's crucial to have contact information for nearby emergency services readily available.

12. Overall Summary of Risk Assessment

Overall, the route presents a moderate risk level for transporting hazardous materials. The main concerns include weather-related hazards during the monsoon, potential traffic congestion, and rural road conditions. Adequate preparation, awareness of local regulations, and contingency planning for route diversions can help mitigate risks effectively. Constant communication and monitoring of weather and traffic conditions are also essential for a safe journey.

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	High	11.45350, 77.85700	15 KM/Hr
7	Turn	Medium	11.45845, 77.85141	30 KM/Hr
8	Turn	Medium	11.46046, 77.85037	30 KM/Hr
9	Turn	Medium	11.46303, 77.84945	30 KM/Hr
10	Turn	Medium	11.46317, 77.84906	30 KM/Hr
11	Turn	Medium	11.34192, 77.72824	30 KM/Hr
12	Blind Spot	Blind Spot	11.33920, 77.72902	10 KM/Hr
13	Turn	High	11.33913, 77.72832	15 KM/Hr
14	Blind Spot	Blind Spot	11.33618, 77.72865	10 KM/Hr
15	Blind Spot	Blind Spot	11.33582, 77.72712	10 KM/Hr
16	Turn	Medium	11.33092, 77.72748	30 KM/Hr
17	Turn	Medium	11.33088, 77.72747	30 KM/Hr
18	Turn	Medium	11.33083, 77.72740	30 KM/Hr
19	Turn	Medium	11.33083, 77.72732	30 KM/Hr
20	Turn	High	11.33085, 77.72730	15 KM/Hr
21	Turn	Medium	11.32259, 77.71458	30 KM/Hr
22	Turn	High	11.31165, 77.70717	15 KM/Hr
23	Turn	Medium	11.31050, 77.70781	30 KM/Hr
24	Turn	Medium	11.31032, 77.70783	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
25	Turn	Medium	11.31003, 77.70761	30 KM/Hr
26	Turn	Medium	11.30807, 77.70415	30 KM/Hr
27	Blind Spot	Blind Spot	11.23903, 77.66455	10 KM/Hr
28	Turn	Medium	11.23738, 77.66170	30 KM/Hr
29	Turn	Medium	11.23837, 77.65729	30 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	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
12	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
13	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
15	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
16	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
17	hospital	City Hospital	11.3451151, 77.7300887	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
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
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	Vikram Hospital, Erode	11.3356411, 77.7280569	30 km/h	Medium
28	hospital	Shabeer Hospital	11.33529, 77.7285236	30 km/h	Medium
29	hospital	J.B. Clinic And Hospital	11.3351769, 77.7282031	30 km/h	Medium
30	hospital	Dr. R.M. Habibullah Hospital	11.335246, 77.7266028	30 km/h	Medium
31	hospital	Kumarasamy Hospital	11.334273, 77.7259118	30 km/h	Medium
32	hospital	Thangam Hospital, Erode	11.3340961, 77.7262437	30 km/h	Medium
33	hospital	Ck Hospital	11.3326562, 77.7282011	30 km/h	Medium
34	hospital	Immick Hospital	11.332617, 77.728073	30 km/h	Medium
35	fire_station	Erode District Fire Station	11.3326366, 77.7272532	30 km/h	Medium
36	hospital	Jai Maaruthi Hospital	11.332, 77.727272	30 km/h	Medium
37	hospital	Shubiksha Hospital	11.3318174, 77.7299544	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	Mercury Hospital	11.3328384, 77.7240531	30 km/h	Medium
41	hospital	Erode Ortho Centre	11.3294487, 77.7230172	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
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	Dr. Snm Siddha Hospital	11.3306597, 77.7196144	30 km/h	Medium
45	hospital	Divisional Railway Hospital	11.3237354, 77.7204487	30 km/h	Medium
46	hospital	Joseph Hospital	11.30801, 77.704584	30 km/h	Medium
49	hospital	Kavitha Hospital	11.238653, 77.663961	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
47	college	Erode Arts and Science College	11.3002956, 77.6984443	30 km/h	Medium
48	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: 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: 11.46046, 77.85037



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: 11.46317, 77.84906



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34192, 77.72824



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: 11.33913, 77.72832



Risk Type: Blind Spot
Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.33618, 77.72865



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.33582, 77.72712



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33092, 77.72748



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33088, 77.72747



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33083, 77.72740



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33083, 77.72732



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.33085, 77.72730



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32259, 77.71458



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: 11.31050, 77.70781



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31032, 77.70783



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31003, 77.70761



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: 11.23738, 77.66170



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr
Coordinates: 11.23837, 77.65729
