



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SONA BALAN FUEL SERVICE

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

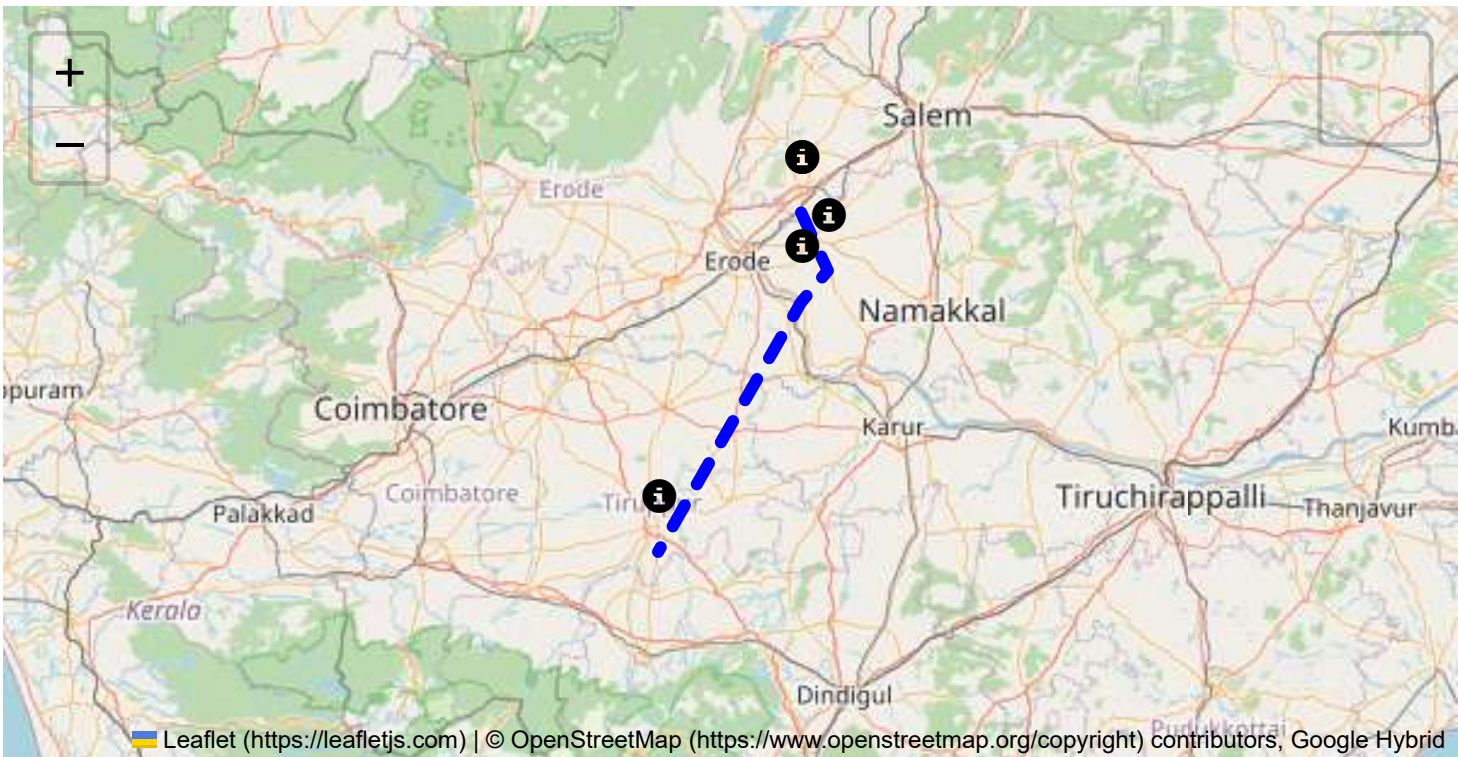
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

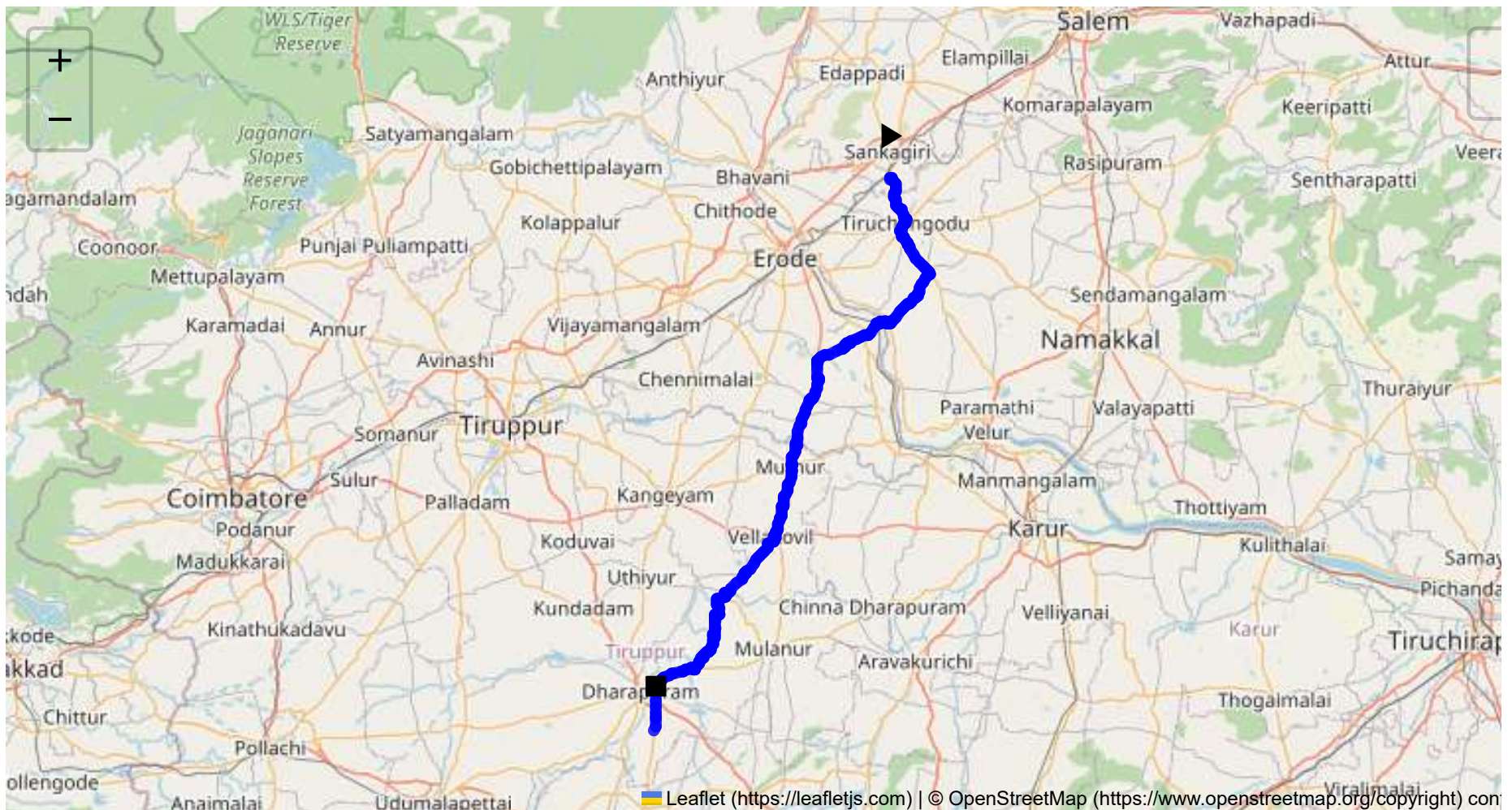
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 109.64 km
Estimated Duration: 2.5 hours
Adjusted Duration (Heavy Vehicle): 3.1 hours
Start: (11.4381, 77.8734)
End: (10.681872, 77.545539)



Welcome to the Journey Risk Management Study

Route Overview

The route from Sangagiri to SH 83 in Tamil Nadu spans approximately 109.64 kilometers. The journey typically takes about 2.51 hours for heavy vehicles carrying hazardous materials, traveling through key points like Sullipalayam and Solasiramani. The route involves traveling on State Highways such as SH 86 and SH 83, known for connecting smaller towns and rural areas.

Weather Conditions

Tamil Nadu experiences a tropical climate with three main seasons: summer, monsoon, and winter. The region is prone to heavy monsoon rains between October and December, which can lead to waterlogged roads and reduced visibility. It is important for drivers to be cautious of potential flooding and slippery road surfaces during the monsoon season.

Traffic Patterns

This route generally experiences moderate traffic, with peak hours typically between 8 AM to 10 AM and 5 PM to 7 PM. Urban areas like Sangagiri and Sullipalayam may experience congestion, especially during local market hours and weekends. Be cautious of slow-moving agricultural vehicles and two-wheelers prevalent in this region.

Road Quality and Infrastructure

The road quality varies along the route. State Highways are generally well-paved but can have potholes and narrower segments in rural areas. Some stretches may lack proper lighting, which can be hazardous during nighttime driving. Regular maintenance occurs, but unexpected road conditions can arise, especially post-monsoon.

Alternative Routes

In emergencies like roadblocks or severe weather conditions, alternative routes include detours through nearby major towns such as Salem, which has better infrastructure and wider roads. Another option is using NH 44 for a significant part of the journey to avoid congested segments.

Local Regulations on Hazardous Material Transport

Transporting hazardous materials in Tamil Nadu requires adherence to specific regulations, including obtaining necessary permits, clearly displaying HAZMAT placards, and following designated safety protocols. Restriction on the movement of such materials during specific hours might also apply.

Historical Incidents

While historical data specific to this route show few major incidents, the region has occasionally seen road accidents involving heavy vehicles due to poor road conditions and weather impacts. Constant vigilance is required to avoid potential mishaps, especially in rural stretches.

Environmental Considerations

The route passes near agricultural fields and small water bodies. Drivers should be cautious to prevent contamination from spills. Dust pollution in dry areas might pose a minor risk to nearby crops. Efforts should be made to minimize ecological impact while covering the transit.

Communication Coverage

Communication coverage is generally good near towns and the highway. However, there may be potential dead zones in some rural or forested sections. It is advisable to have a reliable communication device that can leverage multiple network operators.

Emergency Response Times

Emergency response times can vary significantly. In urban or semi-urban sections, assistance might be available in 30-60 minutes. Rural or less accessible areas could experience delays, with response times extending beyond 1-2 hours. Ensure that vehicles have a well-stocked emergency kit and drivers are trained in first aid.

Overall Risk Assessment Summary

The route from Sangagiri to SH 83 is moderately safe but bears inherent risks typical of rural Indian roads, such as unpredictable traffic behavior, varying road conditions, and seasonal weather impacts. Preparedness and mitigation strategies—like regular communication checks, understanding local traffic

regulations, and having alternative plans—are essential for safe transit. Hazmat transporters should ensure compliance with regulations and be alert to dynamic circumstances along the route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Roundabout	High	11.04637, 77.73761	15 KM/Hr
2	Turn	High	11.43961, 77.87341	15 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	Medium	11.43111, 77.88170	30 KM/Hr
5	Turn	Medium	11.39983, 77.88377	30 KM/Hr
6	Turn	Medium	11.39706, 77.88825	30 KM/Hr
7	Turn	Medium	11.37862, 77.89488	30 KM/Hr
8	Turn	Medium	11.34151, 77.90137	30 KM/Hr
9	Turn	High	11.30859, 77.92918	15 KM/Hr
10	Turn	Medium	11.24421, 77.87541	30 KM/Hr
11	Turn	Medium	11.24192, 77.87363	30 KM/Hr
12	Turn	High	11.24001, 77.87368	15 KM/Hr
13	Turn	High	11.24061, 77.86899	15 KM/Hr
14	Turn	High	11.24242, 77.86833	15 KM/Hr
15	Turn	Medium	11.24252, 77.86780	30 KM/Hr
16	Turn	Medium	11.24343, 77.86716	30 KM/Hr
17	Turn	High	11.24365, 77.86668	15 KM/Hr
18	Turn	High	11.24101, 77.86023	15 KM/Hr
19	Turn	High	11.24198, 77.85893	15 KM/Hr
20	Turn	Medium	11.21416, 77.81761	30 KM/Hr
21	Turn	Medium	11.21438, 77.81565	30 KM/Hr
22	Turn	Medium	11.21372, 77.81372	30 KM/Hr
23	Turn	High	11.18850, 77.77113	15 KM/Hr
24	Turn	Medium	11.16450, 77.77357	30 KM/Hr
25	Turn	Medium	11.16380, 77.77417	30 KM/Hr
26	Turn	Medium	11.16294, 77.77438	30 KM/Hr
27	Turn	Medium	11.13667, 77.76526	30 KM/Hr
28	Turn	Medium	11.07709, 77.74277	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
29	Turn	Medium	11.04618, 77.73719	30 KM/Hr
30	Turn	High	11.04528, 77.73627	15 KM/Hr
31	Turn	High	10.99029, 77.72513	15 KM/Hr
32	Turn	High	10.98982, 77.72400	15 KM/Hr
33	Turn	Medium	10.96598, 77.71682	30 KM/Hr
34	Turn	High	10.94591, 77.71309	15 KM/Hr
35	Turn	High	10.94582, 77.71257	15 KM/Hr
36	Turn	Medium	10.93825, 77.70342	30 KM/Hr
37	Turn	High	10.87230, 77.64948	15 KM/Hr
38	Turn	High	10.87174, 77.64440	15 KM/Hr
39	Turn	High	10.86454, 77.64346	15 KM/Hr
40	Turn	Medium	10.86372, 77.63528	30 KM/Hr
41	Turn	Medium	10.86166, 77.63330	30 KM/Hr
42	Turn	High	10.85787, 77.63357	15 KM/Hr
43	Turn	High	10.85690, 77.63240	15 KM/Hr
44	Turn	Medium	10.85361, 77.63320	30 KM/Hr
45	Turn	Medium	10.85261, 77.63402	30 KM/Hr
46	Turn	Medium	10.84152, 77.63445	30 KM/Hr
47	Turn	Medium	10.84078, 77.63352	30 KM/Hr
48	Turn	High	10.83987, 77.62957	15 KM/Hr
49	Turn	Medium	10.83842, 77.62941	30 KM/Hr
50	Turn	High	10.83784, 77.62873	15 KM/Hr
51	Turn	Medium	10.81721, 77.62884	30 KM/Hr
52	Turn	Medium	10.78968, 77.61905	30 KM/Hr
53	Turn	Medium	10.78308, 77.61275	30 KM/Hr
54	Turn	High	10.76663, 77.60179	15 KM/Hr
55	Turn	Medium	10.76745, 77.59629	30 KM/Hr
56	Turn	Medium	10.74757, 77.54899	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

	type	name	coordinates	speed_limit	risk_level
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
12	police	கரட்டுப்பாளையம் காவல் நிலையம்	11.357586, 77.8922539	30 km/h	Medium
13	hospital	Government Hospital, Elumathur	11.18533, 77.772496	30 km/h	Medium
14	hospital	Malar Hospital, Muthur	11.0438049, 77.7361156	30 km/h	Medium
15	hospital	SIBI Hospital, Vellakoil	10.9569141, 77.7160216	30 km/h	Medium
16	hospital	KG Hospital, Vellakoil	10.9511, 77.714116	30 km/h	Medium
17	hospital	Vellakoil Government Hospital	10.9410661, 77.7110372	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
10	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
11	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: Roundabout
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.04637, 77.73761



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: 11.43111, 77.88170



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: 11.39706, 77.88825



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: 11.34151, 77.90137



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.30859, 77.92918



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24421, 77.87541



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24192, 77.87363



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24001, 77.87368



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24061, 77.86899



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24242, 77.86833



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24252, 77.86780



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.24343, 77.86716



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24365, 77.86668



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24101, 77.86023



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.24198, 77.85893



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.21416, 77.81761



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.21438, 77.81565



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.21372, 77.81372



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.18850, 77.77113



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16450, 77.77357



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16380, 77.77417



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16294, 77.77438



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.13667, 77.76526



Risk Type: Turn
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Speed Limit: 30 KM/Hr

Coordinates: 11.07709, 77.74277



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Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.04618, 77.73719



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.04528, 77.73627



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.99029, 77.72513



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.98982, 77.72400



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.96598, 77.71682



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.94591, 77.71309



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.94582, 77.71257



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.93825, 77.70342



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.87230, 77.64948



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.87174, 77.64440



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.86454, 77.64346



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.86372, 77.63528



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.86166, 77.63330



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.85787, 77.63357



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.85690, 77.63240



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.85361, 77.63320



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.85261, 77.63402



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.84152, 77.63445



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.84078, 77.63352



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.83987, 77.62957



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.83842, 77.62941



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.83784, 77.62873



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.81721, 77.62884



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.78968, 77.61905



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.78308, 77.61275



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.76663, 77.60179



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.76745, 77.59629



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.74757, 77.54899
