



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SS AGENCY

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

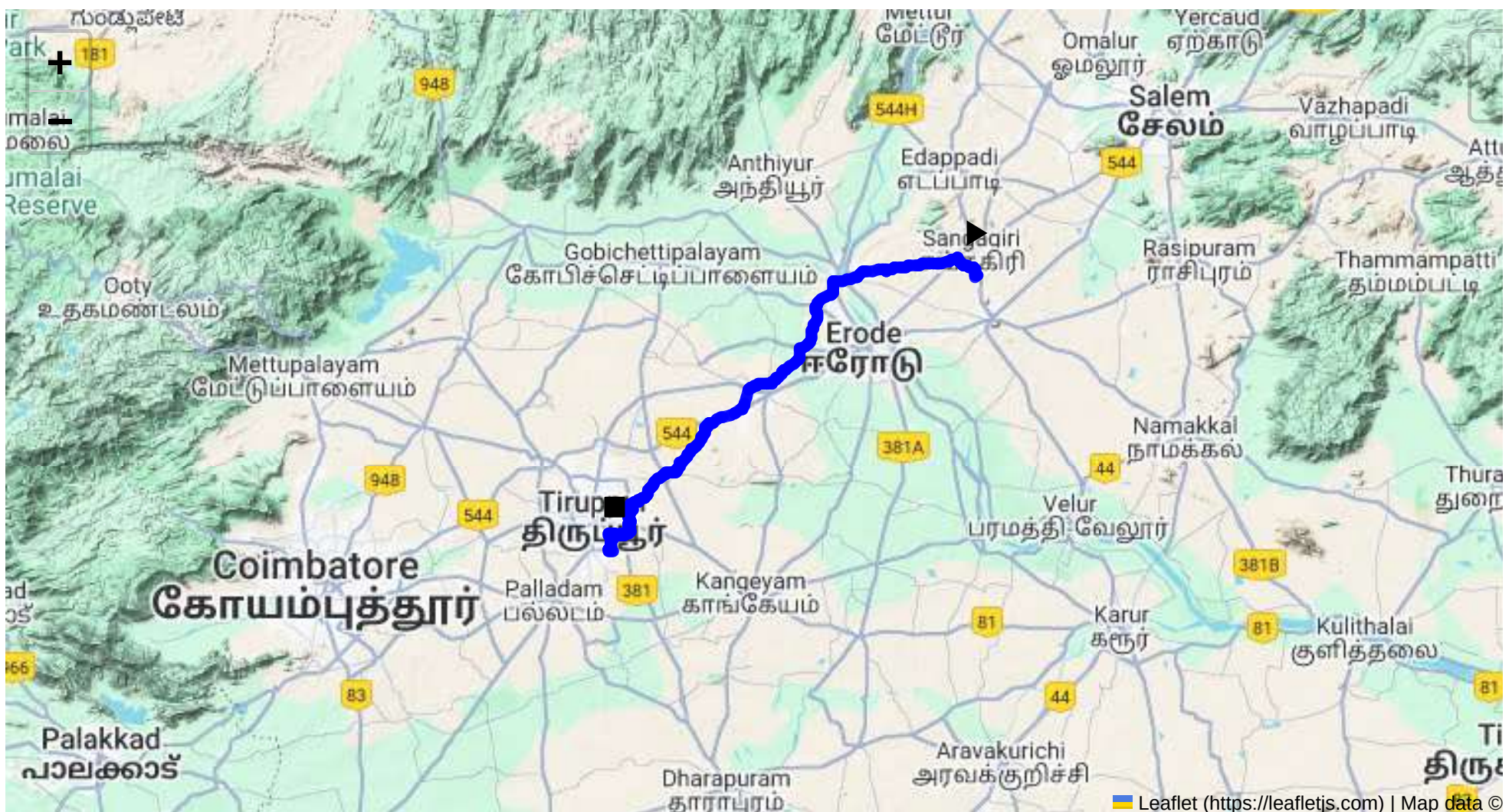
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 87.56 km
Estimated Duration: 1.9 hours
Adjusted Duration (Heavy Vehicle): 2.4 hours
Start: (11.4381, 77.8734)
End: (11.062385, 77.368607)



Welcome to the Journey Risk Management Study

Route Safety Analysis Report

1. Overview of the Route Map: The route from Sangagiri to K Chettipalayam typically follows the NH544 and SH19, spanning approximately 87.56 kilometers. This is a key route in Tamil Nadu connecting textile hubs and industrial areas. It traverses through a combination of urban, semi-urban, and rural settings, mostly linear with moderate curves.

2. Typical Weather Conditions and Potential Weather-Related Hazards: Tamil Nadu generally experiences tropical weather. The region can be prone to high temperatures, particularly from March to June, and receives significant rainfall during the monsoon seasons (June to September and October to December). Heavy rain can lead to waterlogging and reduced visibility. Occasionally, cyclonic storms may affect the area, causing severe disruption.

3. Analysis of Traffic Patterns:

- **Peak Hours:** Traffic tends to be heavier during morning (8:00 AM - 10:30 AM) and evening (5:00 PM - 8:00 PM) rush hours.
- **Congestion-Prone Areas:** Potential congestion zones include intersections near Salem and Avinashi, and around the entrance to Tiruppur.
- It is advisable to plan travel during off-peak times or divert through rural roads with less congestion.

4. Assessment of Road Quality and Infrastructure:

- **NH544:** Generally, the highway is well-maintained with good signage and multiple lanes. However, notable wear and tear can occur due to heavy usage.
- **SH19:** Road quality varies, with some segments experiencing potholes and uneven surfaces. Periodic maintenance causes temporary lane closures and bottlenecks.

5. Suggestions for Alternative Routes: In case of emergencies or severe congestion, consider the Salem-Kumarapalayam-Kangayam-Tiruppur road as an alternative. Though slightly longer, it offers less traffic and comparable travel time.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Truck drivers carrying hazardous materials must adhere to strict state and national regulations.
- Transport of hazardous materials is restricted during peak urban congestion times to mitigate risks.
- Comprehensive documentation and vehicle markings are mandatory.

7. Overview of Historical Incidents: The region has seen periodic road accidents involving heavy vehicles, often due to driver fatigue, speeding, or vehicle failure. Most incidents occur near urban entry points or where road conditions suddenly change.

8. Environmental Considerations and Sensitive Areas:

- Areas around Sangagiri are primarily agricultural; caution is advised to minimize impact on local farms.
- Awareness of natural habitats is necessary as the route crosses through regions with wildlife presence.

9. Analysis of Communication Coverage: Mobile network coverage is generally robust across the route due to its prominence. However, rural stretches, especially near agricultural areas, might experience temporary signal loss.

10. Estimated Emergency Response Times:

- Urban areas: 15-30 minutes due to proximity to facilities.

- Rural areas: 30-60 minutes, depending on accessibility and the specific location.
- Service responsiveness generally high near Salem and Tiruppur.

11. Overall Summary of Risk Assessment: Overall, the route is moderately safe but requires attention to traffic patterns and weather conditions. Ensuring vehicle readiness and compliance with safety regulations is critical for minimizing risk. Adequate planning, awareness of alternative routes, and understanding the local context significantly enhance safety for heavy vehicles transporting hazardous materials.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.43968, 77.87345	15 KM/Hr
1	Turn	High	11.44024, 77.87528	15 KM/Hr
2	Turn	High	11.44898, 77.87410	15 KM/Hr
3	Turn	High	11.45352, 77.85698	15 KM/Hr
4	Turn	Medium	11.45847, 77.85140	30 KM/Hr
5	Turn	Medium	11.45898, 77.85135	30 KM/Hr
6	Turn	High	11.46303, 77.84945	15 KM/Hr
7	Turn	Medium	11.44965, 77.77565	30 KM/Hr
8	Turn	Medium	11.44953, 77.77344	30 KM/Hr
9	Turn	Medium	11.43165, 77.67734	30 KM/Hr
10	Turn	Medium	11.23724, 77.50686	30 KM/Hr
11	Turn	High	11.23704, 77.50676	15 KM/Hr
12	Blind Spot	Blind Spot	11.23686, 77.50216	10 KM/Hr
13	Turn	Medium	11.23649, 77.50219	30 KM/Hr
14	Turn	High	11.23396, 77.50105	15 KM/Hr
15	Turn	Medium	11.23287, 77.49934	30 KM/Hr
16	Turn	Medium	11.18407, 77.46330	30 KM/Hr
17	Turn	Medium	11.18273, 77.46224	30 KM/Hr
18	Turn	Medium	11.17521, 77.45978	30 KM/Hr
19	Turn	Medium	11.17368, 77.45730	30 KM/Hr
20	Turn	Medium	11.17111, 77.45547	30 KM/Hr
21	Turn	High	11.16959, 77.44396	15 KM/Hr
22	Turn	Medium	11.16381, 77.43700	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
23	Turn	Medium	11.16280, 77.43139	30 KM/Hr
24	Turn	Medium	11.15217, 77.42418	30 KM/Hr
25	Turn	Medium	11.15134, 77.42300	30 KM/Hr
26	Turn	Medium	11.15023, 77.42247	30 KM/Hr
27	Turn	Medium	11.14925, 77.42065	30 KM/Hr
28	Turn	Medium	11.13848, 77.41611	30 KM/Hr
29	Turn	Medium	11.13578, 77.41299	30 KM/Hr
30	Turn	Medium	11.12989, 77.40302	30 KM/Hr
31	Turn	High	11.12775, 77.39347	15 KM/Hr
32	Turn	High	11.11846, 77.39460	15 KM/Hr
33	Turn	High	11.11833, 77.39390	15 KM/Hr
34	Turn	High	11.10276, 77.39199	15 KM/Hr
35	Turn	High	11.10256, 77.39273	15 KM/Hr
36	Blind Spot	Blind Spot	11.09882, 77.39312	10 KM/Hr
37	Turn	High	11.09898, 77.39028	15 KM/Hr
38	Turn	Medium	11.09456, 77.39233	30 KM/Hr
39	Turn	High	11.08759, 77.39166	15 KM/Hr
40	Turn	Medium	11.08531, 77.38413	30 KM/Hr
41	Turn	Medium	11.08597, 77.38095	30 KM/Hr
42	Turn	High	11.08536, 77.37919	15 KM/Hr
43	Turn	Medium	11.08481, 77.37902	30 KM/Hr
44	Turn	Medium	11.08448, 77.37842	30 KM/Hr
45	Turn	Medium	11.08510, 77.37541	30 KM/Hr
46	Turn	Medium	11.08463, 77.37378	30 KM/Hr
47	Turn	High	11.08497, 77.37234	15 KM/Hr
48	Turn	High	11.08544, 77.37228	15 KM/Hr
49	Turn	High	11.08604, 77.36377	15 KM/Hr
50	Turn	High	11.08583, 77.36360	15 KM/Hr
51	Turn	High	11.07888, 77.36793	15 KM/Hr
52	Turn	Medium	11.07037, 77.36701	30 KM/Hr
53	Turn	Medium	11.06962, 77.36676	30 KM/Hr
54	Turn	Medium	11.06907, 77.36623	30 KM/Hr
55	Turn	Medium	11.06888, 77.36568	30 KM/Hr
56	Blind Spot	Blind Spot	11.06421, 77.36175	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
4	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
6	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
7	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
8	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
9	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
10	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
11	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
13	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
15	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
16	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
18	hospital	Aravind Eye Care Hospital	11.1729469, 77.4574467	30 km/h	Medium
19	clinic	Sri Maha Annai Clinic	11.1707162, 77.4536498	30 km/h	Medium
20	hospital	Ram Doctor Hospital	11.1709391, 77.4532808	30 km/h	Medium
21	clinic	Kumaran Clinic	11.1697553, 77.451543	30 km/h	Medium
22	hospital	Sri Aravindhar Hospital	11.1697756, 77.4448276	30 km/h	Medium
23	clinic	Dr. Raja Clinic	11.1278464, 77.3927768	30 km/h	Medium
24	clinic	D K Clinic General & Ortho	11.1117864, 77.3906835	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
25	hospital	Tiruppur, Government Hospital	11.083827, 77.3634797	30 km/h	Medium
26	hospital	Meenakshi Hospital - Tiruppur	11.07082, 77.369519	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	KRP Matric. Hr. Sec School	11.4546193, 77.8142445	30 km/h	Medium
1	college	Vivekanandha Engineering College	11.4589312, 77.7899284	30 km/h	Medium
2	marketplace	Monday market	11.452863, 77.775989	30 km/h	Medium
5	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
12	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium
14	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
17	college	Sasurie Engineering College	11.2171482, 77.4898552	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Turn
Risk Level: High

Speed Limit: 15 KM/Hr
Coordinates: 11.44024, 77.87528



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.44898, 77.87410



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45352, 77.85698



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45847, 77.85140



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45898, 77.85135



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.46303, 77.84945



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44965, 77.77565



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44953, 77.77344



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43165, 77.67734



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23724, 77.50686



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23704, 77.50676



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.23686, 77.50216



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23649, 77.50219



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.23396, 77.50105



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23287, 77.49934



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18407, 77.46330



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18273, 77.46224



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17521, 77.45978



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17368, 77.45730



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17111, 77.45547



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.16959, 77.44396



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16381, 77.43700



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16280, 77.43139



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15217, 77.42418



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15134, 77.42300



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15023, 77.42247



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14925, 77.42065



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13848, 77.41611



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13578, 77.41299



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12989, 77.40302



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.12775, 77.39347



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.11846, 77.39460



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.11833, 77.39390



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10276, 77.39199



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10256, 77.39273



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.09882, 77.39312



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.09898, 77.39028



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.09456, 77.39233



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08759, 77.39166



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08531, 77.38413



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08597, 77.38095



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08536, 77.37919



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08481, 77.37902



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08448, 77.37842



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08510, 77.37541



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08463, 77.37378



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08497, 77.37234



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08544, 77.37228



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08604, 77.36377



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08583, 77.36360



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.07888, 77.36793



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07037, 77.36701



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.06962, 77.36676



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.06907, 77.36623



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.06888, 77.36568



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.06421, 77.36175
