



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to ALAGUMALAI MUTHUKUMARAN 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

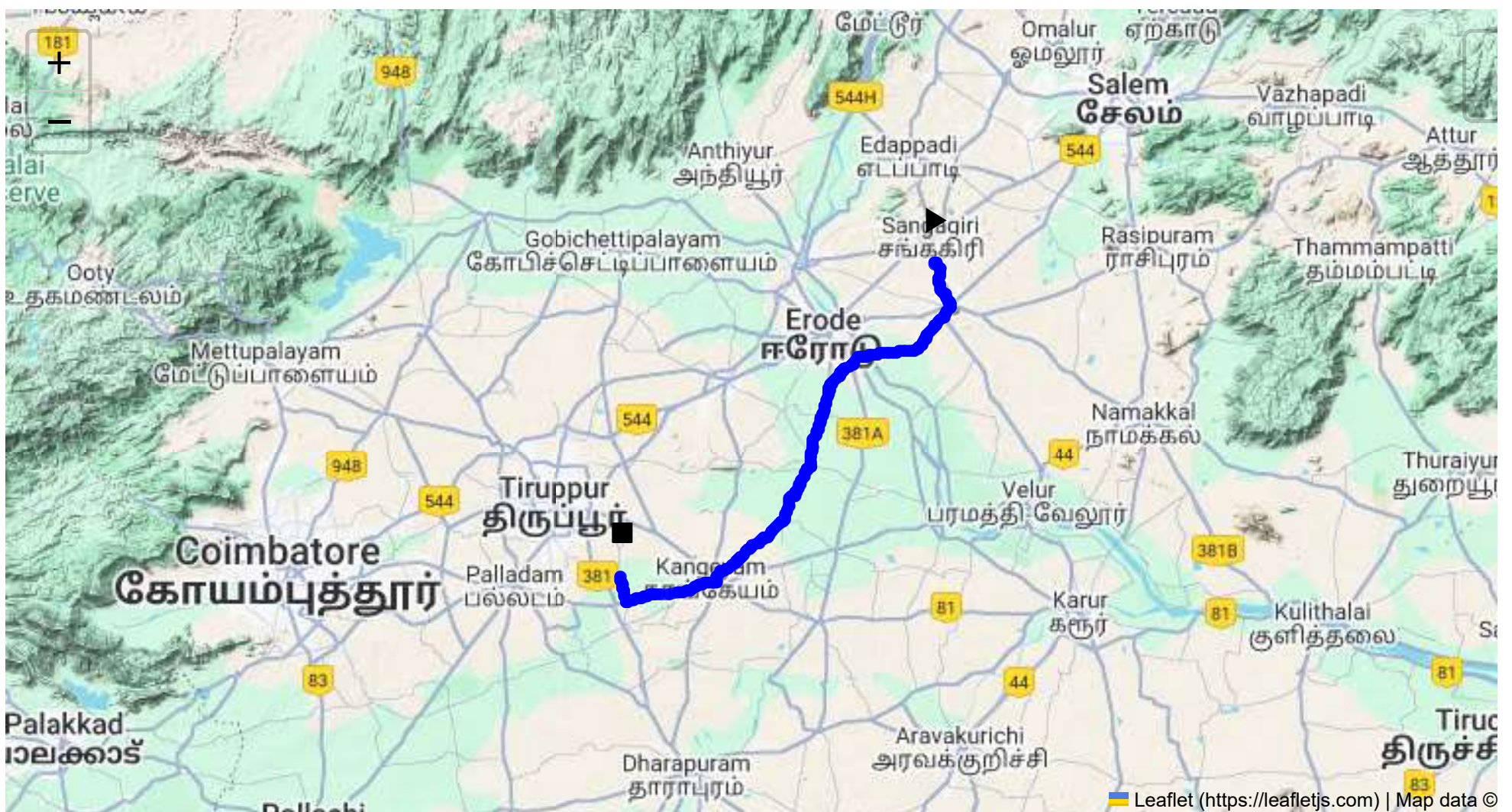
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 87.99 km
Estimated Duration: 2.0 hours
Adjusted Duration (Heavy Vehicle): 2.5 hours
Start: (11.4381, 77.8734)
End: (11.007871, 77.433533)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map:

The route begins at CVQF+23W in Sangagiri and ends at 2C5M+49 in Velayuthampalayam, passing through Kamalar via 25/8, S Car St, Tiruchengode. The total distance is approximately 87.99 km and takes around 2.02 hours for heavy vehicles. The route primarily consists of state highways and rural roads connecting small towns and villages.

2. Typical Weather Conditions and Potential Weather-related Hazards:

The region experiences a tropical climate with hot summers, moderate monsoons, and mild winters. Monsoon season, typically between June and September, can bring heavy rains that could lead to flooding and poor road conditions. Fog can present issues during early mornings, especially in the winter months (December to February).

3. Analysis of Traffic Patterns:

Heavy traffic can occur around urban centers, particularly near Tiruchengode and at major intersections. Peak travel times are generally between 8:00 AM - 10:00 AM and 5:00 PM - 7:00 PM. Congestion is possible near markets and school zones, especially during weekdays.

4. Assessment of Road Quality and Infrastructure:

The road quality varies, with some well-maintained stretches on main highways and less maintained sections on rural roads. Potholes and uneven surfaces may be present, especially after the monsoon season. Signage and road markings can be sparse or worn in less urbanized areas.

5. Suggestions for Alternative Routes:

- **Alternative Route 1:** Via NH544, diverting through Erode to avoid local towns if there's a road blockage.
- **Alternative Route 2:** Use local roads towards Komarapalayam if encountering major congestion or accidents on the main path.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

In Tamil Nadu, heavy vehicles carrying hazardous materials must adhere to regulations requiring clear labeling and placards. They are restricted from certain urban areas during peak hours and must follow designated routes to reduce exposure to densely populated areas.

7. Overview of Historical Incidents:

There have been occurrences of road accidents involving heavy vehicles in this region, often due to driver error or challenging weather conditions. However, reports specifically involving hazardous materials are less common but underscore the need for careful handling and adherence to safety standards.

8. Environmental Considerations and Sensitive Areas:

The route traverses agricultural lands, and care must be taken to prevent spillage of hazardous materials to avoid soil and water contamination. Potential wildlife crossings in rural sections necessitate vigilant driving, especially at night.

9. Analysis of Communication Coverage:

Most of the route has adequate mobile network coverage. However, there may be brief dead zones in some rural stretches where the signal can drop, hampering communication.

10. Estimated Emergency Response Times:

Emergency response along the highway segments in urban centers is generally faster, ranging from 30 to 60 minutes. In rural stretches, it may take 60 to 90 minutes or more for emergency services to arrive due to geographical constraints and road conditions.

12. Overall Summary of Risk Assessment:

The route poses moderate risks primarily due to variable road quality, weather conditions, and localized traffic congestion. Heavy vehicles carrying hazardous materials should maintain strict adherence to safety protocols, including regular vehicle maintenance and careful route planning, especially around sensitive and populous areas. It is recommended to utilize technology for real-time tracking and communication to enhance situational awareness and ensure quick response to any incident.

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	11.39976, 77.88382	30 KM/Hr
4	Turn	Medium	11.39690, 77.88852	30 KM/Hr
5	Turn	High	11.37868, 77.89498	15 KM/Hr
6	Blind Spot	Blind Spot	11.37862, 77.89530	10 KM/Hr
7	Turn	High	11.37857, 77.89473	15 KM/Hr
8	Turn	Medium	11.36919, 77.88934	30 KM/Hr
9	Turn	High	11.36616, 77.88885	15 KM/Hr
10	Turn	Medium	11.34067, 77.86347	30 KM/Hr
11	Turn	Medium	11.33854, 77.86216	30 KM/Hr
12	Turn	Medium	11.33778, 77.86236	30 KM/Hr
13	Turn	Medium	11.31752, 77.84260	30 KM/Hr
14	Turn	Medium	11.30955, 77.77637	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
15	Turn	Medium	11.30963, 77.76695	30 KM/Hr
16	Turn	High	11.29490, 77.74685	15 KM/Hr
17	Turn	High	11.29141, 77.74662	15 KM/Hr
18	Turn	Medium	11.28844, 77.74319	30 KM/Hr
19	Turn	Medium	11.28573, 77.74281	30 KM/Hr
20	Turn	High	11.27319, 77.72981	15 KM/Hr
21	Blind Spot	Blind Spot	11.27330, 77.72715	10 KM/Hr
22	Turn	Medium	11.23054, 77.71796	30 KM/Hr
23	Turn	Medium	11.22387, 77.71385	30 KM/Hr
24	Turn	Medium	11.16078, 77.70122	30 KM/Hr
25	Turn	Medium	11.15953, 77.70067	30 KM/Hr
26	Turn	High	11.15944, 77.70068	15 KM/Hr
27	Turn	Medium	11.11918, 77.67766	30 KM/Hr
28	Turn	Medium	11.11740, 77.67198	30 KM/Hr
29	Turn	Medium	11.10481, 77.67060	30 KM/Hr
30	Turn	Medium	11.09509, 77.66612	30 KM/Hr
31	Turn	Medium	11.08730, 77.66436	30 KM/Hr
32	Turn	Medium	11.08282, 77.65837	30 KM/Hr
33	Turn	High	11.06189, 77.63943	15 KM/Hr
34	Turn	High	11.00826, 77.56962	15 KM/Hr
35	Blind Spot	Blind Spot	11.00058, 77.56882	10 KM/Hr
36	Turn	High	11.00171, 77.56267	15 KM/Hr
37	Turn	Medium	11.00168, 77.56265	30 KM/Hr
38	Blind Spot	Blind Spot	10.97407, 77.44310	10 KM/Hr
39	Turn	High	10.99839, 77.43708	15 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

	type	name	coordinates	speed_limit	risk_level
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	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
10	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
12	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
15	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
16	hospital	J K Hospital	11.0042298, 77.5603345	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	MDV School	11.3719843, 77.8915244	30 km/h	Medium
13	college	Government Arts and Science College, Kangeyam	11.0626738, 77.636227	30 km/h	Medium
14	school	Carmel Girls Higher Secondary School	11.0009019, 77.5710182	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: 11.39976, 77.88382



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.39690, 77.88852



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.37868, 77.89498



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.37862, 77.89530



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37857, 77.89473



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.36919, 77.88934



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.36616, 77.88885



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34067, 77.86347



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33854, 77.86216



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33778, 77.86236



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.31752, 77.84260



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30955, 77.77637



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30963, 77.76695



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29490, 77.74685



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29141, 77.74662



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.28844, 77.74319



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.28573, 77.74281



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.27319, 77.72981



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.27330, 77.72715



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23054, 77.71796



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.22387, 77.71385



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16078, 77.70122



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.15953, 77.70067

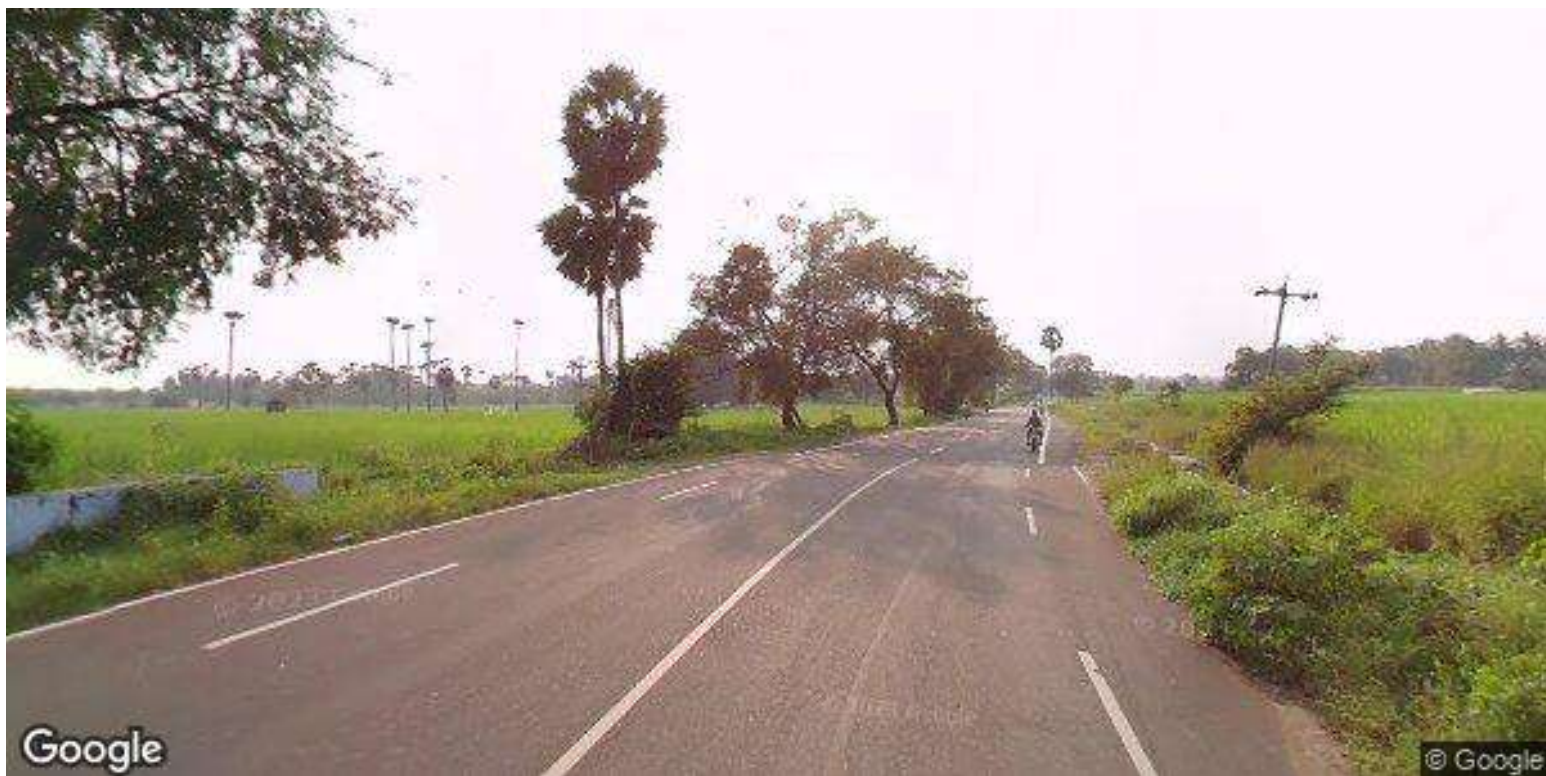


Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15944, 77.70068



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11918, 77.67766



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11740, 77.67198



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10481, 77.67060



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.09509, 77.66612



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08730, 77.66436



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08282, 77.65837



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.06189, 77.63943



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.00826, 77.56962



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.00058, 77.56882



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.00171, 77.56267



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.00168, 77.56265



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 10.97407, 77.44310



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.99839, 77.43708
