



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO SELVAM 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

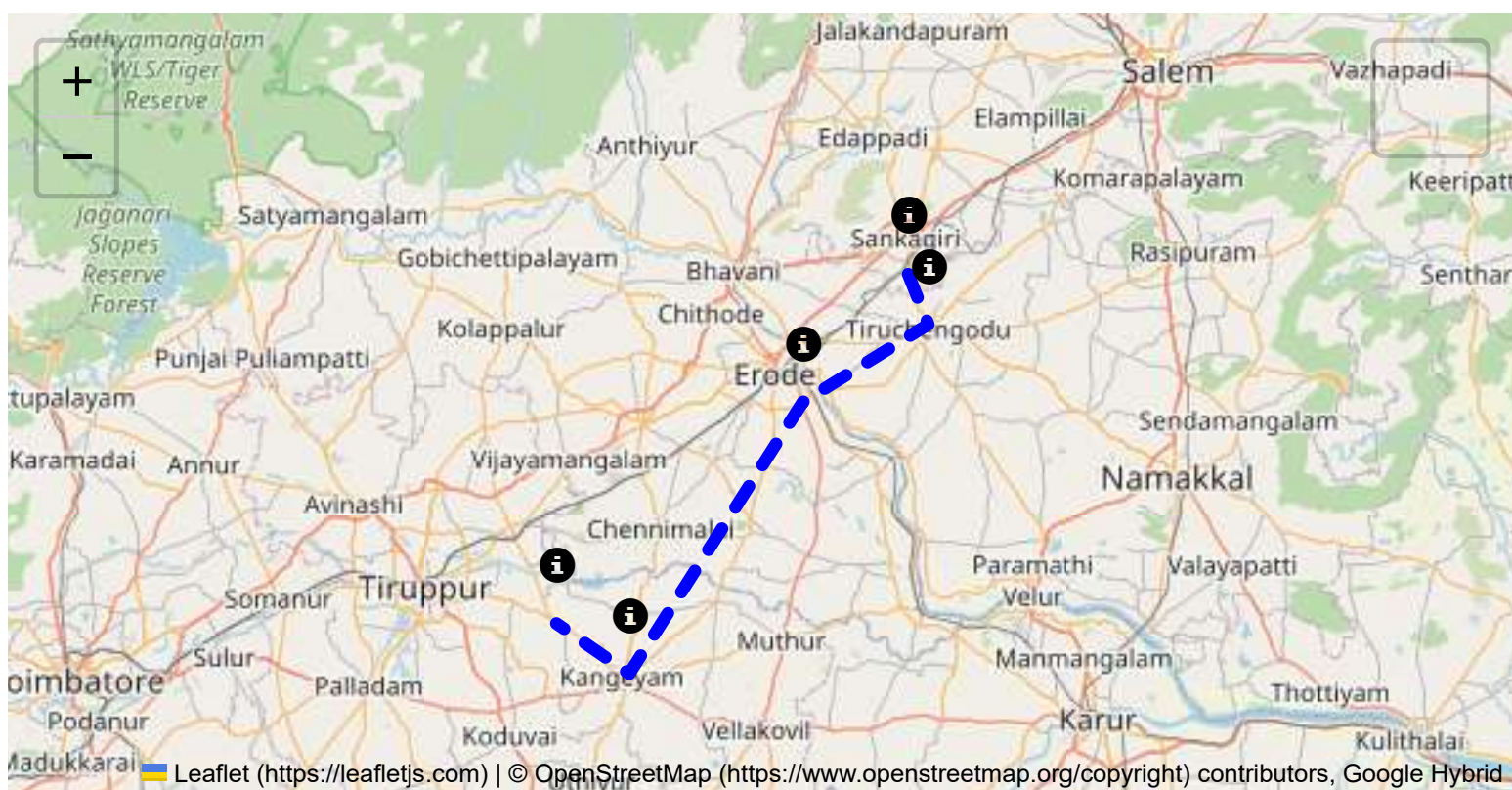
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

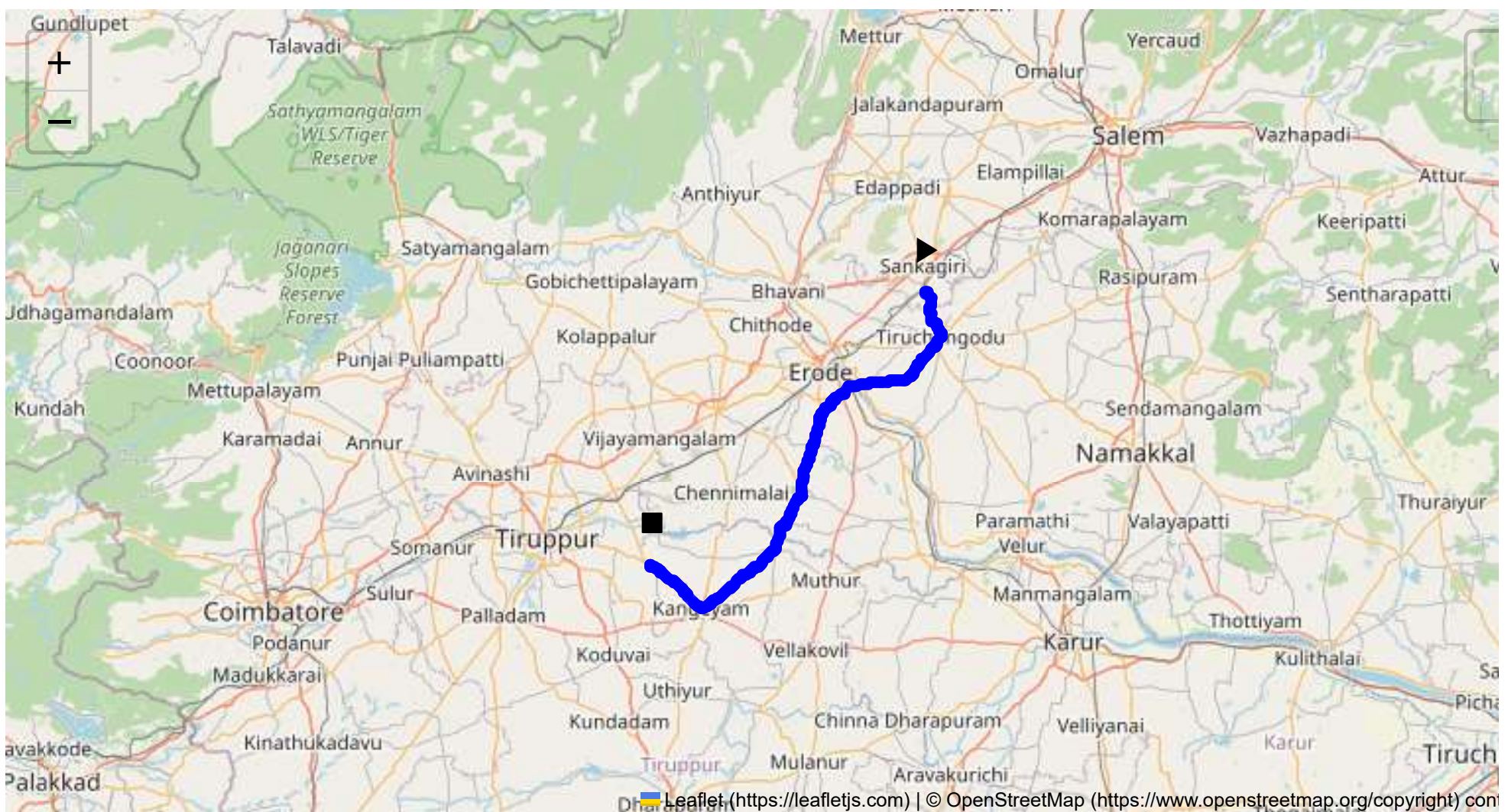
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 80.14 km
Estimated Duration: 1.9 hours
Adjusted Duration (Heavy Vehicle): 2.4 hours
Start: (11.4381, 77.8734)
End: (11.06345, 77.490109)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route spans approximately 80.14 kilometers, beginning at CVQF+23W, Sangagiri, and ending at 3F7R+C9M, Padiyur. Key waypoints include Puthur, the Girls High School near Thondikaradu, Lakkapuram, and Kangeyam. The route predominantly follows a series of state highways, rural roads, and passes through several small towns and peri-urban areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu experiences a tropical climate with distinct wet and dry seasons. During the monsoon season (June to September and October to December), heavy rain can lead to flooding and poor road conditions. In the summer months (March to June), high temperatures can cause road surface deterioration and pose heat stress challenges to drivers.

3. Analysis of Traffic Patterns

- **Peak Hours:** Typically, congestion increases between 8:00-10:00 AM and 5:00-7:00 PM, particularly near urban junctions and town centers like Erode and Kangeyam.
- **Congestion-Prone Areas:** The roads near market areas and schools, particularly around Tiruchengode and Erode, can experience significant delays during peak hours.

4. Assessment of Road Quality and Infrastructure

Rural sections of the route may have uneven surfaces, potholes, and limited roadside lighting. While state highways are generally in better condition, secondary roads may suffer from wear, especially during monsoon months.

5. Suggestions for Alternative Routes for Emergencies

In case of roadblocks or extreme weather:

- An alternative is to take National Highway 544, bypassing congested urban areas, which might add distance but potentially save time by avoiding traffic.
- Another option is to reroute through minor roads to NH44 for better infrastructure.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials is subject to regulations that mandate specific vehicle markings, driver qualifications, and adherence to designated routes. Restricted zones include hospital and school areas, with enforced speed limits and stopping restrictions.

7. Overview of Historical Incidents

There have been occasional reports of spillage involving heavy vehicles. Most incidents occurred in poor weather conditions or were due to driver error in congested areas.

8. Environmental Considerations and Sensitive Areas

Sensitive areas include agricultural zones and water bodies that need to be protected from contamination. The route also crosses regions with significant populations, requiring diligent adherence to safety and environmental regulations.

9. Analysis of Communication Coverage

Mobile network coverage is generally stable along major highways but patchy in rural areas and smaller towns, especially around Kangeyam and less urbanized routes.

10. Estimated Emergency Response Times

Response times vary:

- Urban areas like Erode: Approximately 15-30 minutes due to proximity to emergency services.
- Rural areas or minor roads: Can extend beyond 45 minutes due to distance and road conditions.

11. Overall Summary of Risk Assessment

- **Risk Factors:** Include adverse weather effects, narrow rural roads, and high traffic areas.
- **Mitigation Steps:** Drivers should be trained for adverse conditions, maintain low speeds in sensitive zones and have clear communication plans to navigate dead zones.
- **Overall Risk Level:** Moderate, requiring attentiveness to changing conditions, strict adherence to safety protocols, and readiness to execute emergency response plans.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Roundabout	High	11.00535, 77.56114	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	11.39671, 77.88878	30 KM/Hr
5	Turn	High	11.37868, 77.89498	15 KM/Hr
6	Turn	High	11.37842, 77.89452	15 KM/Hr
7	Turn	High	11.36602, 77.88875	15 KM/Hr
8	Turn	Medium	11.33882, 77.86218	30 KM/Hr
9	Turn	Medium	11.31747, 77.84240	30 KM/Hr
10	Turn	Medium	11.30951, 77.77608	30 KM/Hr
11	Turn	Medium	11.31118, 77.77139	30 KM/Hr
12	Turn	High	11.29473, 77.74685	15 KM/Hr
13	Turn	High	11.29133, 77.74660	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
14	Turn	Medium	11.28844, 77.74319	30 KM/Hr
15	Turn	Medium	11.28558, 77.74271	30 KM/Hr
16	Turn	Medium	11.27360, 77.73008	30 KM/Hr
17	Turn	Medium	11.27314, 77.72962	30 KM/Hr
18	Blind Spot	Blind Spot	11.27330, 77.72711	10 KM/Hr
19	Turn	Medium	11.23047, 77.71792	30 KM/Hr
20	Turn	Medium	11.22378, 77.71384	30 KM/Hr
21	Turn	Medium	11.15952, 77.70067	30 KM/Hr
22	Turn	High	11.15943, 77.70068	15 KM/Hr
23	Turn	Medium	11.11733, 77.67191	30 KM/Hr
24	Turn	Medium	11.10471, 77.67058	30 KM/Hr
25	Turn	Medium	11.09508, 77.66612	30 KM/Hr
26	Turn	Medium	11.08722, 77.66431	30 KM/Hr
27	Turn	Medium	11.08274, 77.65832	30 KM/Hr
28	Turn	High	11.06187, 77.63939	15 KM/Hr
29	Turn	Medium	11.06396, 77.49030	30 KM/Hr
30	Turn	High	11.06392, 77.49016	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
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

	type	name	coordinates	speed_limit	risk_level
9	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
12	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
14	hospital	ARC Hospital	11.0056814, 77.562434	30 km/h	Medium
15	clinic	Priya Nursing Home	11.00622, 77.563094	30 km/h	Medium
16	clinic	Senthil Dental Clinic	11.0054794, 77.5638863	30 km/h	Medium
17	hospital	Raja Children's Hospital	11.0060531, 77.5639063	30 km/h	Medium
21	fire_station	Kangeyam Fire Station	11.0080494, 77.5613364	30 km/h	Medium
22	pharmacy	Bharani medicals	11.0073077, 77.5592308	30 km/h	Medium
23	hospital	Government Hospital	11.005636, 77.5601252	30 km/h	Medium
25	hospital	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium
26	hospital	Arvind hospital - Kangayam	11.0092458, 77.5569869	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
13	college	Government Arts and Science College, Kangeyam	11.0626738, 77.636227	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
18	school	Panchayat Union Middle School, Kangeyam	11.006326, 77.5634525	30 km/h	Medium
19	marketplace	Daily market	11.0071223, 77.560606	30 km/h	Medium
20	marketplace	Weekly Vegetable Market	11.0075738, 77.5605157	30 km/h	Medium
24	marketplace	Daily market	11.0069287, 77.5604531	30 km/h	Medium
27	school	Sri Rajarajeshwari Primary School	11.0079341, 77.5567815	30 km/h	Medium
28	school	Mother Deborah Nursery & Primary School	11.0081324, 77.554243	30 km/h	Medium
29	school	Jaycees Nursery and Primary School	11.0137659, 77.5486157	30 km/h	Medium
30	school	Jaycees Matriculation Higher Secondary School	11.0357536, 77.5298601	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: 11.00535, 77.56114



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: 11.39671, 77.88878



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37868, 77.89498



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37842, 77.89452



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.36602, 77.88875



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33882, 77.86218



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.31747, 77.84240



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30951, 77.77608



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.31118, 77.77139



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29473, 77.74685



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.29133, 77.74660



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: 11.28558, 77.74271



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.27360, 77.73008



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27314, 77.72962



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.27330, 77.72711



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23047, 77.71792



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22378, 77.71384



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15952, 77.70067



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15943, 77.70068



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11733, 77.67191



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10471, 77.67058



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.09508, 77.66612



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08722, 77.66431



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08274, 77.65832



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.06187, 77.63939



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.06396, 77.49030



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.06392, 77.49016
