



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO ROYEL AUTO 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

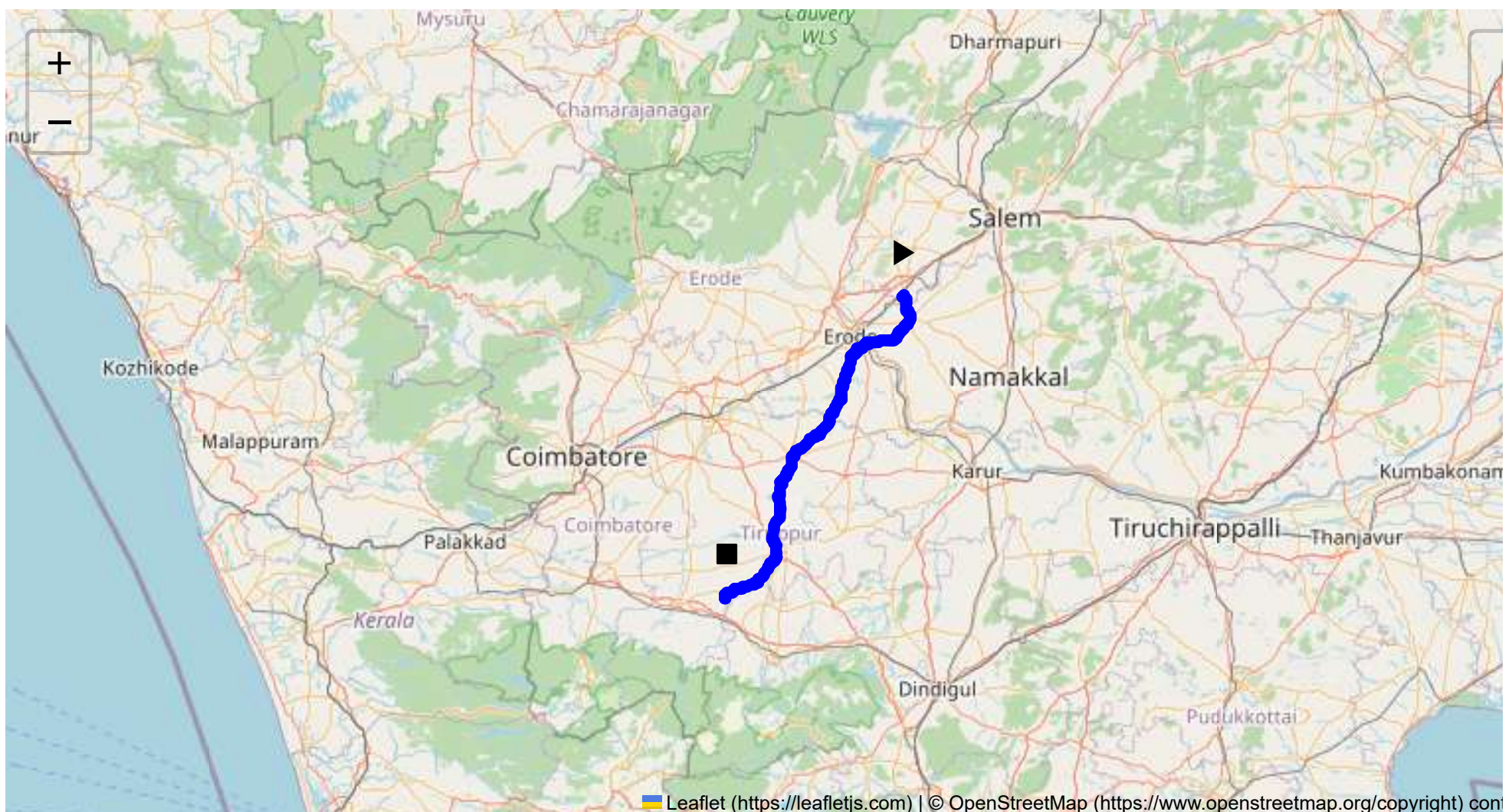
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 126.24 km
Estimated Duration: 2.8 hours
Adjusted Duration (Heavy Vehicle): 3.5 hours
Start: (11.4381, 77.8734)
End: (10.610735, 77.377449)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Jothampatti spans approximately 126.24 kilometers, crossing several key locations including Puthur, Tiruchengode, Lakkapuram in Erode, Kangeyam, and Uthiyur. This route primarily involves state highways and local roads, passing through urban and rural areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region experiences a tropical climate with a hot season from March to May, a monsoon season from June to September, and a cooler season from October to February. Monsoons may cause heavy rains leading to water-logged roads and reduced visibility. During summer, heatwaves may present a risk, affecting vehicle performance and driver endurance.

3. Analysis of Traffic Patterns

- **Sangagiri to Tiruchengode:** Moderate traffic with occasional congestion during commute hours (8-10 AM and 5-7 PM).
- **Tiruchengode to Erode:** Known for heavier traffic, especially near markets and schools. Peak congestion during the morning and late afternoon.
- **Erode to Kangeyam:** Commercial activity increases the likelihood of traffic snarls, particularly around industrial zones.
- **Kangeyam to Uthiyur and Jothampatti:** Less congested, primarily rural roads with occasional slow-moving agricultural vehicles.

4. Assessment of Road Quality and Infrastructure

While state highways are generally well-maintained, certain stretches might have potholes or uneven surfaces, especially after monsoon rains. Rural roads near Uthiyur might be narrower and less maintained, posing challenges for larger vehicles.

5. Suggestions for Alternative Routes for Emergencies

- **Erode Bypass:** Using ring roads around Erode can help avoid congested urban areas.
- **NH 544:** At certain points, detouring through National Highways can provide faster, more reliable alternatives compared to narrower state roads.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Tamil Nadu imposes strict regulations on transporting hazardous materials, necessitating proper documentation, specific containment measures, and restricted travel times (typically avoiding rush hours). Ensure compliance with local authorities for route permits.

7. Overview of Historical Incidents

While there have been few reported incidents, accidents have typically involved vehicle overturns due to sharp turns or overloaded trucks, underlining the importance of cautious driving, especially in curvy or hilly segments.

8. Environmental Considerations and Sensitive Areas

Passing through agricultural zones, it is crucial to prevent spillage of hazardous material. Any incidents in these areas could severely impact local ecosystems and water sources. Drivers are urged to exercise heightened caution near water bodies along the route.

9. Analysis of Communication Coverage

Mobile network coverage is generally reliable across most of the route, with potential dead zones in more remote rural areas near Uthiyur. Ensure all communication devices are checked and functional before entering these segments.

10. Estimated Emergency Response Times

- Urban Areas (e.g., Erode, Kangeyam): 30-45 minutes due to proximity to local emergency services.
- Rural Areas (e.g., Uthiyur): 60-90 minutes depending on access points and available services.

12. Overall Summary of Risk Assessment

The route presents several risks, notably weather-related hazards during the monsoon, heavy traffic in urban areas, and road quality concerns. While the infrastructure supports heavy vehicles, adherence to regulations on hazardous material transit is crucial. Emergency preparedness, including reliable communication tools and awareness of alternative routes, is recommended to mitigate potential disruptions.

Careful planning and steadfast adherence to safety protocols will be vital for navigating this route effectively and ensuring the mission's success while prioritizing the safety of both personnel and local communities.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Roundabout	High	11.00172, 77.56268	15 KM/Hr
2	Roundabout	High	10.72668, 77.52217	15 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	11.43111, 77.88170	30 KM/Hr
6	Turn	Medium	11.39983, 77.88377	30 KM/Hr
7	Turn	Medium	11.39706, 77.88825	30 KM/Hr
8	Turn	High	11.37868, 77.89498	15 KM/Hr
9	Turn	Medium	11.37812, 77.89444	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	Medium	11.36602, 77.88875	30 KM/Hr
11	Turn	Medium	11.33882, 77.86218	30 KM/Hr
12	Turn	Medium	11.31747, 77.84240	30 KM/Hr
13	Turn	Medium	11.30951, 77.77608	30 KM/Hr
14	Turn	Medium	11.31118, 77.77139	30 KM/Hr
15	Turn	High	11.29473, 77.74685	15 KM/Hr
16	Turn	High	11.29133, 77.74660	15 KM/Hr
17	Turn	Medium	11.28890, 77.74349	30 KM/Hr
18	Turn	Medium	11.28558, 77.74271	30 KM/Hr
19	Turn	High	11.27314, 77.72962	15 KM/Hr
20	Blind Spot	Blind Spot	11.27330, 77.72711	10 KM/Hr
21	Turn	Medium	11.23090, 77.71808	30 KM/Hr
22	Turn	Medium	11.22378, 77.71384	30 KM/Hr
23	Turn	High	11.15943, 77.70068	15 KM/Hr
24	Turn	Medium	11.11943, 77.67799	30 KM/Hr
25	Turn	Medium	11.11783, 77.67283	30 KM/Hr
26	Turn	Medium	11.11680, 77.67167	30 KM/Hr
27	Turn	Medium	11.10471, 77.67058	30 KM/Hr
28	Turn	Medium	11.09508, 77.66612	30 KM/Hr
29	Turn	Medium	11.08722, 77.66431	30 KM/Hr
30	Turn	Medium	11.08274, 77.65832	30 KM/Hr
31	Turn	High	11.06187, 77.63939	15 KM/Hr
32	Turn	Medium	11.06173, 77.63591	30 KM/Hr
33	Turn	Medium	11.00847, 77.56981	30 KM/Hr
34	Turn	High	11.00090, 77.56888	15 KM/Hr
35	Turn	Medium	10.94900, 77.54681	30 KM/Hr
36	Turn	Medium	10.94764, 77.54709	30 KM/Hr
37	Turn	Medium	10.93853, 77.53921	30 KM/Hr
38	Turn	Medium	10.93703, 77.53642	30 KM/Hr
39	Turn	Medium	10.93006, 77.53262	30 KM/Hr
40	Turn	Medium	10.89465, 77.52809	30 KM/Hr
41	Turn	Medium	10.89185, 77.52641	30 KM/Hr
42	Turn	Medium	10.83431, 77.52934	30 KM/Hr
43	Turn	High	10.77602, 77.50716	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
44	Turn	Medium	10.75794, 77.51938	30 KM/Hr
45	Turn	Medium	10.72791, 77.52050	30 KM/Hr
46	Turn	High	10.63694, 77.40463	15 KM/Hr
47	Turn	High	10.62887, 77.38647	15 KM/Hr
48	Blind Spot	Blind Spot	10.62535, 77.37463	10 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
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
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
20	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
23	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	30 km/h	Medium
24	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	30 km/h	Medium
25	clinic	Punitha Nursing Home	10.72901, 77.520148	30 km/h	Medium
26	hospital	Ponnaiah Hospital, Dharapuram	10.72916, 77.520131	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
14	school	Carmel Girls Higher Secondary School	11.0009019, 77.5710182	30 km/h	Medium
17	school	Global Matriculation Higher Secondary School	10.965994, 77.5591898	30 km/h	Medium
18	college	Maharani College	10.7625655, 77.5157126	30 km/h	Medium
19	school	Sindhu Matriculation Higher Secondary School	10.7471261, 77.5182993	30 km/h	Medium
21	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium
22	school	Thenmalar Higher Secondary School	10.7333748, 77.5166481	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: 11.00172, 77.56268



Risk Type: Roundabout
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.72668, 77.52217



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: High
Speed Limit: 15 KM/Hr
Coordinates: 11.37868, 77.89498



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.37812, 77.89444



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 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: 11.28890, 77.74349



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.28558, 77.74271



Risk Type: Turn

Risk Level: High

Speed Limit: 15 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: 11.23090, 77.71808



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.22378, 77.71384



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: 11.11943, 77.67799



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11783, 77.67283



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11680, 77.67167



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: 11.06173, 77.63591



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00847, 77.56981



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.00090, 77.56888



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.94900, 77.54681



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.94764, 77.54709



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.93853, 77.53921



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.93703, 77.53642



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.93006, 77.53262



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.89465, 77.52809



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.89185, 77.52641



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.83431, 77.52934



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.77602, 77.50716



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75794, 77.51938



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.72791, 77.52050



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.63694, 77.40463



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.62887, 77.38647



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 10.62535, 77.37463
