



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SREE SHANMUGA 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

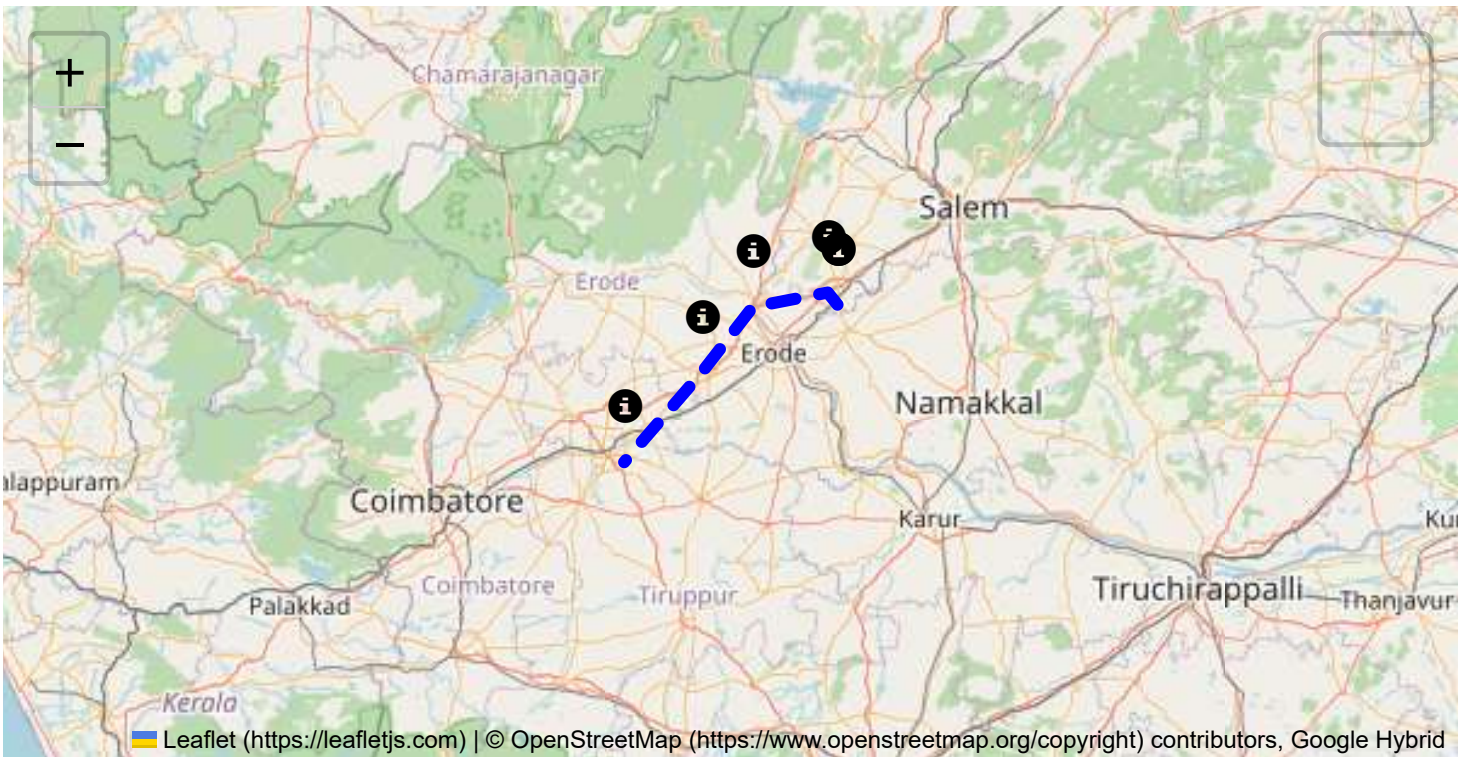
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

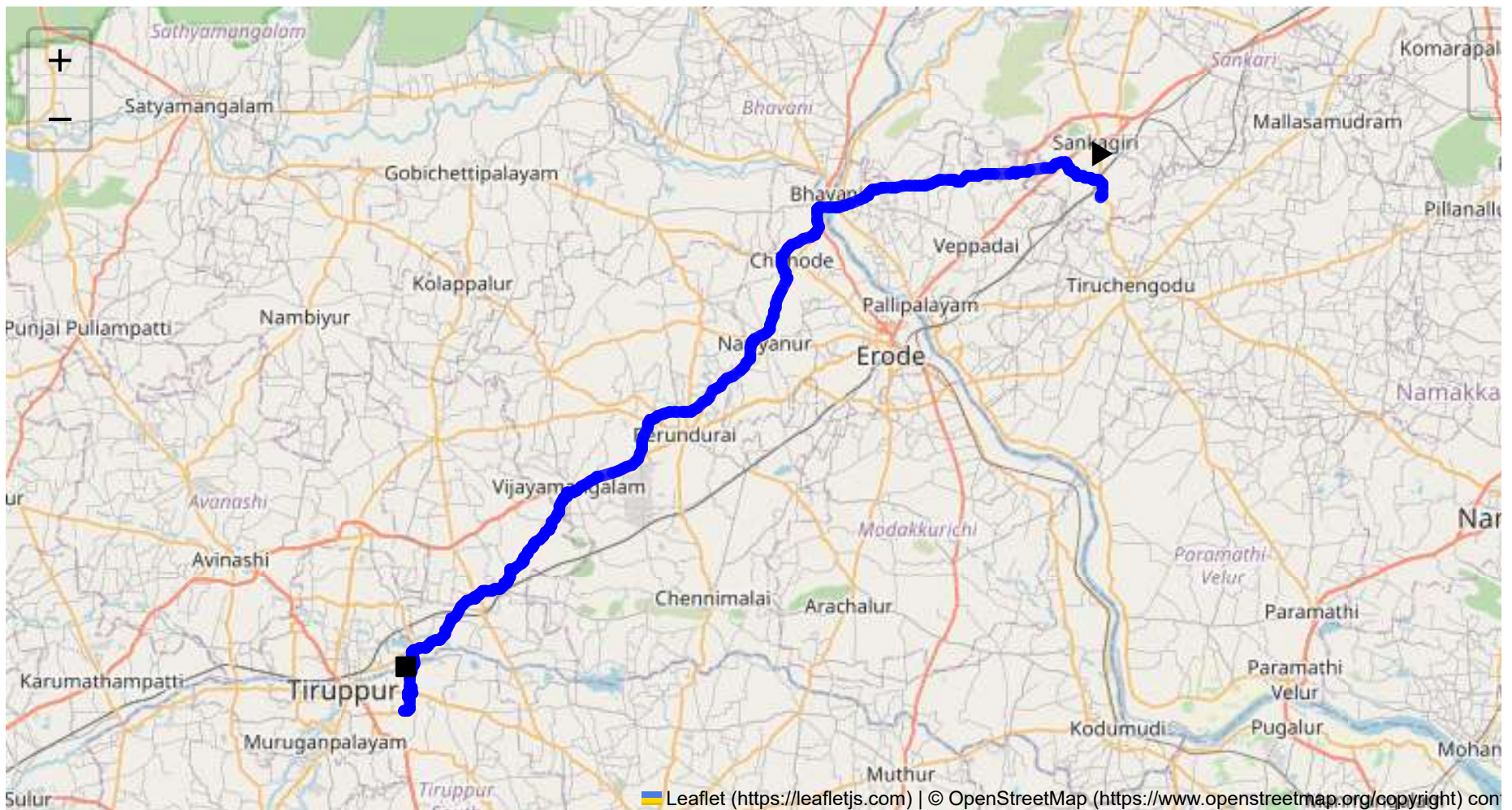
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 81.05 km
Estimated Duration: 1.7 hours
Adjusted Duration (Heavy Vehicle): 2.1 hours
Start: (11.4381, 77.8734)
End: (11.086634, 77.387668)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Theran Chennmalayar Nagar in Tiruppur spans approximately 81.05 kilometers, predominantly traversing through state highways such as SH 79A and other connecting roads. This route winds through several towns and villages, offering a mix of rural and semi-urban environments.

2. Typical Weather Conditions and Potential Weather-Related Hazards

The region typically experiences a tropical climate. The summer months (April to June) can be extremely hot, which might affect driver comfort and vehicle operation. Monsoons (June to September) bring heavy rains that could lead to reduced visibility and slippery roads, increasing the risk of accidents. The winter months (November to February) are relatively mild and less hazardous in terms of weather.

3. Analysis of Traffic Patterns

Traffic congestion often peaks during the early morning commute (8:00 AM to 10:00 AM) and evening rush hours (5:00 PM to 7:00 PM). The towns of Bhavani and Tiruppur may experience significant congestion due to local business activity. Markets and school zones are congestion-prone areas, especially around Kalingarayanpalayam.

4. Assessment of Road Quality and Infrastructure

The primary routes like SH 79A are generally maintained but can have patches of uneven surfaces and potholes, especially after the monsoon rains. Smaller connecting roads might be narrower and less maintained, presenting challenges for heavy vehicles.

5. Suggestions for Alternative Routes for Emergencies

In emergencies, consider using NH 544 (connecting Salem to Coimbatore) which provides a relatively better-maintained road and more facilities for emergency support. However, it might extend the travel time.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials in Tamil Nadu is regulated by the Motor Vehicles Act, 1988 and its amendments, which dictate the need for proper documentation, labeling, and safety measures. Specific routes and times might be restricted, especially through densely populated zones.

7. Overview of Historical Incidents Involving Heavy Vehicles or Hazardous Materials

While detailed historical data specific to this route is limited, Tamil Nadu has witnessed incidents involving heavy vehicle accidents due to reckless driving and poor road conditions. Most incidents occur during adverse weather conditions.

8. Environmental Considerations and Sensitive Areas

The route crosses several environmentally sensitive areas, like water bodies and agricultural lands, which necessitate caution to prevent spills or leaks. Bhavani, being near a river, requires special attention to avoid environmental contamination.

9. Analysis of Communication Coverage

Most of the route has reliable cellular network coverage, although there may be brief sections on rural stretches where network strength is weak. This could impact real-time communication and navigation services.

10. Estimated Emergency Response Times for Different Route Segments

Emergency response times could vary:

- Within towns like Sangagiri and Tiruppur, expect response times of 15-30 minutes due to proximity to emergency services.
- In rural areas between these towns, response times could extend to 45-60 minutes, depending on accessibility and availability of services.

12. Overall Summary of Risk Assessment

The route from Sangagiri to Tiruppur via the specified path presents moderate risk factors due to weather variability, road conditions, and traffic congestion. Proper planning, adherence to transport regulations, and real-time communication are crucial to mitigate these risks. Awareness of peak traffic hours, potential weather impacts, and maintaining communication are key for ensuring safe transport of hazardous materials. An alternative route via NH 544 is recommended in case of severe disruptions. Emergency protocols should account for varying response times based on location.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.43961, 77.87341	15 KM/Hr
1	Turn	High	11.44029, 77.87544	15 KM/Hr
2	Turn	High	11.44893, 77.87413	15 KM/Hr
3	Turn	Medium	11.45127, 77.86734	30 KM/Hr
4	Turn	High	11.45350, 77.85700	15 KM/Hr
5	Turn	Medium	11.45845, 77.85141	30 KM/Hr
6	Turn	Medium	11.45889, 77.85136	30 KM/Hr
7	Turn	High	11.46303, 77.84945	15 KM/Hr
8	Turn	Medium	11.46317, 77.84906	30 KM/Hr
9	Turn	Medium	11.43175, 77.67757	30 KM/Hr
10	Turn	Medium	11.23724, 77.50686	30 KM/Hr
11	Turn	High	11.23704, 77.50676	15 KM/Hr
12	Turn	Medium	11.23685, 77.50236	30 KM/Hr
13	Turn	High	11.23675, 77.50215	15 KM/Hr
14	Turn	Medium	11.23622, 77.50210	30 KM/Hr
15	Turn	Medium	11.23396, 77.50105	30 KM/Hr
16	Turn	Medium	11.23329, 77.49966	30 KM/Hr
17	Turn	Medium	11.18329, 77.46249	30 KM/Hr
18	Turn	Medium	11.17851, 77.46169	30 KM/Hr
19	Turn	Medium	11.17497, 77.45961	30 KM/Hr
20	Turn	Medium	11.17383, 77.45750	30 KM/Hr
21	Turn	Medium	11.17133, 77.45590	30 KM/Hr
22	Turn	Medium	11.16959, 77.44438	30 KM/Hr
23	Turn	Medium	11.16950, 77.44376	30 KM/Hr
24	Turn	Medium	11.16381, 77.43700	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
25	Turn	Medium	11.16259, 77.43103	30 KM/Hr
26	Turn	Medium	11.15161, 77.42320	30 KM/Hr
27	Turn	Medium	11.14985, 77.42215	30 KM/Hr
28	Turn	Medium	11.14892, 77.42022	30 KM/Hr
29	Turn	Medium	11.13893, 77.41649	30 KM/Hr
30	Turn	Medium	11.13578, 77.41299	30 KM/Hr
31	Turn	Medium	11.13007, 77.40331	30 KM/Hr
32	Turn	High	11.12775, 77.39347	15 KM/Hr
33	Turn	High	11.11863, 77.39473	15 KM/Hr
34	Turn	Medium	11.11846, 77.39460	30 KM/Hr
35	Turn	High	11.11833, 77.39390	15 KM/Hr
36	Turn	High	11.10294, 77.39187	15 KM/Hr
37	Turn	High	11.10239, 77.39292	15 KM/Hr
38	Turn	High	11.09882, 77.39312	15 KM/Hr
39	Turn	High	11.09898, 77.39028	15 KM/Hr
40	Turn	Medium	11.09417, 77.39244	30 KM/Hr
41	Turn	High	11.08759, 77.39166	15 KM/Hr
42	Turn	High	11.08703, 77.38750	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
4	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
5	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
8	hospital	Thanish Siddha Hospital	11.430003, 77.674964	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

	type	name	coordinates	speed_limit	risk_level
11	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
12	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
14	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
16	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
17	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
19	hospital	Aravind Eye Care Hospital	11.1729469, 77.4574467	30 km/h	Medium
20	clinic	Sri Maha Annai Clinic	11.1707162, 77.4536498	30 km/h	Medium
21	hospital	Ram Doctor Hospital	11.1709391, 77.4532808	30 km/h	Medium
22	clinic	Kumaran Clinic	11.1697553, 77.451543	30 km/h	Medium
23	hospital	Sri Aravindhar Hospital	11.1697756, 77.4448276	30 km/h	Medium
24	clinic	Dr. Raja Clinic	11.1278464, 77.3927768	30 km/h	Medium
25	clinic	D K Clinic General & Ortho	11.1117864, 77.3906835	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
7	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
13	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
15	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
18	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: 11.44029, 77.87544



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44893, 77.87413



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45127, 77.86734



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.45350, 77.85700



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45845, 77.85141



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45889, 77.85136



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: 11.46317, 77.84906



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43175, 77.67757



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: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23685, 77.50236



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.23675, 77.50215



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23622, 77.50210



Risk Type: Turn
Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23396, 77.50105



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.23329, 77.49966



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.18329, 77.46249



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17851, 77.46169



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17497, 77.45961



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17383, 77.45750



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.17133, 77.45590



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16959, 77.44438



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.16950, 77.44376



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: 11.16259, 77.43103



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15161, 77.42320



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14985, 77.42215



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.14892, 77.42022



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.13893, 77.41649



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: 11.13007, 77.40331



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: 11.11863, 77.39473



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 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: 11.10294, 77.39187



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10239, 77.39292



Risk Type: Turn
Risk Level: High
Speed Limit: 15 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: 11.09417, 77.39244



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08759, 77.39166



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.08703, 77.38750

