



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO EMINENT 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

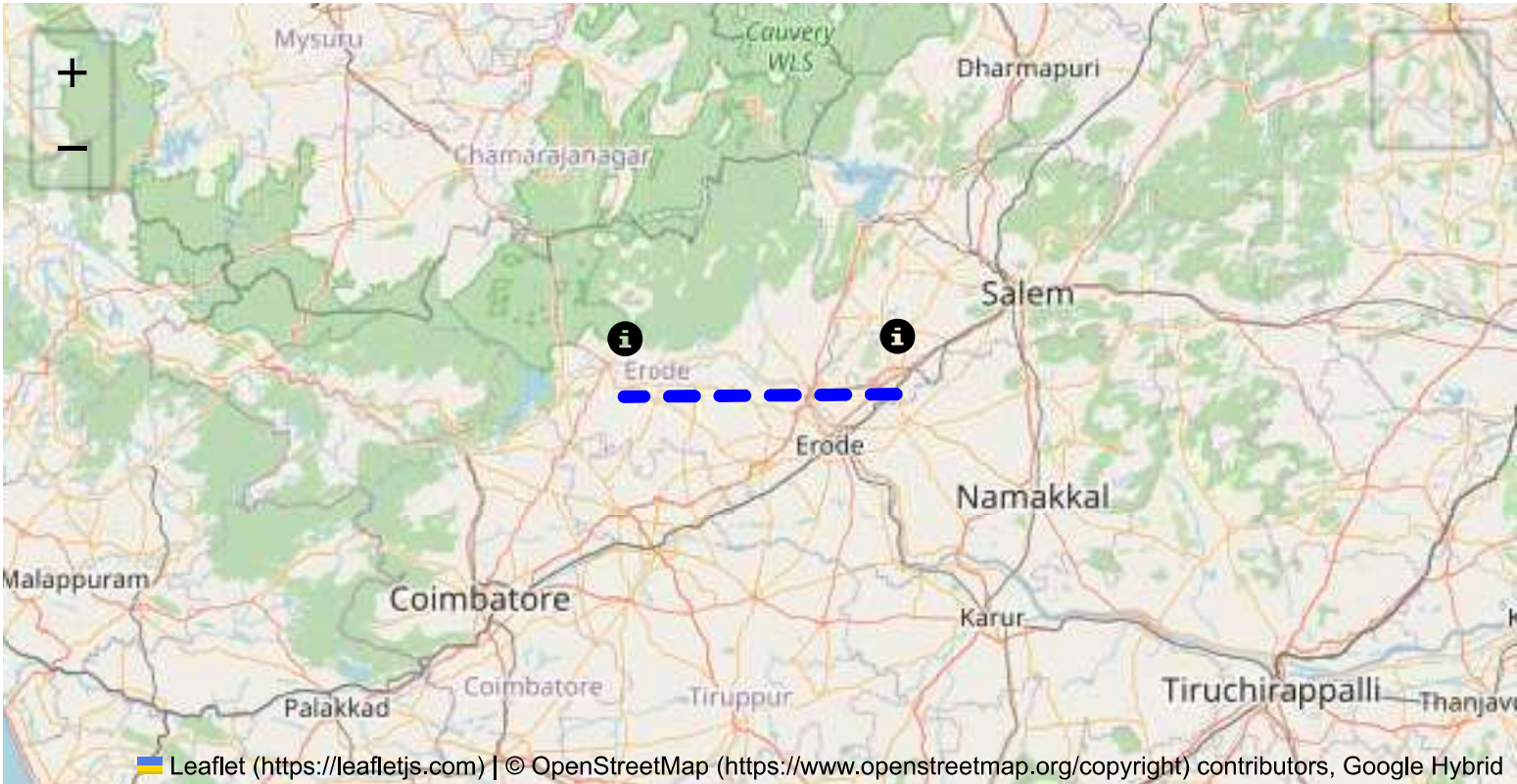
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

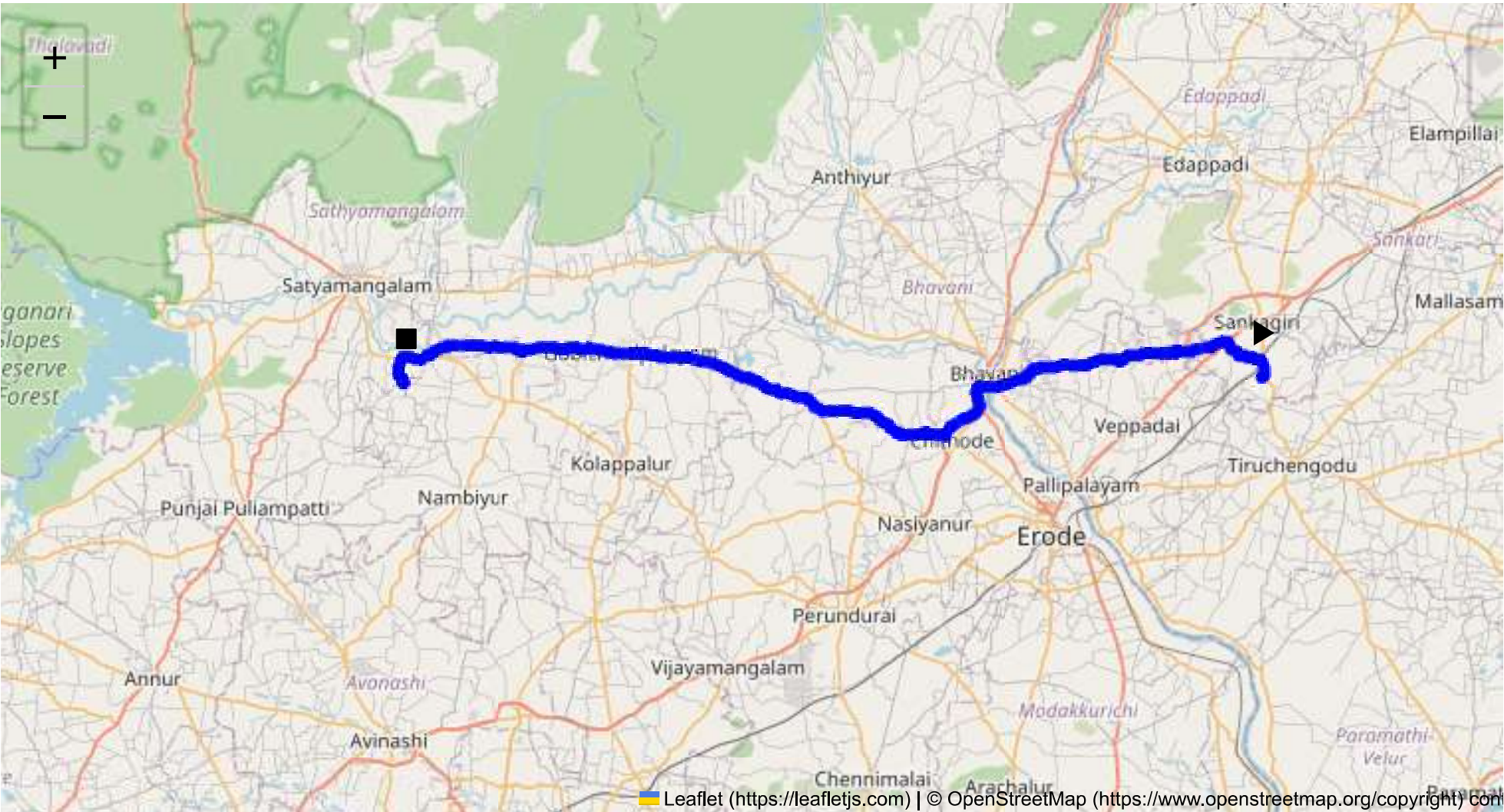
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 74.99 km
Estimated Duration: 1.5 hours
Adjusted Duration (Heavy Vehicle): 1.9 hours
Start: (11.4381, 77.8734)
End: (11.4336, 77.27715)



Welcome to the Journey Risk Management Study

Route Safety Analysis: Sangagiri to Indiampalayam

1. Overview of the Route Map:

- The route from Sangagiri to Indiampalayam spans approximately 75 kilometers, primarily following regional and state highways. It traverses a mix of rural and semi-urban areas, typically comprising well-marked, two-lane roads.

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

- The region experiences a tropical climate with a distinct monsoon season. Typically, heavy rainfall occurs from October to December, posing risks such as flooding or waterlogging in low areas.
- High temperatures are common from March to June, which could lead to driver fatigue and increased tire wear.
- Fog may occur during winter mornings, reducing visibility.

3. Traffic Patterns:

- Peak traffic hours are generally observed in the morning (7 AM - 9 AM) and evening (5 PM - 7 PM).
- Congestion is likely in towns and small cities en route, particularly around market areas and local schools.
- Traffic delays can occur near toll checkpoints or railway crossings.

4. Assessment of Road Quality and Infrastructure:

- Overall, the road quality is mixed, with some sections in good condition while others may have potholes or uneven surfaces.
- Infrastructure includes regular service stations, but breakdown assistance may be sparse in remote areas.
- Adequate signage and reflectors are generally present, though maintenance can be inconsistent.

5. Suggestions for Alternative Routes:

- In emergencies, consideration could be given to taking NH44 and then diverging towards state highways for improved infrastructure.
- Alternate routes should be planned in advance via GPS or local guidance, particularly during monsoon.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Strict adherence to hazardous materials transport permits is required.
- Specific timings may be enforced for the movement of hazardous materials to reduce risk during peak urban traffic times.
- Compliance with Tamil Nadu's environmental and safety regulations is obligatory.

7. Overview of Historical Incidents:

- Historical data shows occasional incidents of overturned vehicles and road accidents involving heavy vehicles, frequently attributed to human error and poor road conditions.
- Spillage incidents have been rare but emphasize the importance of following prescribed routes and safety protocols.

8. Environmental Considerations and Sensitive Areas:

- The route passes near agricultural lands; spills or accidents in these areas could have severe environmental impacts.
- Awareness and precaution are critical near water bodies to avoid contamination risks.

9. Analysis of Communication Coverage:

- Mobile network coverage is generally reliable in urban and semi-urban areas.
- Potential dead zones may occur in remote stretches, necessitating alternate communication methods such as satellite phones during emergencies.

10. **Estimated Emergency Response Times:**

- Emergency services are available but response times vary. In urban areas, the response within approximately 20-30 minutes can be expected.
- In rural segments, response times could extend to 45-60 minutes or more.

12. **Overall Summary of Risk Assessment:**

- The route presents manageable risks provided proper precautions are taken. Major concerns include weather impacts, road condition variations, peak hour congestion, and specific segments with limited communication.
- Regular checks of vehicle and cargo preparedness, adherence to safety protocols, and keeping updated with local advisories can mitigate potential hazards effectively.

The analysis underscores the necessity for continuous route tracking, emergency preparedness, and ongoing communication with local authorities.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	Medium	11.43822, 77.87348	30 KM/Hr
1	Turn	High	11.43968, 77.87345	15 KM/Hr
2	Turn	High	11.44029, 77.87544	15 KM/Hr
3	Turn	High	11.44898, 77.87410	15 KM/Hr
4	Turn	Medium	11.45357, 77.85789	30 KM/Hr
5	Turn	High	11.45352, 77.85698	15 KM/Hr
6	Turn	Medium	11.45847, 77.85140	30 KM/Hr
7	Turn	Medium	11.46303, 77.84945	30 KM/Hr
8	Turn	Medium	11.46314, 77.84928	30 KM/Hr
9	Turn	Medium	11.45509, 77.81383	30 KM/Hr
10	Turn	High	11.40046, 77.65371	15 KM/Hr
11	Turn	High	11.40035, 77.65383	15 KM/Hr
12	Turn	High	11.39829, 77.65233	15 KM/Hr
13	Turn	Medium	11.42079, 77.56127	30 KM/Hr
14	Turn	Medium	11.45747, 77.36607	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
15	Turn	High	11.45745, 77.36605	15 KM/Hr
16	Turn	High	11.45745, 77.36598	15 KM/Hr
17	Turn	Medium	11.45747, 77.36596	30 KM/Hr
18	Turn	Medium	11.45764, 77.36314	30 KM/Hr
19	Turn	High	11.45209, 77.27737	15 KM/Hr
20	Turn	Medium	11.44321, 77.27337	30 KM/Hr
21	Turn	Medium	11.44112, 77.27329	30 KM/Hr
22	Turn	Medium	11.43677, 77.27599	30 KM/Hr
23	Turn	High	11.43397, 77.27590	15 KM/Hr
24	Turn	Medium	11.43373, 77.27615	30 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Government Hospital	11.4525596, 77.7749426	30 km/h	Medium
4	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
5	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
6	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
8	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
9	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
10	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
11	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
12	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
13	hospital	Naarayani Hospital	11.4157401, 77.5773087	30 km/h	Medium
14	hospital	P K Hospital	11.4175923, 77.5640962	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
15	hospital	Dharun Hospital	11.4223638, 77.5597735	30 km/h	Medium
16	hospital	Dr. Ramaswamy Hospital	11.4249065, 77.5535658	30 km/h	Medium
17	hospital	Dakshin Trauma Centre	11.454593, 77.4461819	30 km/h	Medium
18	hospital	Dakshin Hospital	11.4546301, 77.445905	30 km/h	Medium
19	hospital	Sri Varahi Herbal Research Centre and Hospital	11.4539333, 77.4427438	30 km/h	Medium
20	clinic	Germen Homeopathy Clinic	11.4536305, 77.4394692	30 km/h	Medium
21	hospital	JP Hospital	11.454765, 77.438257	30 km/h	Medium
22	hospital	KKS Hospital	11.4551792, 77.4392927	30 km/h	Medium
24	hospital	Siranjeeve Hospitals	11.453132, 77.4344382	30 km/h	Medium
25	clinic	Anandhan Clinic	11.4548037, 77.4349074	30 km/h	Medium
26	hospital	Ramachandran Hospital	11.452242, 77.434641	30 km/h	Medium
27	hospital	Kumaran Hospital	11.4533971, 77.4349621	30 km/h	Medium
28	hospital	Dr. Rathinasamy Hospital	11.457562, 77.4327752	30 km/h	Medium
29	hospital	Gobi Neuro Mind Care	11.4548344, 77.434649	30 km/h	Medium
30	hospital	Hariharan Hospital	11.4523578, 77.4299287	30 km/h	Medium
31	hospital	Vasanth Hospital	11.4526864, 77.4292173	30 km/h	Medium
32	hospital	KKRS Hospital	11.45417, 77.430584	30 km/h	Medium
33	clinic	Jeeva Nursing Home	11.4533031, 77.4294145	30 km/h	Medium
34	hospital	Sathya Hospital	11.4561856, 77.4298694	30 km/h	Medium
35	hospital	S K Hospital	11.4540106, 77.430108	30 km/h	Medium
36	hospital	Sivakami Hospital	11.4531846, 77.4299288	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
37	clinic	Sri Sudha Physiotherapy Clinic	11.4559915, 77.4300217	30 km/h	Medium
38	hospital	Arun Hospital	11.4538121, 77.4305743	30 km/h	Medium
39	clinic	Sairam Clinic	11.4560122, 77.4306716	30 km/h	Medium
40	hospital	Best Hospital	11.4543558, 77.4263617	30 km/h	Medium
41	clinic	Anand Nursing Home	11.4553169, 77.4296248	30 km/h	Medium
42	clinic	Kanmani Child Care Clinic	11.4545273, 77.428668	30 km/h	Medium
43	hospital	Rajasekaran Hospital	11.454463, 77.4262	30 km/h	Medium
44	hospital	Samuel Hospital	11.4542555, 77.4271194	30 km/h	Medium
45	hospital	Sivasakthi Hospital	11.4544711, 77.4297229	30 km/h	Medium
46	hospital	SS Children's Hospital	11.4555386, 77.4296357	30 km/h	Medium
47	hospital	SP Dhanapal Hospital	11.4559935, 77.4304406	30 km/h	Medium
48	clinic	Gobi Siddha Health Centre	11.455616, 77.4307062	30 km/h	Medium
49	clinic	Sri Dhanvantari Siddha Clinic	11.4561216, 77.4295797	30 km/h	Medium
50	hospital	Neha Hospital	11.4560138, 77.4270219	30 km/h	Medium
51	hospital	M.S Children's Hospital	11.4556012, 77.4301006	30 km/h	Medium
52	hospital	Gobi Diabetic Hospital	11.455394, 77.4301181	30 km/h	Medium
53	clinic	Dr. Ramesh Babu Clinic	11.4560871, 77.4296353	30 km/h	Medium
54	hospital	Sankareswari Eye Hospital	11.4572997, 77.428765	30 km/h	Medium
55	hospital	SP Hospital	11.456607, 77.430302	30 km/h	Medium
58	hospital	Government Hospital	11.4565126, 77.4288768	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
59	hospital	Sri Chakra Hospital	11.4544464, 77.4228363	30 km/h	Medium
60	hospital	U M Hospital	11.4544151, 77.4240386	30 km/h	Medium
61	hospital	Dr. Gopal Hospital	11.455258, 77.422901	30 km/h	Medium
62	clinic	VG Ortho Centre	11.4550504, 77.4225102	30 km/h	Medium
63	hospital	Arun Hospital	11.4548852, 77.4250314	30 km/h	Medium
64	clinic	Palaniappa Clinic	11.4555925, 77.4202828	30 km/h	Medium
65	hospital	Abi SK Hospital	11.457163, 77.412487	30 km/h	Medium
66	clinic	Nalam Vazh S.K Siddha and Varma Clinic	11.457576, 77.412164	30 km/h	Medium
68	clinic	Singiripalayam Natarajan Siddha Ortho Care	11.4603252, 77.3183801	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
23	school	Shree Vidyalaya Matric Higher Secondary School	11.4536114, 77.4383163	30 km/h	Medium
56	school	Diamond Jubliee Higher Secondary School	11.4529541, 77.4280306	30 km/h	Medium
57	school	CKK Palaniammal School	11.4569211, 77.4276828	30 km/h	Medium
67	school	Saratha Techno School	11.4544819, 77.379986	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
69	school	Saratha International School	11.4541471, 77.3032962	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: 11.44898, 77.87410



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45357, 77.85789



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: 11.46303, 77.84945



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46314, 77.84928



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45509, 77.81383



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.40046, 77.65371



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.40035, 77.65383



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.39829, 77.65233



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.42079, 77.56127



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45747, 77.36607



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45745, 77.36605



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45745, 77.36598



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45747, 77.36596



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45764, 77.36314



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45209, 77.27737



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44321, 77.27337



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44112, 77.27329



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43677, 77.27599



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.43397, 77.27590



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43373, 77.27615