



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SRI ROYAL PETROLEUM

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

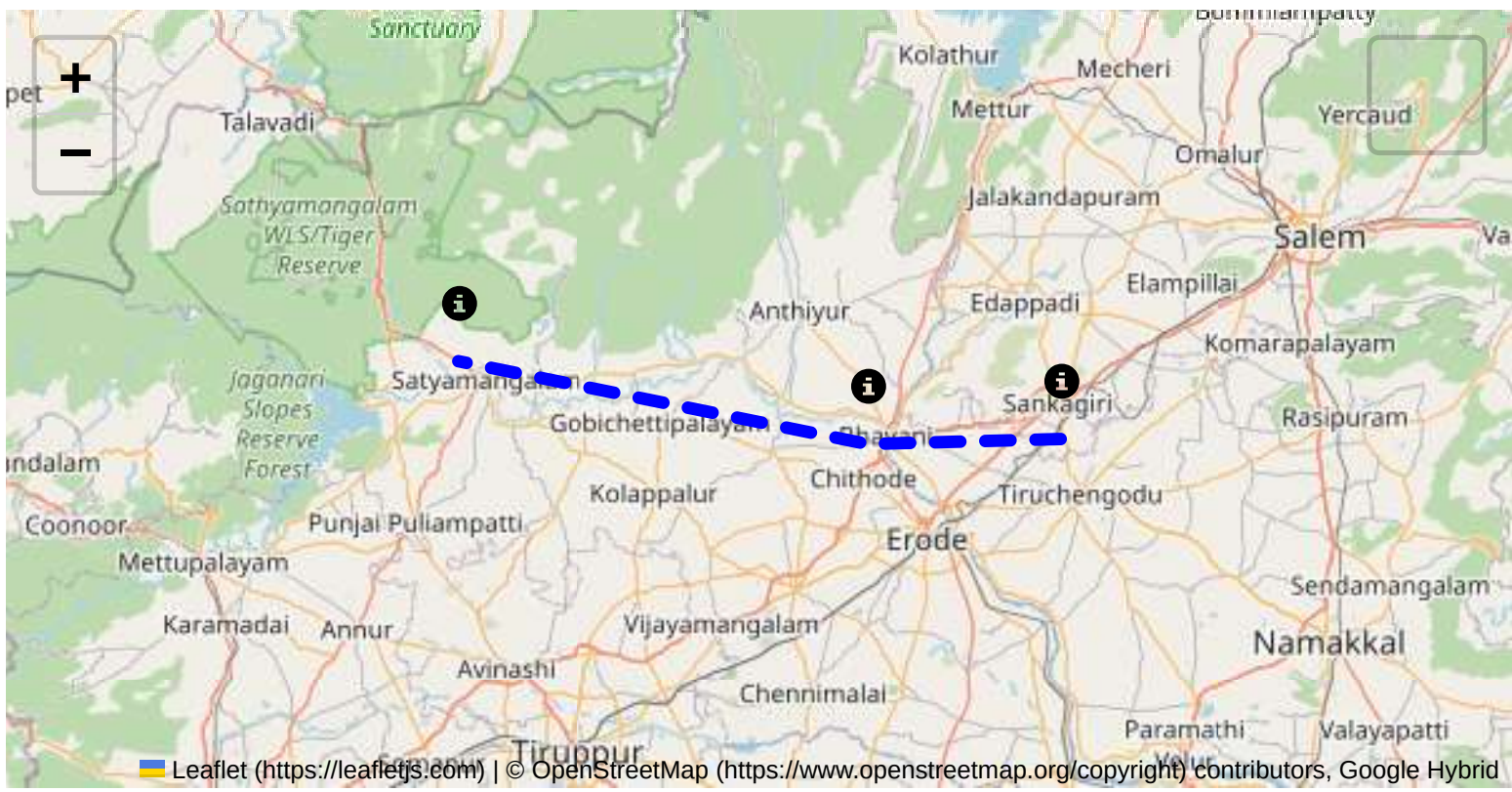
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

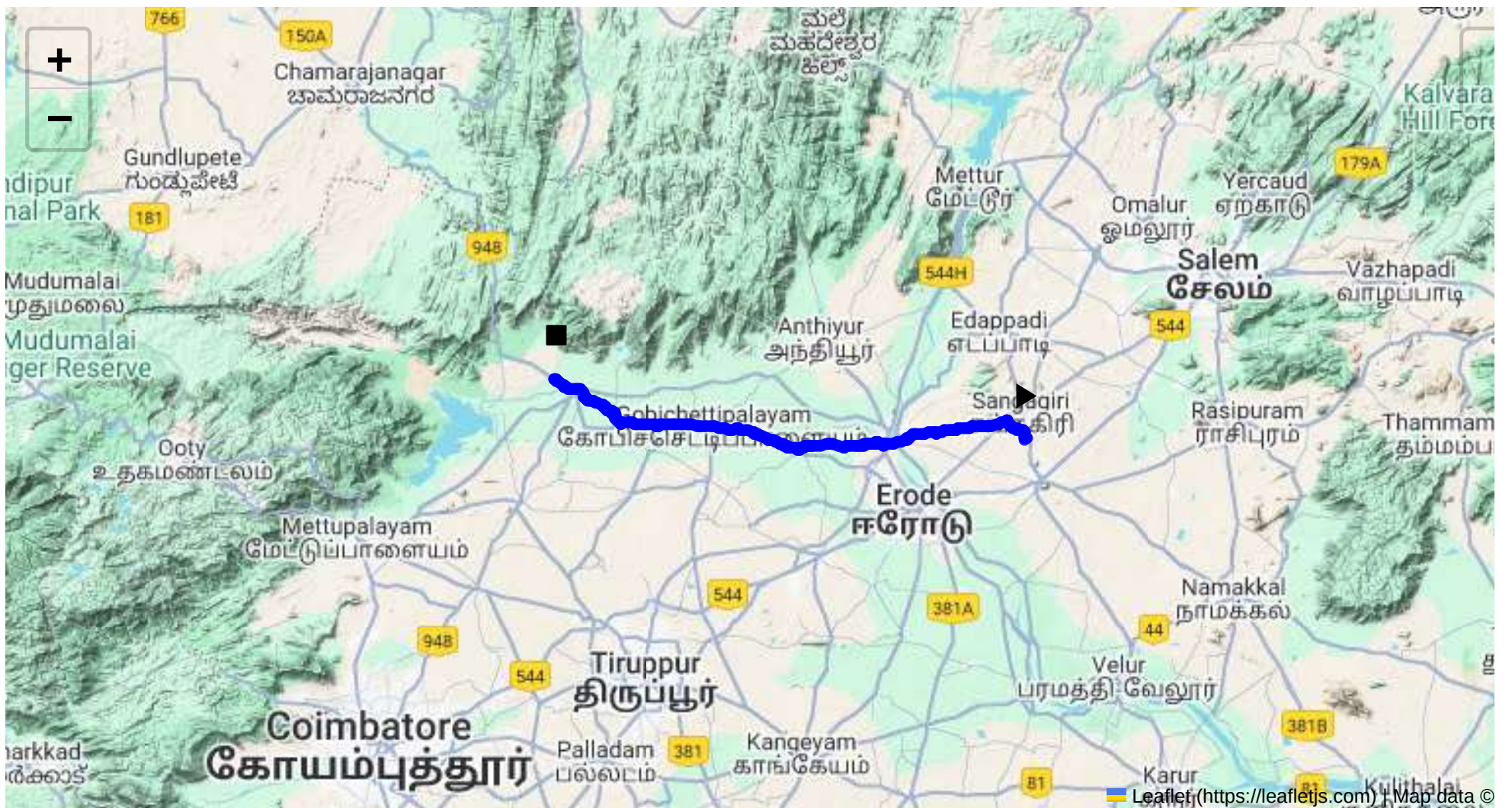
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 79.58 km
Estimated Duration: 1.8 hours
Adjusted Duration (Heavy Vehicle): 2.2 hours
Start: (11.4381, 77.8734)
End: (11.52018, 77.215645)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map: The route from CVQF+23W in Sangagiri to G6C8+556 near Kannada via CMJ7+V29 in Erode covers approximately 79.58 km. The journey involves traversing through rural and semi-urban landscapes, primarily using state highways and national highways, which are generally well-marked but may have periodic single-lane stretches.

2. Typical Weather Conditions and Potential Hazards: Tamil Nadu experiences a tropical climate. The route could encounter heavy rains during the northeast monsoon (October to December), causing potential road flooding and reduced visibility. High temperatures and heatwaves are common in summer months (March to June), risking overheating of vehicles.

3. Analysis of Traffic Patterns: Traffic tends to be heavier during morning hours (8-10 AM) and evening hours (5-7 PM), particularly near urban centers like Erode. Congestion-prone areas include market vicinities and intersections in Erode, and near highway junctions.

4. Assessment of Road Quality and Infrastructure: Overall, road quality is moderate. While national and state highways are generally in good condition, local roads may have potholes or uneven surfaces. Road signage is adequate, but care is required on narrower sections of the route.

5. Suggestions for Alternative Routes: In case of emergencies, alternative routes via SH15 or SH84 can be considered. These provide detours around congested urban centers, though they might add travel time.

6. Local Regulations on Hazardous Material Transport: Transport of hazardous materials requires compliance with regulations set by the Ministry of Road Transport and Highways. Vehicles must adhere to signage, carry appropriate placards, and obtain necessary permits. Night-time travel may be restricted for safety.

7. Overview of Historical Incidents: There have been occasional incidents involving overturned heavy vehicles, often linked to poor weather conditions or human error. Historical data shows Erode region as a common area for accidents due to congestion.

8. Environmental Considerations and Sensitive Areas: The route traverses agricultural regions and is near several water bodies. Caution is advised to prevent spills, especially around sensitive ecological zones. Awareness of local flora and fauna is crucial, particularly in rural patches.

9. Communication Coverage and Dead Zones: Mobile network coverage is generally reliable, with potential dead zones in rural stretches between Sangagiri and Erode. Important to ensure communication equipment is functional for emergencies.

10. Estimated Emergency Response Times: Emergency response times fluctuate based on location:

- Sangagiri: Approximately 20-30 minutes.
- Erode: Response within 15-20 minutes due to better infrastructure.
- Rural stretches: May experience 30-45 minutes delay due to lesser accessibility.

12. Overall Risk Assessment Summary: Risk levels on this route can be considered moderate. The primary concerns include adverse weather, traffic congestion, and road quality on local stretches. Adequate preparation, adherence to regulations, and an understanding of environmental impacts can mitigate these risks significantly. It is crucial for transport drivers to stay updated with weather forecasts, plan travel during non-peak hours, and maintain effective communication with control centers to ensure a safe journey.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.43968, 77.87345	15 KM/Hr
1	Turn	High	11.44024, 77.87528	15 KM/Hr
2	Turn	High	11.44898, 77.87410	15 KM/Hr
3	Turn	Medium	11.45357, 77.85789	30 KM/Hr
4	Turn	High	11.45352, 77.85698	15 KM/Hr
5	Turn	Medium	11.45847, 77.85140	30 KM/Hr
6	Turn	Medium	11.45898, 77.85135	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	11.43001, 77.67575	15 KM/Hr
11	Turn	Medium	11.43003, 77.67551	30 KM/Hr
12	Turn	High	11.43026, 77.67525	15 KM/Hr
13	Blind Spot	Blind Spot	11.43073, 77.67536	10 KM/Hr
14	Turn	Medium	11.43273, 77.67018	30 KM/Hr
15	Turn	Medium	11.43268, 77.66999	30 KM/Hr
16	Turn	High	11.43342, 77.66685	15 KM/Hr
17	Turn	Medium	11.43239, 77.66578	30 KM/Hr
18	Turn	Medium	11.43222, 77.65329	30 KM/Hr
19	Turn	Medium	11.42904, 77.57122	30 KM/Hr
20	Turn	Medium	11.42838, 77.56943	30 KM/Hr
21	Turn	Medium	11.42828, 77.56554	30 KM/Hr
22	Turn	Medium	11.42704, 77.56397	30 KM/Hr
23	Turn	High	11.42337, 77.55804	15 KM/Hr
24	Turn	Medium	11.42335, 77.55788	30 KM/Hr
25	Turn	Medium	11.45761, 77.36302	30 KM/Hr
26	Turn	Medium	11.45634, 77.35808	30 KM/Hr
27	Turn	Medium	11.45755, 77.35606	30 KM/Hr
28	Turn	High	11.45964, 77.30748	15 KM/Hr
29	Turn	Medium	11.46616, 77.30075	30 KM/Hr
30	Turn	High	11.47157, 77.29804	15 KM/Hr
31	Turn	Medium	11.47294, 77.29866	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
32	Turn	Medium	11.47333, 77.29847	30 KM/Hr
33	Turn	Medium	11.47449, 77.29614	30 KM/Hr
34	Turn	Medium	11.47449, 77.29541	30 KM/Hr
35	Turn	Medium	11.47525, 77.29446	30 KM/Hr
36	Turn	High	11.47602, 77.29451	15 KM/Hr
37	Turn	Medium	11.47746, 77.28972	30 KM/Hr
38	Turn	Medium	11.48272, 77.28581	30 KM/Hr
39	Turn	Medium	11.49558, 77.25638	30 KM/Hr
40	Turn	Medium	11.50737, 77.25025	30 KM/Hr
41	Turn	Medium	11.50939, 77.22974	30 KM/Hr
42	Turn	High	11.51961, 77.21565	15 KM/Hr
43	Turn	Medium	11.51990, 77.21564	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

	type	name	coordinates	speed_limit	risk_level
13	hospital	PST Mahaa Hospital	11.4312903, 77.6585751	30 km/h	Medium
14	hospital	Dharun Hospital	11.4223638, 77.5597735	30 km/h	Medium
15	hospital	Dr. Ramaswamy Hospital	11.4249065, 77.5535658	30 km/h	Medium
16	hospital	Dakshin Trauma Centre	11.454593, 77.4461819	30 km/h	Medium
17	hospital	Dakshin Hospital	11.4546301, 77.445905	30 km/h	Medium
18	hospital	Sri Varahi Herbal Research Centre and Hospital	11.4539333, 77.4427438	30 km/h	Medium
19	clinic	Germen Homeopathy Clinic	11.4536305, 77.4394692	30 km/h	Medium
20	hospital	JP Hospital	11.454765, 77.438257	30 km/h	Medium
21	hospital	KKS Hospital	11.4551792, 77.4392927	30 km/h	Medium
23	hospital	Siranjeeve Hospitals	11.453132, 77.4344382	30 km/h	Medium
24	clinic	Anandhan Clinic	11.4548037, 77.4349074	30 km/h	Medium
25	hospital	Ramachandran Hospital	11.452242, 77.434641	30 km/h	Medium
26	hospital	Kumaran Hospital	11.4533971, 77.4349621	30 km/h	Medium
27	hospital	Kavitha Children's Hospital	11.4565402, 77.4310815	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	Dr. Moorthy Hospital	11.4546045, 77.4308533	30 km/h	Medium
31	pharmacy	Abirami Medicals	11.4550894, 77.4309286	30 km/h	Medium
32	hospital	Hariharan Hospital	11.4523578, 77.4299287	30 km/h	Medium
33	hospital	Vasanth Hospital	11.4526864, 77.4292173	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
34	clinic	Jeeva Nursing Home	11.4533031, 77.4294145	30 km/h	Medium
35	hospital	Sathya Hospital	11.4561856, 77.4298694	30 km/h	Medium
36	hospital	Sivakami Hospital	11.4531846, 77.4299288	30 km/h	Medium
37	hospital	Best Hospital	11.4543558, 77.4263617	30 km/h	Medium
38	clinic	Anand Nursing Home	11.4553169, 77.4296248	30 km/h	Medium
39	clinic	Kanmani Child Care Clinic	11.4545273, 77.428668	30 km/h	Medium
40	hospital	Rajasekaran Hospital	11.454463, 77.4262	30 km/h	Medium
41	hospital	Samuel Hospital	11.4542555, 77.4271194	30 km/h	Medium
42	hospital	Sivasakthi Hospital	11.4544711, 77.4297229	30 km/h	Medium
43	hospital	SS Children's Hospital	11.4555386, 77.4296357	30 km/h	Medium
44	clinic	Sri Dhanvantari Siddha Clinic	11.4561216, 77.4295797	30 km/h	Medium
45	hospital	Neha Hospital	11.4560138, 77.4270219	30 km/h	Medium
46	clinic	Dr. Ramesh Babu Clinic	11.4560871, 77.4296353	30 km/h	Medium
47	hospital	Sankareswari Eye Hospital	11.4572997, 77.428765	30 km/h	Medium
48	hospital	Arun Hospital	11.4548852, 77.4250314	30 km/h	Medium
51	hospital	Government Hospital	11.4565126, 77.4288768	30 km/h	Medium
52	hospital	Sri Chakra Hospital	11.4544464, 77.4228363	30 km/h	Medium
53	hospital	U M Hospital	11.4544151, 77.4240386	30 km/h	Medium
54	hospital	Dr. Gopal Hospital	11.455258, 77.422901	30 km/h	Medium
55	clinic	VG Ortho Centre	11.4550504, 77.4225102	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
56	clinic	Palaniappa Clinic	11.4555925, 77.4202828	30 km/h	Medium
57	hospital	Abi SK Hospital	11.457163, 77.412487	30 km/h	Medium
58	clinic	Nalam Vazh S.K Siddha and Varma Clinic	11.457576, 77.412164	30 km/h	Medium
60	clinic	Singiripalayam Natarajan Siddha Ortho Care	11.4603252, 77.3183801	30 km/h	Medium
61	hospital	Assisi Hospital	11.4636431, 77.30493	30 km/h	Medium
63	hospital	Sathyamangalam Government Hospital	11.5016489, 77.2582814	30 km/h	Medium
64	hospital	Vijaya Hospital	11.5051709, 77.2480971	30 km/h	Medium
65	hospital	Emmanuvel Hospital	11.5063418, 77.2470483	30 km/h	Medium
66	hospital	Udhayam Hospital	11.5064193, 77.2467814	30 km/h	Medium
67	hospital	Amudha Poly Clinic & Hospital	11.5053476, 77.2466406	30 km/h	Medium
68	clinic	KGR Surgical Nursing Home	11.5050605, 77.2453693	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
22	school	Shree Vidyalaya Matric Higher Secondary School	11.4536114, 77.4383163	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
49	school	Diamond Jubilee Higher Secondary School	11.4529541, 77.4280306	30 km/h	Medium
50	school	CKK Palaniammal School	11.4569211, 77.4276828	30 km/h	Medium
59	school	Saratha Techno School	11.4544819, 77.379986	30 km/h	Medium
62	college	Bannari Amman Institute	11.4947151, 77.277266	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44024, 77.87528



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: 11.45898, 77.85135



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: 11.43001, 77.67575



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43003, 77.67551



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.43026, 77.67525



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.43073, 77.67536



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43273, 77.67018



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43268, 77.66999



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43342, 77.66685



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43239, 77.66578



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43222, 77.65329



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.42904, 77.57122



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42838, 77.56943



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42828, 77.56554



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42704, 77.56397



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.42337, 77.55804



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.42335, 77.55788



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45761, 77.36302



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45634, 77.35808



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45755, 77.35606



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45964, 77.30748



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.46616, 77.30075



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.47157, 77.29804



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.47294, 77.29866



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.47333, 77.29847



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.47449, 77.29614



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.47449, 77.29541



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.47525, 77.29446



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.47602, 77.29451



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.47746, 77.28972



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.48272, 77.28581



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.49558, 77.25638



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.50737, 77.25025



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.50939, 77.22974



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.51961, 77.21565



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.51990, 77.21564
