



JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal To SENTHIL KUMAR FUEL STATION

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

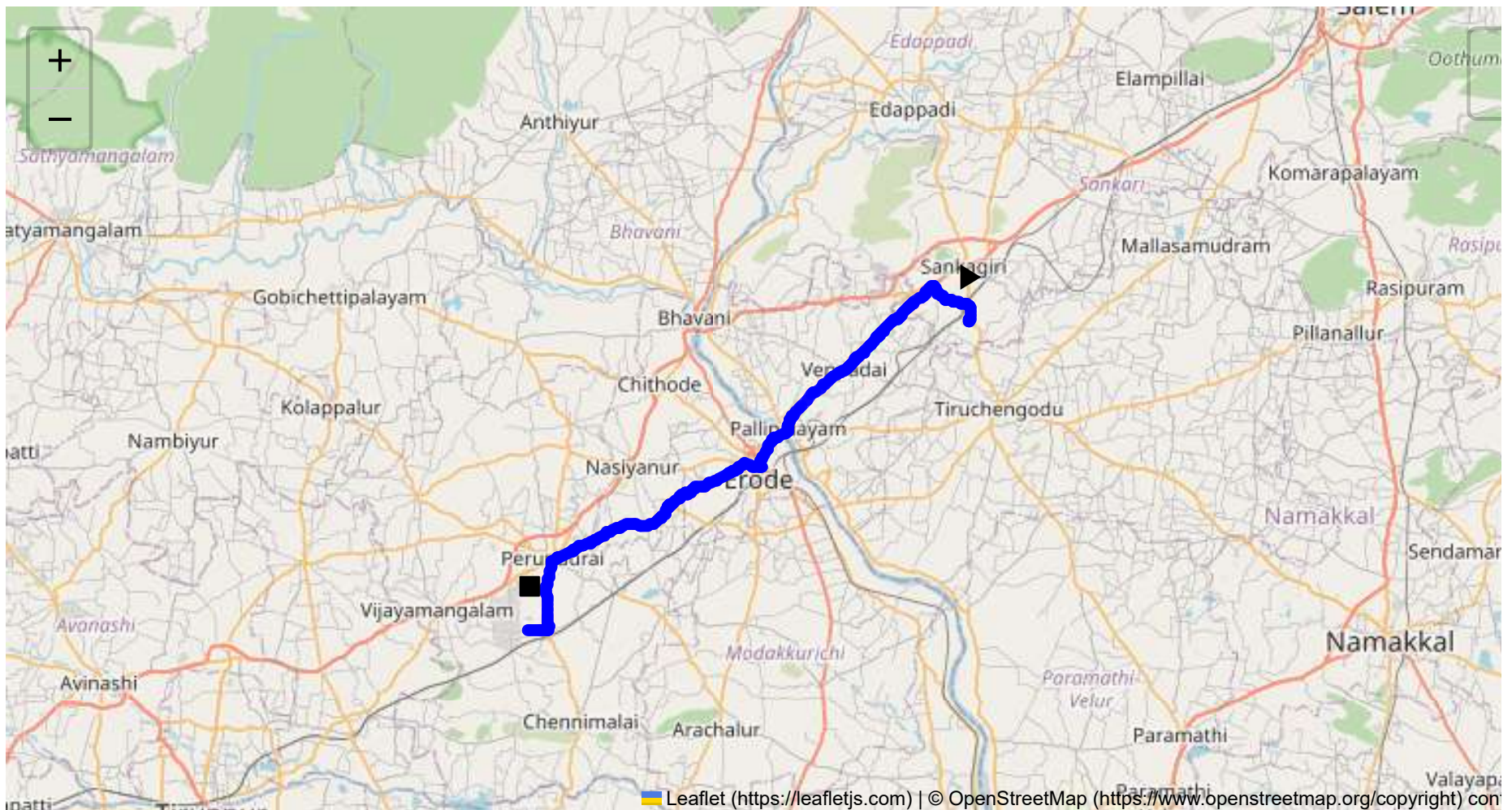
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 50.19 km
Estimated Duration: 1.3 hours
Adjusted Duration (Heavy Vehicle): 1.7 hours
Start: (11.4381, 77.8734)
End: (11.226456, 77.565703)



Welcome to the Journey Risk Management Study

- 1. Overview of the Route Map:** The route from Sangagiri, Tamil Nadu to Ingur, Tamil Nadu spans approximately 50.19 kilometers and passes through various locations including SH 79A, Nethaji Road Erode, and SH 96 in Perundurai. This route primarily utilizes state highways and local roads, ensuring connectivity through semi-urban and rural areas.
- 2. Typical Weather Conditions and Potential Weather-Related Hazards:** The climate in this part of Tamil Nadu is typically tropical, with hot and dry conditions most of the year. Monsoon season (June to September) can bring heavy rains, potentially causing water-logging or slippery road conditions. Flash floods are possible in the monsoon, particularly near low-lying areas.
- 3. Analysis of Traffic Patterns:** Traffic is generally moderate but can increase during peak hours, typically 8-10 AM and 5-8 PM, especially around urban centers like Erode. Narrow roads and intersections may contribute to congestion.
- 4. Assessment of Road Quality and Infrastructure:** The state highways are generally well-maintained, but certain segments might have potholes and uneven surfaces, especially after the monsoon season. Signage and road markers are usually present but could be insufficient in rural stretches.
- 5. Suggestions for Alternative Routes for Emergencies:** Alternative routes include taking National Highway 544 via Salem, which is a broader highway with better amenities, though it increases travel distance. Local routes through lesser-known villages might be used for short detours, but information should be verified for road quality.

6. Summary of Local Regulations Affecting Hazardous Material Transport: Transport of hazardous materials requires adherence to local safety regulations, including permits, proper labeling, and restricted travel times. Night-time travel might be restricted for heavy vehicles carrying hazardous materials.

7. Overview of Historical Incidents: While specific data for this route might be limited, Tamil Nadu roads have reported incidents involving heavy vehicles due to over-speeding, driver fatigue, and inadequate vehicle maintenance, particularly highlighting the need for caution.

8. Environmental Considerations and Sensitive Areas: Proximity to agricultural lands, water bodies, and residential areas necessitates precautions to prevent any spillage or pollution during transport. SH 96 is particularly close to some agricultural regions.

9. Analysis of Communication Coverage: Communication coverage is generally reliable in urban and semi-urban areas but might experience dead zones in rural stretches, particularly away from main highways or in valleys.

10. Estimated Emergency Response Times: In urban areas like Erode, emergency response is usually swift, averaging 15-30 minutes. In rural or remote sections, the response time could extend to 45 minutes or more due to limited facilities or challenging access.

12. Overall Summary of Risk Assessment: The route poses moderate risks typical of rural and semi-urban Indian roads. Weather conditions (especially during monsoons), potential traffic congestions, and road infrastructure quality are significant considerations for transport safety. Proper planning, clear communication, and adherence to safety protocols are crucial for mitigating risks associated with transporting hazardous materials along this route. Awareness of emergency services locations and maintaining reliable communication will further enhance safety during transit.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	Roundabout	High	11.27718, 77.58674	15 KM/Hr
2	Roundabout	High	11.27633, 77.58694	15 KM/Hr
3	Turn	Medium	11.43822, 77.87348	30 KM/Hr
4	Turn	High	11.43961, 77.87341	15 KM/Hr
5	Turn	High	11.44029, 77.87544	15 KM/Hr
6	Turn	Medium	11.44893, 77.87413	30 KM/Hr
7	Turn	Medium	11.45127, 77.86734	30 KM/Hr
8	Turn	High	11.45350, 77.85700	15 KM/Hr
9	Turn	Medium	11.45845, 77.85141	30 KM/Hr
10	Turn	Medium	11.46046, 77.85037	30 KM/Hr
11	Turn	Medium	11.46303, 77.84945	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
12	Turn	Medium	11.46317, 77.84906	30 KM/Hr
13	Turn	Medium	11.34172, 77.72823	30 KM/Hr
14	Blind Spot	Blind Spot	11.33920, 77.72902	10 KM/Hr
15	Turn	Medium	11.34078, 77.71715	30 KM/Hr
16	Turn	Medium	11.32289, 77.68026	30 KM/Hr
17	Turn	Medium	11.32132, 77.67955	30 KM/Hr
18	Turn	Medium	11.32071, 77.67892	30 KM/Hr
19	Turn	Medium	11.28889, 77.61284	30 KM/Hr
20	Turn	High	11.27450, 77.58271	15 KM/Hr
21	Turn	Medium	11.22673, 77.58027	30 KM/Hr
22	Blind Spot	Blind Spot	11.22642, 77.58045	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	hospital	Cheran Hospital	11.3680302, 77.7481976	30 km/h	Medium
2	pharmacy	Pharmacy	11.3652161, 77.7486375	30 km/h	Medium
3	hospital	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
4	hospital	Sri Kumaran E N T Hospital	11.3657814, 77.7477763	30 km/h	Medium
5	hospital	Sri Krishna Hospital	11.3656648, 77.7477783	30 km/h	Medium
6	police	Police Station	11.3630177, 77.7476505	30 km/h	Medium
7	hospital	Government Hospital	11.3608508, 77.747453	30 km/h	Medium
9	hospital	Sri Hari Sakthivel Hospital	11.3526901, 77.7323055	30 km/h	Medium
10	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
11	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
12	hospital	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
13	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	30 km/h	Medium
15	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
16	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
17	hospital	City Hospital	11.3451151, 77.7300887	30 km/h	Medium
18	clinic	K.B.N. Nursing Home	11.344835, 77.7310771	30 km/h	Medium
19	clinic	Kpn Nursing Home	11.3437022, 77.7304525	30 km/h	Medium
20	hospital	Kaviraj Ayurveda Hospital	11.3400349, 77.7298199	30 km/h	Medium
21	hospital	Dr Kokilasekar Nursing Hospital	11.3395874, 77.7269838	30 km/h	Medium
22	clinic	M.R Nursing Home	11.3386746, 77.7294262	30 km/h	Medium
24	hospital	Government Maternity Hospital, Agathiar	11.33716, 77.727075	30 km/h	Medium
25	clinic	Naseer Nursing Home	11.3364485, 77.7271691	30 km/h	Medium
26	clinic	Dr. R Kumaraswamy Sexologist Clinic	11.3396057, 77.7221701	30 km/h	Medium
27	clinic	Newlife Fertility Centre	11.3389396, 77.7213358	30 km/h	Medium
28	hospital	Guhan ENT Hospital	11.339489, 77.721001	30 km/h	Medium
29	clinic	Janet Nursing Home	11.3396455, 77.7203698	30 km/h	Medium
30	hospital	Dr. Pondiperumal Hospital	11.3390924, 77.7205408	30 km/h	Medium
31	hospital	Abisek Medical Centre	11.3415975, 77.7191789	30 km/h	Medium
32	hospital	Sri Vijaya Hitech Hospital	11.3400011, 77.7192251	30 km/h	Medium
33	hospital	Shri Vijaiah Trauma Care Hospital	11.3418935, 77.7193036	30 km/h	Medium
34	hospital	Surya Hospital	11.3400026, 77.7190977	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
36	hospital	Dr. Agarwal's Eye Hospital Ltd. - Erode	11.3421842, 77.7173066	30 km/h	Medium
37	hospital	Universal Hospital	11.3411046, 77.7185217	30 km/h	Medium
38	hospital	L.V.S. Eye Hospital	11.3385839, 77.7156597	30 km/h	Medium
39	hospital	Erode Kidney's Centre	11.3383801, 77.7164201	30 km/h	Medium
40	hospital	Duraisamy Hospital	11.3391625, 77.7187054	30 km/h	Medium
41	hospital	Shri Preethe Hospital	11.3385944, 77.7157979	30 km/h	Medium
42	hospital	Dr Nsk Hospital	11.3381737, 77.7153821	30 km/h	Medium
43	hospital	Srimathi Murugeshan Hospital	11.3389205, 77.7187791	30 km/h	Medium
44	hospital	Devi Hospital	11.34116, 77.718307	30 km/h	Medium
45	hospital	KMCH Speciality Hospital	11.33911, 77.716284	30 km/h	Medium
46	hospital	SCS Hospital And Urology Clinic	11.3410253, 77.718043	30 km/h	Medium
47	hospital	Anusha Hospital	11.3397168, 77.7166805	30 km/h	Medium
48	clinic	Vanalikaa Homoeo Centre	11.341349, 77.717987	30 km/h	Medium
49	hospital	Suriya Hospital	11.340248, 77.7186452	30 km/h	Medium
50	clinic	Skin Care Clinic	11.3409042, 77.7178413	30 km/h	Medium
51	hospital	Care Hospital	11.338443, 77.716511	30 km/h	Medium
52	hospital	Abitha Eye Hospital	11.34021, 77.7187589	30 km/h	Medium
53	hospital	Ortho Life Hospital	11.3395729, 77.7167329	30 km/h	Medium
54	hospital	SRC Hospital	11.3413999, 77.7177834	30 km/h	Medium
55	hospital	Keran Hospital	11.3400456, 77.7154808	30 km/h	Medium
56	hospital	Gem Hospital	11.338106, 77.7155077	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
57	hospital	Nalan Hospital	11.3399703, 77.716773	30 km/h	Medium
58	clinic	Dr. Chandran Skin Laser Centre	11.3413527, 77.7174891	30 km/h	Medium
59	hospital	Sri Hari Hospital	11.338357, 77.7164204	30 km/h	Medium
60	hospital	District Hospital, Eroda	11.3393048, 77.717926	30 km/h	Medium
61	hospital	Annai Ent and Head and Neck Care Center	11.3387785, 77.7149034	30 km/h	Medium
62	hospital	Kovai Medical Centre And Hospital, Perundurai	11.3381361, 77.7139593	30 km/h	Medium
63	hospital	Senthil Multispeciality Hospital	11.338983, 77.7138529	30 km/h	Medium
64	clinic	Madhu Surgical Clinic	11.3386602, 77.7143441	30 km/h	Medium
65	hospital	Kavin Hospital	11.3383568, 77.7138882	30 km/h	Medium
66	clinic	RB Kids Clinic	11.339221, 77.713915	30 km/h	Medium
67	hospital	Arun Fracture Hospital	11.3378114, 77.7152632	30 km/h	Medium
68	clinic	Sathyavathi Ramalingam Clinic	11.3380366, 77.7166875	30 km/h	Medium
69	hospital	Curie Hospital	11.3380517, 77.7140038	30 km/h	Medium
70	hospital	Maruthi Medical Centre(Mmch Hospital)	11.3384018, 77.7130616	30 km/h	Medium
71	clinic	Vadivu Subramanian Nursing Home	11.337507, 77.7152038	30 km/h	Medium
72	hospital	Erode Trust Hospital	11.3399422, 77.7134188	30 km/h	Medium
73	hospital	Sri Athi Sathya Hospital	11.3392651, 77.7126583	30 km/h	Medium
74	hospital	Arc Fertility Hospital	11.3397231, 77.7130655	30 km/h	Medium
75	hospital	Srinivasa Speciality Hospital	11.337577, 77.715527	30 km/h	Medium
76	hospital	Vanjee Multispeciality Dental Centre	11.3418385, 77.7132218	30 km/h	Medium
77	hospital	Vsm Hospital Atho And Maternity Centre	11.3374641, 77.7117842	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
78	hospital	Sudha Institute of Medical Sciences Hospital	11.3371539, 77.7109247	30 km/h	Medium
79	hospital	Sri Harini Hospital	11.335935, 77.7112643	30 km/h	Medium
80	hospital	Sholai Medical Centre	11.3364905, 77.7107674	30 km/h	Medium
81	hospital	Arcees Hospital	11.3381082, 77.7110478	30 km/h	Medium
82	clinic	Rahat Acu Clinic	11.3378679, 77.7123699	30 km/h	Medium
83	hospital	Sakthipriya Hospital	11.337874, 77.711363	30 km/h	Medium
84	hospital	Velavan Hospital	11.3384075, 77.7123677	30 km/h	Medium
85	hospital	V.S.M. Hospital	11.337176, 77.7113816	30 km/h	Medium
86	hospital	SIMS Children Hospital	11.3376687, 77.7106065	30 km/h	Medium
87	hospital	Bharani Paventhan Multi Speciality Hospital	11.3358357, 77.7081187	30 km/h	Medium
88	hospital	Kalyani Kidney Care Centre	11.3383604, 77.7080879	30 km/h	Medium
89	hospital	Gnanaganesh Hospital	11.3340114, 77.706332	30 km/h	Medium
90	hospital	Siddhvedam Siddha Hospital	11.3336526, 77.7063319	30 km/h	Medium
91	clinic	Sukeerthi Skin Care	11.3342224, 77.7051196	30 km/h	Medium
93	hospital	RKR Neuro Hospital	11.3278243, 77.6991636	30 km/h	Medium
94	hospital	TPN Hospital	11.3273279, 77.6928516	30 km/h	Medium
95	hospital	Erode Hospital	11.3279227, 77.6924918	30 km/h	Medium
96	hospital	Nalamthaa Siddha Hospital	11.3253867, 77.6901722	30 km/h	Medium
97	hospital	Care 24 Medical Centre & Hospital	11.326585, 77.688148	30 km/h	Medium
99	clinic	Vasan Eye Care	11.3223693, 77.6844101	30 km/h	Medium
106	hospital	Erode Cancer Centre	11.313682, 77.6686621	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
108	hospital	Krishna Medical Centre	11.2854479, 77.6039939	30 km/h	Medium
109	hospital	Mag Hospital	11.2804816, 77.5959817	30 km/h	Medium
110	hospital	Sree Shanthi Hospital	11.2778297, 77.5885653	30 km/h	Medium
111	police	Police Station	11.277733, 77.5865812	30 km/h	Medium
112	hospital	Government Hospital, Perundurai	11.2760337, 77.5874483	30 km/h	Medium
113	clinic	Sri Amman Clinic	11.275952, 77.5868085	30 km/h	Medium
114	hospital	Marutham Hospital	11.2796906, 77.5864262	30 km/h	Medium
115	clinic	Sri Clinic	11.27555, 77.586134	30 km/h	Medium
116	clinic	Sridar Clinic	11.2755095, 77.5861442	30 km/h	Medium
117	clinic	Thulasi Clinic	11.2766687, 77.5869752	30 km/h	Medium
118	hospital	Santhi Hospital	11.2787879, 77.5872993	30 km/h	Medium
119	hospital	KMCH Hospital	11.2788797, 77.5848796	30 km/h	Medium
120	hospital	Priya Hospital	11.2761, 77.584773	30 km/h	Medium
121	hospital	Sakthi Dental Hospital	11.2788566, 77.5849413	30 km/h	Medium
122	hospital	Sivakumar Hospital	11.2770302, 77.5852952	30 km/h	Medium
123	hospital	Anu Child Care	11.2765928, 77.5848408	30 km/h	Medium
124	clinic	Avm Physiotherapy Clinic	11.2766435, 77.5842715	30 km/h	Medium
125	clinic	Dass Homoeo Clinic	11.2771706, 77.5841177	30 km/h	Medium
126	hospital	N V Nursing Home	11.2780408, 77.5848735	30 km/h	Medium
127	hospital	Dr. Jayakanthan Hospital	11.2738446, 77.5881795	30 km/h	Medium
128	clinic	Gks Child Clinic	11.2759154, 77.5832766	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
129	clinic	Ravi Clinic	11.2768201, 77.5836969	30 km/h	Medium
130	pharmacy	Nathan Medicals	11.2773384, 77.5829441	30 km/h	Medium
131	clinic	Logeshwaran Homeo Clinic	11.277675, 77.583065	30 km/h	Medium
132	clinic	Baby Dental and Poly Clinic	11.2753902, 77.5829593	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	Ssri Valliappa Vidhayalayam mat hr school	11.4004878, 77.7794381	30 km/h	Medium
8	marketplace	Weekly Market	11.3605669, 77.7488199	30 km/h	Medium
14	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium
23	school	E.V.R. Govt Girls Hr. Sec School	11.3371265, 77.7266283	30 km/h	Medium
35	school	Sengunthar matriculation School	11.3407075, 77.7195086	30 km/h	Medium
100	school	Bharathiya Vidya Bhavan	11.3229221, 77.6782975	30 km/h	Medium
101	college	Vellalar College and Schools	11.3222276, 77.6757207	30 km/h	Medium
102	school	Government Higher Secondary School	11.3200241, 77.6774475	30 km/h	Medium
103	school	Government Higher Secondary School	11.3196253, 77.6771687	30 km/h	Medium
104	school	Vellalar College And Schools	11.3224382, 77.6758948	30 km/h	Medium
105	school	Geethanjali All India Senior Secondary School	11.3194694, 77.6718667	30 km/h	Medium
107	school	Sri Chaitanya Techno School	11.3155178, 77.66829	30 km/h	Medium
133	school	Kongu Vellalar Matriculation Higher Sec School	11.2722171, 77.5817369	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37086, 77.74828



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.27718, 77.58674



Risk Type: Roundabout
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.27633, 77.58694



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: 11.44893, 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: 11.46046, 77.85037



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: 11.46317, 77.84906



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34172, 77.72823



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.33920, 77.72902



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34078, 77.71715



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32289, 77.68026



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32132, 77.67955



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.32071, 77.67892



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28889, 77.61284



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.27450, 77.58271

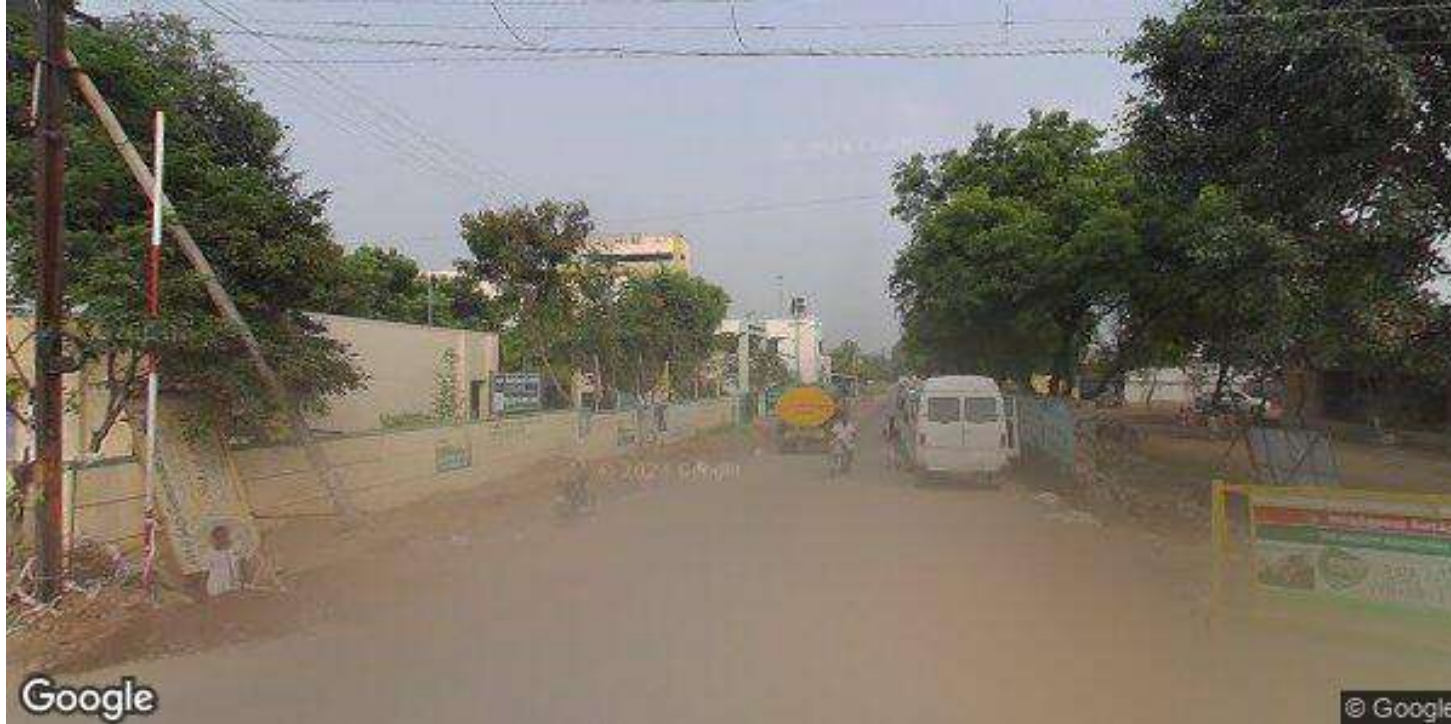


Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.22673, 77.58027



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.22642, 77.58045
