

JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to K Mohammed Abdul Khader

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

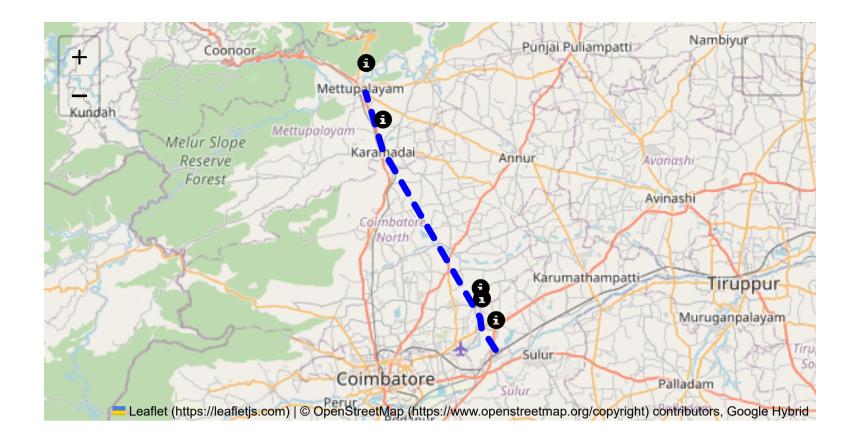
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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



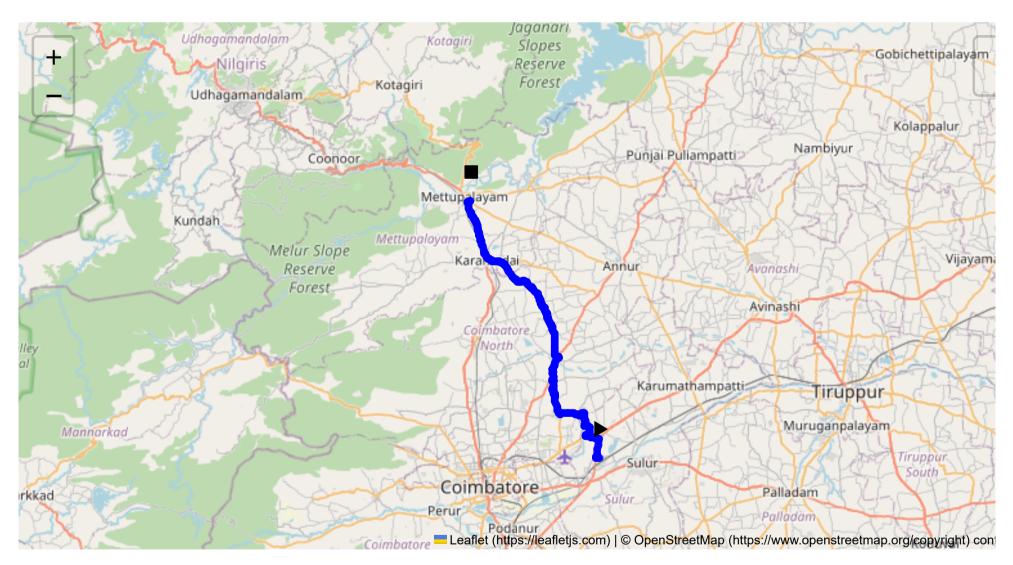
Route Summary:

Total Distance: 41.55 km

Estimated Duration: 1.3 hours

Adjusted Duration (Heavy Vehicle): 1.6 hours

Start: (11.0315, 77.0797) End: (11.30073, 76.940726)



Welcome to the Journey Risk Management Study

Route Overview

The route from Athappagoundenpudur, Coimbatore to Mettupalayam in Tamil Nadu via Chinniyampalayam, GEM Nagar, and Karamadai spans approximately 41.55 kilometers. The journey typically takes around 1.26 hours for heavy vehicles, especially those carrying hazardous materials. The

route is primarily rural with stretches of highway, passing through smaller towns and peripheral urban areas.

Weather Conditions

- **Typical Weather**: The region generally experiences a tropical climate, with significant monsoon influence.
- **Potential Hazards**: Heavy rainfall during the monsoon season (June to September) can lead to waterlogging and reduced visibility, impacting road safety. High temperatures in the summer (March to May) can affect vehicle performance and increase the likelihood of tire blowouts.

Traffic Patterns

- **Peak Hours**: Traffic congestion is typically higher during morning (7:30 AM 9:30 AM) and evening (5:00 PM 7:00 PM) rush hours, particularly around town intersections.
- Congestion-Prone Areas: The vicinity of marketplaces and intersections near Chinniyampalayam and Karamadai can experience slow-moving traffic.

Road Quality and Infrastructure

- Road Quality: The route is a mix of well-paved highway sections and narrower rural roads. Occasional
 potholes and uneven surfaces can be found, especially after monsoon seasons.
- Infrastructure: Signage may be inconsistent or obscured in rural stretches, and lighting is limited on some parts of the route.

Alternative Routes for Emergencies

In emergencies, consider:

- Using secondary roads through Thudiyalur if the Nagapattinam-Coimbatore Highway is congested or blocked.
- Another option is rerouting back towards Coimbatore and taking the NH948, although this may be longer and more congested.

Local Regulations

- **Hazardous Material Rules**: Compliance with regional transport laws is crucial. Restrictions on the timing and routes for hazardous materials may apply, mainly during peak urban traffic times.
- **Documentation**: Ensure all required permits and transport certifications are in place.

Historical Incidents

• Incidents: There have been past incidents involving heavy vehicles in the monsoon season, mainly due to skidding on wet roads and reduced visibility. Notable incidents were largely focused around congested zones near urban areas.

Environmental Considerations

- Sensitive Areas: The route passes through agricultural land, so there are strict guidelines against spills or emissions from vehicles to protect the local environment.
- **Natural Reservations**: There may be wildlife in the more rural sections, so caution is advised to prevent accidents involving animals.

Communication Coverage

• **Dead Zones**: Communication coverage is generally good, but certain rural segments might have limited connectivity. Local service providers are recommended for better coverage.

Emergency Response Times

- **Coimbatore to Karamadai**: Estimated response time is 15-30 minutes due to proximity to urban facilities.
- **Karamadai to Mettupalayam**: May take 30-45 minutes for emergency services due to distance and road conditions.

Overall Summary of Risk Assessment

- Moderate Risk: The overall route is moderately safe but requires caution due to potential weather hazards, inconsistent road quality, and occasional congested traffic spots.
- **Recommendations**: Drivers should be aware of weather forecasts, adhere to local traffic laws, and maintain communication with emergency services.
- Preparation: Vehicles should be well-maintained, especially focusing on tires and brakes, and drivers should be trained for emergency maneuvers in adverse conditions.

By following these guidelines and being aware of potential risks, the safety of the transport along this route can be significantly enhanced.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.07800, 77.03707	15 KM/Hr
1	U-Turn	High	11.0549503, 77.0650284	10 KM/Hr
2	Turn	High	11.03211, 77.07640	15 KM/Hr
3	Turn	High	11.05129, 77.07919	15 KM/Hr
4	Turn	High	11.05181, 77.07696	15 KM/Hr
5	Turn	High	11.05218, 77.07692	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
ô	Turn	Medium	11.05281, 77.07261	30 KM/Hr
7	Turn	Medium	11.05343, 77.07106	30 KM/Hr
3	Turn	Medium	11.05351, 77.07099	30 KM/Hr
9	Turn	High	11.05411, 77.07097	15 KM/Hr
10	Turn	High	11.05529, 77.06566	15 KM/Hr
11	Turn	High	11.05498, 77.06509	15 KM/Hr
12	Blind Spot	Blind Spot	11.05507, 77.06496	10 KM/Hr
13	Turn	High	11.05751, 77.06875	15 KM/Hr
14	Turn	High	11.06437, 77.06865	15 KM/Hr
15	Turn	High	11.06490, 77.06371	15 KM/Hr
16	Turn	Medium	11.06501, 77.06366	30 KM/Hr
17	Turn	High	11.07201, 77.06366	15 KM/Hr
18	Turn	Medium	11.07232, 77.06400	30 KM/Hr
19	Blind Spot	Blind Spot	11.07865, 77.06377	10 KM/Hr
20	Turn	High	11.07773, 77.05884	15 KM/Hr
21	Turn	Medium	11.07655, 77.05823	30 KM/Hr
22	Turn	Medium	11.07807, 77.05306	30 KM/Hr
23	Turn	Medium	11.07854, 77.03872	30 KM/Hr
24	Turn	Medium	11.09605, 77.03172	30 KM/Hr
25	Turn	Medium	11.09655, 77.03237	30 KM/Hr
26	Turn	High	11.09837, 77.03248	15 KM/Hr
27	Turn	Medium	11.09852, 77.03233	30 KM/Hr
28	Turn	High	11.09883, 77.03091	15 KM/Hr
29	Turn	High	11.10301, 77.03046	15 KM/Hr
30	Turn	Medium	11.10312, 77.03001	30 KM/Hr
31	Turn	Medium	11.10331, 77.02984	30 KM/Hr
32	Blind Spot	Blind Spot	11.11250, 77.03030	10 KM/Hr
33	Blind Spot	Blind Spot	11.11256, 77.02901	10 KM/Hr
34	Blind Spot	Blind Spot	11.13744, 77.03599	10 KM/Hr
35	Blind Spot	Blind Spot	11.13742, 77.03359	10 KM/Hr
36	Turn	Medium	11.13829, 77.03346	30 KM/Hr
37	Turn	High	11.13901, 77.03204	15 KM/Hr
38	Turn	Medium	11.16732, 77.02884	30 KM/Hr
39	Turn	Medium	11.16943, 77.02891	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
40	Turn	Medium	11.17187, 77.02752	30 KM/Hr
41	Turn	Medium	11.18436, 77.02299	30 KM/Hr
42	Turn	Medium	11.18446, 77.02279	30 KM/Hr
43	Turn	Medium	11.18881, 77.02127	30 KM/Hr
44	Turn	Medium	11.20958, 77.00724	30 KM/Hr
45	Turn	Medium	11.21403, 77.00250	30 KM/Hr
46	Turn	High	11.21427, 77.00246	15 KM/Hr
47	Turn	Medium	11.21435, 77.00232	30 KM/Hr
48	Turn	High	11.21575, 77.00174	15 KM/Hr
49	Turn	High	11.21590, 77.00040	15 KM/Hr
50	Turn	Medium	11.21638, 77.00010	30 KM/Hr
51	Turn	Medium	11.21704, 76.99880	30 KM/Hr
52	Turn	Medium	11.23428, 76.97860	30 KM/Hr
53	Turn	Medium	11.24082, 76.96002	30 KM/Hr
54	Blind Spot	Blind Spot	11.30000, 76.93887	10 KM/Hr
55	Blind Spot	Blind Spot	11.30046, 76.94127	10 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	KGM, Chinniampalayam	11.0570076, 77.067239	30 km/h	Medium
1	hospital	Chinniampalayam Venkateshwara Hospital	11.0545152, 77.0652106	30 km/h	Medium
3	hospital	R V Hospital, Coimbatore	11.0546916, 77.0639178	30 km/h	Medium
4	hospital	Kamalaprakasam, Kalapatti	11.0778, 77.035681	30 km/h	Medium
6	hospital	Aravindan Hospital	11.1334592, 77.0340488	30 km/h	Medium
7	hospital	Sampath Hospital ,S.S.Kulam	11.1339, 77.034088	30 km/h	Medium
8	hospital	Gokulam ortho hospital	11.1340331, 77.0350369	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
15	hospital	Sowmiya Hospital	11.2377363, 76.9652218	30 km/h	Medium
16	hospital	Government primary health center	11.2385887, 76.9640887	30 km/h	Medium
17	hospital	KR Hospital, Karamadai	11.23934, 76.962781	30 km/h	Medium
18	hospital	Sowmiya Hospital	11.2400426, 76.9619912	30 km/h	Medium
19	police	Karamadai Police Station	11.2395224, 76.9595897	30 km/h	Medium
20	pharmacy	sri kaveri medicals	11.2428499, 76.960831	30 km/h	Medium
21	hospital	burma doctor hospital	11.2414022, 76.9600962	30 km/h	Medium
24	pharmacy	Saravana Pharmacy	11.2429694, 76.9584406	30 km/h	Medium
25	hospital	Subbu Hospital	11.2434041, 76.9602041	30 km/h	Medium
31	hospital	Hindustan Hospital	11.2816017, 76.9462511	30 km/h	Medium
32	hospital	Smyle Hospital, Mettupalayam	11.2878481, 76.9420704	30 km/h	Medium
35	hospital	Government Hospital, Mettupalayam	11.2891427, 76.9409612	30 km/h	Medium
36	hospital	Meenakshi Hospital	11.2913595, 76.9413024	30 km/h	Medium
40	hospital	R A Medical Center and Hospital	11.2976038, 76.940787	30 km/h	Medium
42	hospital	Kps Hospitals Pvt Ltd	11.3003873, 76.9402459	30 km/h	Medium
43	hospital	Suriya Hospital, Coimbatore	11.30192, 76.9400722	30 km/h	Medium
44	hospital	Immanuel Eye Hospital	11.3022381, 76.9400735	30 km/h	Medium
45	hospital	Garnett Memorial Eye Hospital	11.3020423, 76.9400816	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
2	school	Government school	11.0554435, 77.0653927	30 km/h	Medium
5	college	KV Institute of Management and Information Studies	11.1050789, 77.0276575	30 km/h	Medium
9	school	panchayat union middle school	11.2140204, 77.0028892	30 km/h	Medium
10	school	panchayat union middle school	11.2141334, 77.0028305	30 km/h	Medium
11	school	The ooty public school	11.2158022, 77.0041736	30 km/h	Medium
12	college	Christ the King Engineering College	11.2262519, 76.9803262	30 km/h	Medium
13	school	Vidya Vikas Schools	11.2400364, 76.9731001	30 km/h	Medium
14	school	panchayat union primary school	11.2375143, 76.9692497	30 km/h	Medium
22	marketplace	Karamadai Friday Market	11.2406365, 76.9591049	30 km/h	Medium
23	marketplace	Karamadai Market	11.2407774, 76.9594288	30 km/h	Medium
26	school	Karamadai Government Higher Secondary School	11.2508729, 76.9546065	30 km/h	Medium
27	marketplace	karamadai transport mundy market	11.252799, 76.9559317	30 km/h	Medium
28	marketplace	TDR Banana auction mundy	11.2521314, 76.95564	30 km/h	Medium
29	school	SRSI Matriculation Higher Secondary School	11.2643436, 76.9549985	30 km/h	Medium
30	school	Metro Matriculation Hr. Sec. School	11.2806205, 76.9481429	30 km/h	Medium
33	school	Government Boys Higher Secondary School	11.2871158, 76.940117	30 km/h	Medium
34	school	Rosary Girls High School	11.2885341, 76.9409627	30 km/h	Medium
37	school	LEF Christain Matriculation School	11.2929024, 76.9433302	30 km/h	Medium
38	school	LEF Christain Matriculation School	11.2928911, 76.943694	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
39	school	Holy Angels Primary School	11.2994396, 76.942179	30 km/h	Medium
41	marketplace	மேட்டுப்பாளையம் உழவர் சந்தை	11.3010351, 76.937417	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout Risk Level: High Speed Limit: 15 KM/Hr

Coordinates: 11.07800, 77.03707



Risk Type: U-Turn
Risk Level: High
Speed Limit: 10 KM/Hr

Coordinates: 11.0549503, 77.0650284



Coordinates: 11.03211, 77.07640



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.05129, 77.07919



Coordinates: 11.05181, 77.07696



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.05218, 77.07692



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

Coordinates: 11.05281, 77.07261



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.05343, 77.07106



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.05351, 77.07099



Coordinates: 11.05411, 77.07097



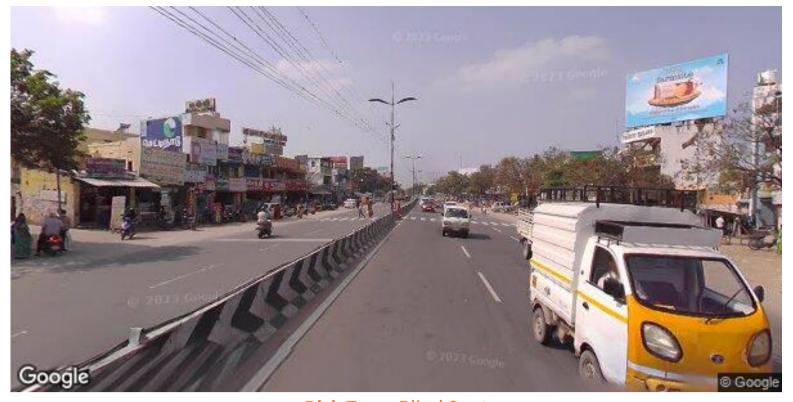
Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.05529, 77.06566



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.05498, 77.06509



Risk Type: Blind Spot Risk Level: Blind Spot Speed Limit: 10 KM/Hr

Coordinates: 11.05507, 77.06496



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.05751, 77.06875



Coordinates: 11.06437, 77.06865



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.06490, 77.06371

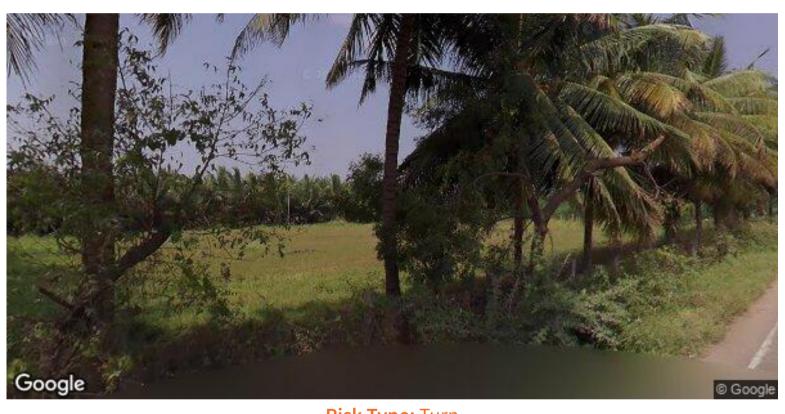


Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

Coordinates: 11.06501, 77.06366



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.07201, 77.06366



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07232, 77.06400



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr

Coordinates: 11.07865, 77.06377



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr

Coordinates: 11.07773, 77.05884



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07655, 77.05823



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07807, 77.05306



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.07854, 77.03872



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

Coordinates: 11.09605, 77.03172



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.09655, 77.03237



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.09837, 77.03248



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.09852, 77.03233



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.09883, 77.03091



Coordinates: 11.10301, 77.03046



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10312, 77.03001



Risk Type. Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10331, 77.02984



Risk Type: Blind Spot Risk Level: Blind Spot Speed Limit: 10 KM/Hr

Coordinates: 11.11250, 77.03030



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr



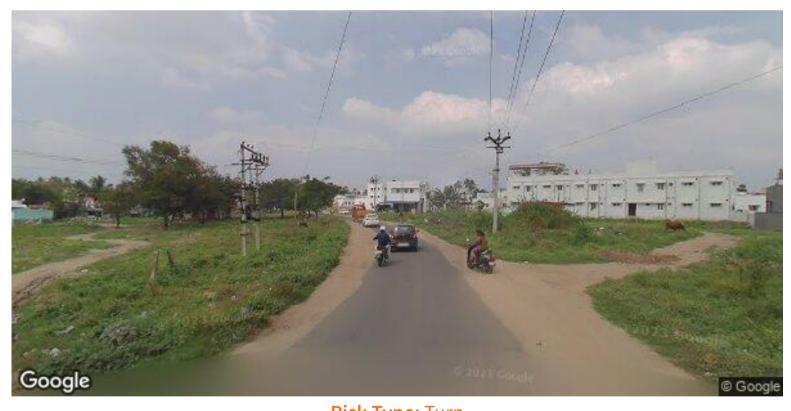
Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr

Coordinates: 11.13744, 77.03599



Risk Type: Blind Spot Risk Level: Blind Spot Speed Limit: 10 KM/Hr

Coordinates: 11.13742, 77.03359



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.13829, 77.03346



Coordinates: 11.13901, 77.03204



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16732, 77.02884



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

Coordinates: 11.16943, 77.02891



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17187, 77.02752



Risk Type. Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.18436, 77.02299



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.18446, 77.02279



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.18881, 77.02127



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr

Coordinates: 11.20958, 77.00724



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.21403, 77.00250



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.21427, 77.00246



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.21435, 77.00232



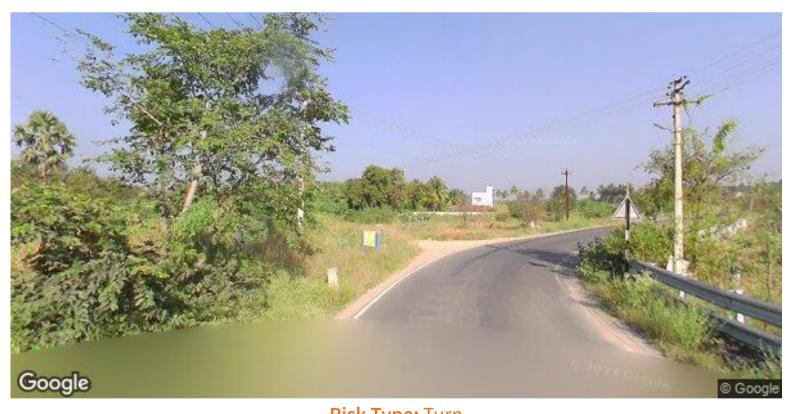
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.21575, 77.00174



Coordinates: 11.21590, 77.00040



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.21638, 77.00010



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.21704, 76.99880



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23428, 76.97860



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.24082, 76.96002



Risk Type: Blind Spot Risk Level: Blind Spot Speed Limit: 10 KM/Hr

Coordinates: 11.30000, 76.93887



Risk Type: Blind Spot Risk Level: Blind Spot Speed Limit: 10 KM/Hr

Coordinates: 11.30046, 76.94127