

JOURNEY RISK MANAGEMENT (JRM) STUDY

IOCL Coimbatore Terminal to Kalpana Agencies

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

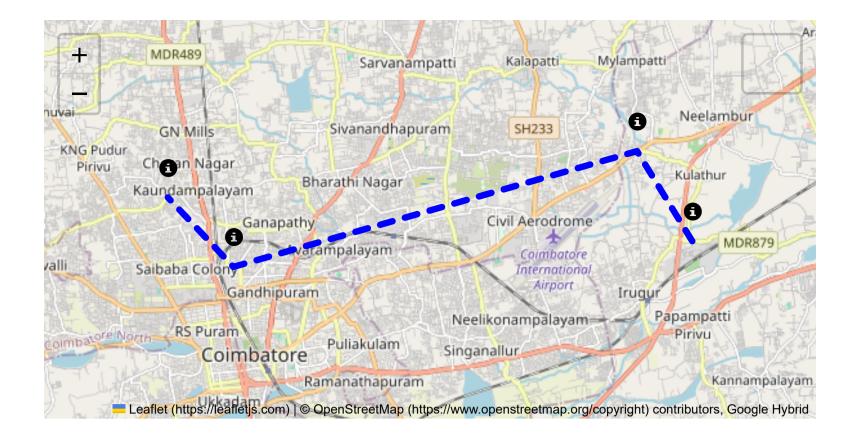
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

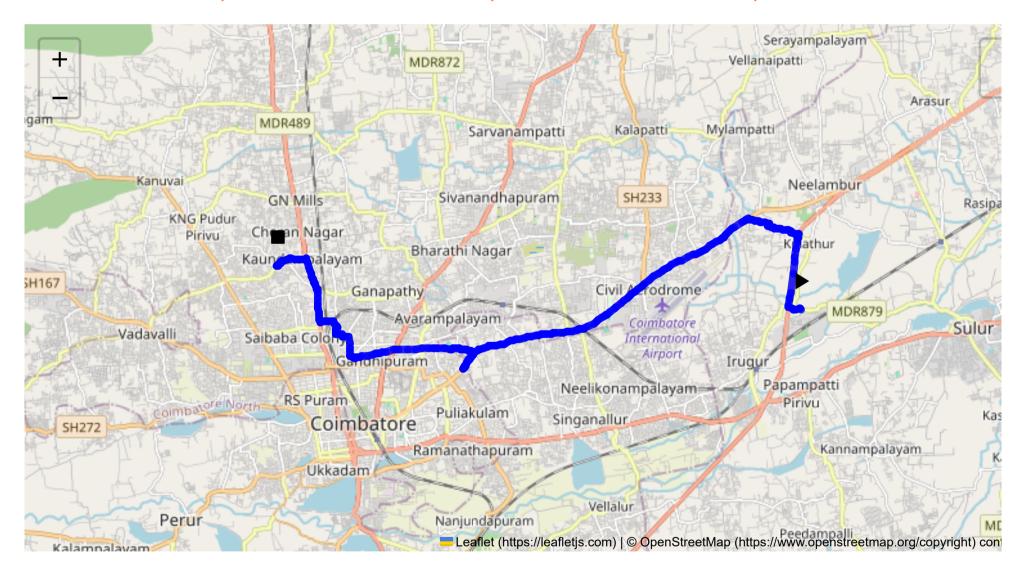
Total Distance: 22.75 km

Estimated Duration: 0.8 hours

Adjusted Duration (Heavy Vehicle): 1.0 hours

Start: (11.0315, 77.0797)

End: (11.042968770201512, 76.93982402324681)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route covers a distance of approximately 22.75 kilometers, starting from Athappagoundenpudur in Coimbatore, traveling via Chinniyampalayam, Teachers Colony, and passing through Sivananda Colony in Tatabad, before reaching the final destination at Anbu Nagar, Veerapandi in Coimbatore. The route

involves navigating through both urban and suburban areas, incorporating state highways and smaller roads typical in city peripheries.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Coimbatore generally experiences a tropical wet and dry climate. The weather is relatively stable, with monsoons between June to August. During this period, heavy rainfall can cause road slickness and minor flooding in low-lying areas. Visibility can be reduced during heavy rain, and roadside waterlogging might be an issue around poorly drained areas.

3. Traffic Patterns

Traffic can be dense, especially during peak hours (8 AM - 10 AM and 5 PM - 7 PM) in urban areas such as Chinniyampalayam and Tatabad due to daily commuters. Congestion-prone areas include junctions in Sivananda Colony and near major intersections in the city. Anticipate slower movement during these times.

4. Assessment of Road Quality and Infrastructure

The road quality varies from well-maintained state highways to narrower city roads with potholes in some urban parts. Infrastructure such as traffic signals and signage is generally in good condition within city limits, although rural sections may lack adequate signage.

5. Suggestions for Alternative Routes for Emergencies

In case of emergency, using the city's ring road or bypass facilities might help avoid traffic congestion. Potential detour routes should be checked closer to departure for updated traffic conditions.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials through Coimbatore is regulated by specific routes designated for trucks. Drivers must adhere to specified timings (usually night hours for heavy vehicles) and loading/unloading zones. It's critical to remain updated with regional transport authorities for current guidelines to prevent infringements.

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

There are occasional reports of accidents involving heavy vehicles around Coimbatore due to driver fatigue and mechanical failures. However, incidents specific to hazardous materials are less common, suggesting reasonable enforcement of safety standards. Historical incident hotspots align with high traffic areas.

8. Environmental Considerations and Sensitive Areas

The route passes through suburban and slightly densely populated urban environments, alongside academic institutions in Tatabad, requiring adherence to environmental noise and emissions regulations. There are no significant natural reserves along this specific path.

9. Analysis of Communication Coverage

Telecommunication coverage is generally reliable along the route, with minor potential dead zones in sparsely populated or infrastructurally underdeveloped areas. Service disruptions are unlikely within urban Coimbatore.

10. Estimated Emergency Response Times

Emergency response times within city limits, notably in Tatabad and Chinniyampalayam, are within 15-20 minutes, owing to nearby police, fire stations, and hospitals. In rural segments, response may be slower, averaging 30 minutes.

12. Overall Summary of Risk Assessment

This route poses moderate risk primarily due to traffic congestion and varying road conditions. The rainy season introduces additional risks related to weather, particularly in less-developed segments prone to waterlogging. Ensuring compliance with hazardous transport regulations, maintaining vehicle standards, adhering to alternate timings, and planning for potential detours are advised for optimal safety.

In conclusion, with proper planning and adherence to safety guidelines, the route is manageable for transporting hazardous materials. Real-time navigation updates and weather monitoring are recommended tools for the driver's safety and efficiency.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	U-Turn	High	11.0161282, 76.9896128	10 KM/Hr
1	U-Turn	High	11.0283074, 76.95130449999999	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	Medium	11.05181, 77.07696	30 KM/Hr
5	Turn	High	11.05222, 77.07690	15 KM/Hr
6	Turn	Medium	11.05343, 77.07106	30 KM/Hr
7	Turn	Medium	11.05351, 77.07099	30 KM/Hr
8	Turn	Medium	11.05411, 77.07097	30 KM/Hr
9	Turn	High	11.05529, 77.06566	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	High	11.01613, 76.98961	15 KM/Hr
11	Blind Spot	Blind Spot	11.01618, 76.98951	10 KM/Hr
12	Turn	High	11.02014, 76.99212	15 KM/Hr
13	Turn	Medium	11.02051, 76.99177	30 KM/Hr
14	Turn	Medium	11.02133, 76.98668	30 KM/Hr
15	Turn	Medium	11.02098, 76.98650	30 KM/Hr
16	Turn	Medium	11.02095, 76.98646	30 KM/Hr
17	Turn	Medium	11.02132, 76.98270	30 KM/Hr
18	Turn	Medium	11.01886, 76.96047	30 KM/Hr
19	Turn	High	11.01891, 76.96036	15 KM/Hr
20	Turn	Medium	11.01890, 76.96035	30 KM/Hr
21	Turn	Medium	11.01889, 76.96029	30 KM/Hr
22	Turn	High	11.01944, 76.95923	15 KM/Hr
23	Turn	High	11.02444, 76.95905	15 KM/Hr
24	Turn	High	11.02446, 76.95713	15 KM/Hr
25	Turn	High	11.02504, 76.95710	15 KM/Hr
26	Turn	Medium	11.02503, 76.95553	30 KM/Hr
27	Turn	Medium	11.02514, 76.95541	30 KM/Hr
28	Turn	High	11.02696, 76.95577	15 KM/Hr
29	Turn	Medium	11.02700, 76.95569	30 KM/Hr
30	Turn	Medium	11.02847, 76.95462	30 KM/Hr
31	Turn	High	11.02838, 76.95130	15 KM/Hr
32	Turn	High	11.02831, 76.95130	15 KM/Hr
33	Turn	High	11.02831, 76.95120	15 KM/Hr
34	Turn	High	11.03863, 76.94972	15 KM/Hr
35	Turn	Medium	11.03865, 76.94966	30 KM/Hr
36	Turn	High	11.04488, 76.94741	15 KM/Hr
37	Turn	Medium	11.04405, 76.94077	30 KM/Hr
38	Turn	High	11.04361, 76.94066	15 KM/Hr
39	Turn	Medium	11.04340, 76.94006	30 KM/Hr
40	Turn	Medium	11.04313, 76.93992	30 KM/Hr
41	Blind Spot	Blind Spot	11.04302, 76.93966	10 KM/Hr
42	Turn	Medium	11.04296, 76.93970	30 KM/Hr
43	Turn	High	11.04294, 76.93976	15 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
5	hospital	Kovai Medical Centre,Coimbatore	11.0426077, 77.0406074	30 km/h	Medium
6	hospital	Lotus Eye Care Hospital Ltd, Coimbatore	11.0406116, 77.0401856	30 km/h	Medium
7	hospital	Park Hospital, Coimbatore	11.0419411, 77.0379131	30 km/h	Medium
13	hospital	St Lukes Hospital, Coimbatore	11.0335424, 77.0376261	30 km/h	Medium
15	hospital	Coimbatore Medical College Hospital	11.0289285, 77.0237553	30 km/h	Medium
17	hospital	Rajah Hospital, Coimbatore	11.0270299, 77.0187333	30 km/h	Medium
18	hospital	Sumith Hospital	11.0261493, 77.0176752	30 km/h	Medium
19	police	Peelamedu E2 Police Station	11.0253639, 77.0101634	30 km/h	Medium
25	hospital	Hindusthan Hospital, Coimbatore	11.019682, 76.9947731	30 km/h	Medium
26	hospital	Sri Ramakrishna Dental Hospital	11.0212988, 76.9883526	30 km/h	Medium
32	hospital	Sri Ramakrishna Hospital, Coimbatore	11.0231203, 76.9776419	30 km/h	Medium
33	hospital	Sri Ramakrishna Hospital	11.0236015, 76.976512	30 km/h	Medium
35	clinic	Shark Clinic	11.0188961, 76.9744842	30 km/h	Medium
36	hospital	Ramakrishna Hospital	11.0207084, 76.972413	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
37	hospital	Ellen Multispeciality Hospital	11.0213634, 76.9708723	30 km/h	Medium
38	hospital	GP Hospital	11.0201233, 76.9710726	30 km/h	Medium
39	pharmacy	Chinnaiah Medicals	11.0207714, 76.9688485	30 km/h	Medium
40	hospital	Becker Manual Hospital	11.020659, 76.968611	30 km/h	Medium
41	pharmacy	Pasumai Pharmacy	11.0203554, 76.966338	30 km/h	Medium
42	clinic	C.S.R. Nursing Home, Coimbatore	11.0209812, 76.9661131	30 km/h	Medium
43	hospital	Jeevan Clinic and Hospital, Coimbatore	11.019947, 76.9670891	30 km/h	Medium
44	hospital	Nithya Hospital	11.0210366, 76.9665217	30 km/h	Medium
48	clinic	Aiswarya Clinic	11.0228593, 76.9656034	30 km/h	Medium
49	hospital	Preethi Medical Centre	11.0208486, 76.9649585	30 km/h	Medium
50	hospital	City Hospital	11.0193391, 76.9635166	30 km/h	Medium
51	hospital	Bethel Hospital	11.0190021, 76.962084	30 km/h	Medium
52	hospital	Bethel Hospital Pvt. Ltd Coimbatore	11.0187223, 76.9612328	30 km/h	Medium
53	hospital	The Balakrishnan Hospital	11.0190567, 76.9625585	30 km/h	Medium
54	hospital	Lalitha Hospital	11.0174139, 76.9617565	30 km/h	Medium
55	hospital	Roselet Medical ObgandSurgical Centre	11.0177943, 76.9612482	30 km/h	Medium
56	pharmacy	Apollo	11.0187962, 76.9603231	30 km/h	Medium
57	hospital	Kongunad Hospital, Coimbatore	11.018058, 76.9604883	30 km/h	Medium
58	hospital	Sheela Clinic	11.01843, 76.9604642	30 km/h	Medium
59	pharmacy	arya vaidhya salai	11.0193537, 76.9603411	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
60	hospital	Sengottaiah Hospital, Coimbatore	11.0225148, 76.9601579	30 km/h	Medium
61	hospital	Sathya Medical Centre & Hospital	11.0238937, 76.9582121	30 km/h	Medium
62	hospital	Eye Trust Hospital	11.0242987, 76.9582327	30 km/h	Medium
63	hospital	Ganga Hospital	11.026129, 76.9524873	30 km/h	Medium
67	police	C-3 Saibaba Colony Police Station	11.0266348, 76.9515967	30 km/h	Medium
70	hospital	Dr.Sengaliappan Nursing Home, Coimbatore	11.0272375, 76.9501348	30 km/h	Medium
71	hospital	KTVR Group Hospital	11.026167, 76.9499384	30 km/h	Medium
73	clinic	Akshaya Clinic	11.0271033, 76.9496102	30 km/h	Medium
74	hospital	Onecare Ortho Hospital	11.026568, 76.948798	30 km/h	Medium
75	clinic	Shree Kanna Clinic	11.026359, 76.948803	30 km/h	Medium
77	hospital	Womens Medical Centre, Coimbatore	11.0337824, 76.9517175	30 km/h	Medium
78	hospital	Dr. BRJ Ortho Centre	11.0340354, 76.9512209	30 km/h	Medium
79	hospital	H. S. Hospital	11.0418035, 76.9477855	30 km/h	Medium
80	hospital	Krithika Hospital , Tiruppur	11.0424742, 76.9476856	30 km/h	Medium
81	hospital	Padmavathy Hospital	11.0427427, 76.9477212	30 km/h	Medium
82	hospital	Malar Hpl Goundanpalayam	11.0437293, 76.9475494	30 km/h	Medium
83	fire_station	Tamilnadu fire and rescue services	11.0440949, 76.9485156	30 km/h	Medium
84	hospital	Kalpana Medical Centre	11.0469835, 76.9476787	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_leve
2	school	Government school	11.0554435, 77.0653927	30 km/h	Medium
4	school	Sri Vivekananda Matriculation Higher Secondary School	11.054695, 77.0572126	30 km/h	Medium
8	school	Park Global School	11.0424178, 77.038601	30 km/h	Medium
9	traffic_signals	SITRA Junction	11.0380037, 77.0374143	30 km/h	Medium
10	college	South India Textile Research Association - SITRA	11.0396478, 77.0355493	30 km/h	Medium
11	college	PSG College of Arts and Science	11.0328471, 77.034909	30 km/h	Medium
12	school	RAK's Pallikoodam	11.0381253, 77.0329064	30 km/h	Medium
14	college	Government Polytechnic	11.0300874, 77.0308517	30 km/h	Medium
16	traffic_signals	Hope College Signal	11.0263851, 77.0208783	30 km/h	Medium
20	school	Sardar Vallabhbhai Patel International School of Textiles & Management	11.0253598, 77.0082319	30 km/h	Medium
21	college	PSG College of Technology	11.024807, 77.0029194	30 km/h	Medium
22	school	PSG Sarva Jana Higher Secondary School	11.0227214, 77.0040432	30 km/h	Medium
23	college	PSG Institute of Management	11.0228112, 77.0030943	30 km/h	Medium
24	college	PSG Grounds	11.0203887, 77.0047109	30 km/h	Medium
27	college	Sri Ramakrishna Dental College	11.0213038, 76.9883559	30 km/h	Medium
28	college	SNR College of Arts and Science	11.0219743, 76.9877109	30 km/h	Medium
29	college	Sri Ramakrishna College of Arts & Science	11.022171, 76.98703	30 km/h	Medium
30	school	Sri Ramakrishna Matric Higher Secondary School	11.023175, 76.9847233	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
31	college	Sri Ramakrishna Arts and Science College for Womens	11.0223964, 76.9780502	30 km/h	Medium
34	school	P.R.Sidha Naidu Memorial Matriculation School	11.0221084, 76.9765552	30 km/h	Medium
45	school	St. Mary's Primary School	11.0218649, 76.9672728	30 km/h	Medium
46	school	St. Mar's High School	11.0221987, 76.9674321	30 km/h	Medium
47	school	Brindisi Matric. Ir. Sec. School	11.0226114, 76.9672831	30 km/h	Medium
64	marketplace	Saibaba Colony Vegetable Market	11.0261428, 76.951784	30 km/h	Medium
65	traffic_signals	Saibaba Temple Signal	11.0269678, 76.9512074	30 km/h	Medium
66	traffic_signals	Saibaba Temple Signal	11.0269695, 76.9513556	30 km/h	Medium
68	marketplace	M.G.R.Wholesale Market	11.0304613, 76.9497095	30 km/h	Medium
69	school	Amrit Special needs school	11.0298208, 76.9503161	30 km/h	Medium
72	school	Ramalingam Primary School	11.0256049, 76.9510321	30 km/h	Medium

Route Photos of Risky Spots



Risk Level: High
Speed Limit: 10 KM/Hr

Coordinates: 11.0161282, 76.9896128



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

Coordinates: 11.0283074, 76.95130449999999



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

Coordinates: 11.03211, 77.07640



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

Coordinates: 11.05129, 77.07919



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.05181, 77.07696



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.05222, 77.07690



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: 11.01613, 76.98961



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.01618, 76.98951



Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.02014, 76.99212



Coordinates: 11.02051, 76.99177



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

Coordinates: 11.02133, 76.98668



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

Coordinates: 11.02098, 76.98650



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.02095, 76.98646



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.02132, 76.98270



Coordinates: 11.01886, 76.96047



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

Coordinates: 11.01891, 76.96036



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.01890, 76.96035



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.01889, 76.96029



Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.01944, 76.95923



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

Coordinates: 11.02444, 76.95905



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

Coordinates: 11.02504, 76.95710



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

Coordinates: 11.02503, 76.95553



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.02514, 76.95541



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

Coordinates: 11.02696, 76.95577



Coordinates: 11.02700, 76.95569



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.02847, 76.95462



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

Coordinates: 11.02838, 76.95130



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.02831, 76.95130



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.02831, 76.95120



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

Coordinates: 11.03863, 76.94972



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.03865, 76.94966



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.04488, 76.94741



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.04405, 76.94077



Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.04361, 76.94066



Coordinates: 11.04340, 76.94006



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.04313, 76.93992



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

Coordinates: 11.04302, 76.93966



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.04296, 76.93970



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

Coordinates: 11.04294, 76.93976