



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to A D OILS & LUBRICANTS

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

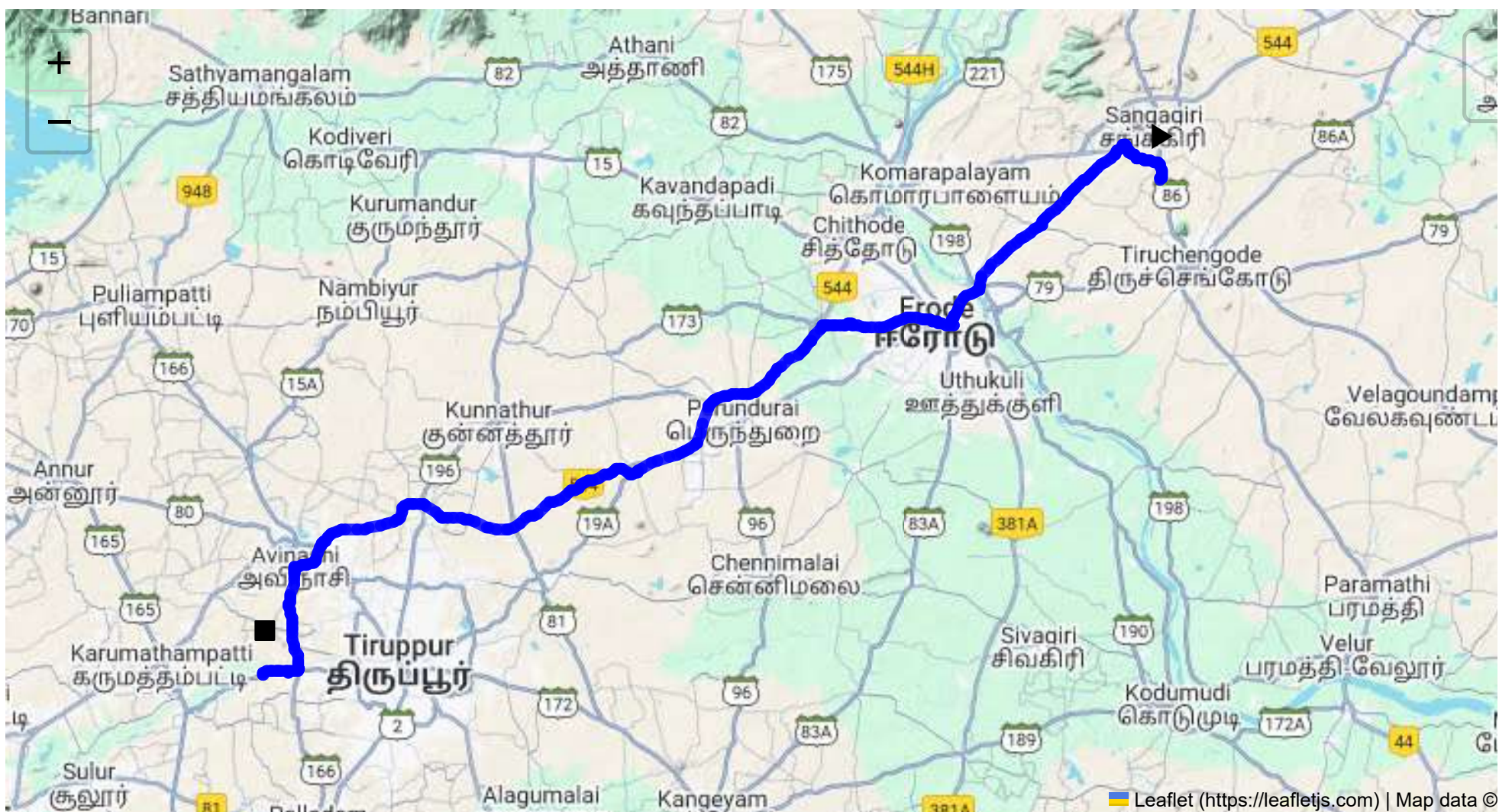
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 95.68 km
Estimated Duration: 2.1 hours
Adjusted Duration (Heavy Vehicle): 2.6 hours
Start: (11.4381, 77.8734)
End: (11.09929, 77.245613)



Welcome to the Journey Risk Management Study

Route Analysis Report

1. Overview of the Route Map

This route begins in Sangagiri, Tamil Nadu, and travels through Attur - Rasipuram - Erode Road and Nasiyanur Road, eventually leading to Semmandampalayam. It covers approximately 95.68 kilometers

and typically takes about 2.09 hours for heavy vehicles transporting hazardous materials. The path features a mix of rural and urban areas, traversing small towns and villages with a varied landscape.

2. Typical Weather Conditions

The region experiences a tropical climate:

- **Summer (March to June):** High temperatures (up to 40°C), risk of overheating vehicles.
- **Monsoon (July to September):** Heavy rainfall, increasing the risk of road flooding and reduced visibility.
- **Winter (November to February):** Mild and pleasant but fog can occur, potentially impairing visibility.

3. Traffic Patterns

- **Peak Hours:** Typically between 8-10 AM and 5-8 PM, especially in urban sections like Erode.
- **Congestion Zones:** Near Rasipuram and Erode, these areas can experience significant slowdowns.

4. Road Quality and Infrastructure

- **Main Highways:** Generally in good condition but may have sections undergoing maintenance.
- **Rural Roads:** May exhibit potholes and uneven surfaces, requiring cautious driving, especially in rain.

5. Alternative Routes for Emergencies

- Consider using NH44 for bypassing congestion near Erode, although it might lengthen the travel time slightly.
- SH15 provides north-south alternatives if the route between Attur and Erode is obstructed.

6. Local Regulations

Transport of hazardous materials requires permits from local authorities. Speed restrictions and designated travel windows may apply, especially in densely populated areas.

7. Historical Incidents

- Over the past five years, a few incidents involving overturned vehicles have occurred, primarily due to inadequate speed management and poor weather conditions.
- Hazardous material-related incidents have been minimal but underscore the importance of rigorous safety practices.

8. Environmental Considerations

Sensitive ecological zones, such as near river crossings, require care to avoid spills. Erode is known for its textile industry, with certain pollution controls in effect that might impact transport operations.

9. Communication Coverage

- Good coverage along major highways; however, certain rural stretches may experience signal drops.
- Ensure satellite communication systems are operational as a backup.

10. Emergency Response Times

- **Rural Areas:** 30-40 minutes, improvements needed.
- **Urban Areas like Erode:** 15-25 minutes due to better infrastructure and proximity to emergency services.

11. Overall Summary of Risk Assessment

This route features standard risks associated with rural-frontier roadways, including variable weather and congestion in urban areas. Regular updates on weather conditions and traffic, driver training on emergency protocols, and maintaining communication readiness enhance safety. Overall, vigilance is key, particularly during adverse weather or peak hours.

Recommendations:

- Regularly monitor weather updates.
- Avoid peak traffic hours when possible.
- Ensure consistent communication and emergency protocol training.
- Plan regular vehicle maintenance, focusing on brakes and tires for rough road segments.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.37086, 77.74828	15 KM/Hr
1	Roundabout	High	11.17250, 77.26863	15 KM/Hr
2	Roundabout	High	11.10249, 77.27146	15 KM/Hr
3	Turn	High	11.43968, 77.87345	15 KM/Hr
4	Turn	High	11.44024, 77.87528	15 KM/Hr
5	Turn	High	11.44898, 77.87410	15 KM/Hr
6	Turn	High	11.45352, 77.85698	15 KM/Hr
7	Turn	Medium	11.45847, 77.85140	30 KM/Hr
8	Turn	Medium	11.45898, 77.85135	30 KM/Hr
9	Turn	Medium	11.46303, 77.84945	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	High	11.46314, 77.84928	15 KM/Hr
11	Turn	Medium	11.46302, 77.84874	30 KM/Hr
12	Turn	Medium	11.36498, 77.74811	30 KM/Hr
13	Turn	Medium	11.35874, 77.73842	30 KM/Hr
14	Turn	Medium	11.34219, 77.72834	30 KM/Hr
15	Blind Spot	Blind Spot	11.33920, 77.72902	10 KM/Hr
16	Blind Spot	Blind Spot	11.34079, 77.71710	10 KM/Hr
17	Blind Spot	Blind Spot	11.34097, 77.71715	10 KM/Hr
18	Turn	Medium	11.34408, 77.69645	30 KM/Hr
19	Turn	Medium	11.33811, 77.64953	30 KM/Hr
20	Turn	High	11.33900, 77.64123	15 KM/Hr
21	Turn	High	11.33828, 77.63811	15 KM/Hr
22	Turn	High	11.32831, 77.62967	15 KM/Hr
23	Turn	High	11.32838, 77.62939	15 KM/Hr
24	Turn	Medium	11.16867, 77.26760	30 KM/Hr
25	Turn	Medium	11.14597, 77.26362	30 KM/Hr
26	Turn	Medium	11.13833, 77.26638	30 KM/Hr
27	Turn	Medium	11.10901, 77.27135	30 KM/Hr
28	Turn	Medium	11.10647, 77.27039	30 KM/Hr
29	Turn	High	11.10187, 77.26520	15 KM/Hr
30	Turn	High	11.10086, 77.26444	15 KM/Hr
31	Turn	Medium	11.10143, 77.25611	30 KM/Hr
32	Turn	Medium	11.10193, 77.25226	30 KM/Hr
33	Turn	Medium	11.10138, 77.24891	30 KM/Hr
34	Turn	High	11.09954, 77.24571	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
1	pharmacy	Pharmacy	11.3652161, 77.7486375	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
2	hospital	Visaalam Hospitals	11.3651528, 77.747808	30 km/h	Medium
3	hospital	Cheran Hospital	11.3680302, 77.7481976	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	V K Hospital	11.3513792, 77.7313976	30 km/h	Medium
11	hospital	Senthil Prakash Hospital	11.352639, 77.732267	30 km/h	Medium
12	hospital	Dhanvantri Critical Care Center	11.3504266, 77.7311274	30 km/h	Medium
13	hospital	Kumudha Hospital	11.3467172, 77.7306797	30 km/h	Medium
14	hospital	Dhanvantri Critical Care Centre	11.35099, 77.730508	30 km/h	Medium
15	hospital	Indrajith Yoga Nature Cure Hospital	11.3499973, 77.732974	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

	type	name	coordinates	speed_limit	risk_level
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	Abisek Medical Centre	11.3415975, 77.7191789	30 km/h	Medium
29	clinic	Janet Nursing Home	11.3396455, 77.7203698	30 km/h	Medium
30	hospital	Sri Vijaya Hitech Hospital	11.3400011, 77.7192251	30 km/h	Medium
31	hospital	Dr. Pondiperumal Hospital	11.3390924, 77.7205408	30 km/h	Medium
32	hospital	Shri Vijaiah Trauma Care Hospital	11.3418935, 77.7193036	30 km/h	Medium
33	hospital	Guhan ENT Hospital	11.339489, 77.721001	30 km/h	Medium
35	hospital	Dr. Agarwal's Eye Hospital Ltd. - Erode	11.3421842, 77.7173066	30 km/h	Medium
36	hospital	Universal Hospital	11.3411046, 77.7185217	30 km/h	Medium
37	hospital	Erode Kidney's Centre	11.3383801, 77.7164201	30 km/h	Medium
38	hospital	Duraisamy Hospital	11.3391625, 77.7187054	30 km/h	Medium
39	hospital	Srimathi Murugeshan Hospital	11.3389205, 77.7187791	30 km/h	Medium
40	hospital	Devi Hospital	11.34116, 77.718307	30 km/h	Medium
41	hospital	KMCH Speciality Hospital	11.33911, 77.716284	30 km/h	Medium
42	hospital	SCS Hospital And Urology Clinic	11.3410253, 77.718043	30 km/h	Medium
43	hospital	Anusha Hospital	11.3397168, 77.7166805	30 km/h	Medium
44	clinic	Vanalika Homoeo Centre	11.341349, 77.717987	30 km/h	Medium
45	hospital	Suriya Hospital	11.340248, 77.7186452	30 km/h	Medium
46	clinic	Skin Care Clinic	11.3409042, 77.7178413	30 km/h	Medium
47	hospital	Care Hospital	11.338443, 77.716511	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
48	hospital	Abitha Eye Hospital	11.34021, 77.7187589	30 km/h	Medium
49	hospital	Ortho Life Hospital	11.3395729, 77.7167329	30 km/h	Medium
50	clinic	Sathyavathi Ramalingam Clinic	11.3380366, 77.7166875	30 km/h	Medium
51	hospital	SRC Hospital	11.3413999, 77.7177834	30 km/h	Medium
52	hospital	Nalan Hospital	11.3399703, 77.716773	30 km/h	Medium
53	hospital	Surya Hospital	11.3400026, 77.7190977	30 km/h	Medium
54	clinic	Dr. Chandran Skin Laser Centre	11.3413527, 77.7174891	30 km/h	Medium
55	hospital	Sri Hari Hospital	11.338357, 77.7164204	30 km/h	Medium
56	hospital	District Hospital, Eroda	11.3393048, 77.717926	30 km/h	Medium
57	hospital	L.V.S. Eye Hospital	11.3385839, 77.7156597	30 km/h	Medium
58	hospital	Annai Ent and Head and Neck Care Center	11.3387785, 77.7149034	30 km/h	Medium
59	hospital	Shri Preethe Hospital	11.3385944, 77.7157979	30 km/h	Medium
60	hospital	Dr Nsk Hospital	11.3381737, 77.7153821	30 km/h	Medium
61	hospital	Keran Hospital	11.3400456, 77.7154808	30 km/h	Medium
62	hospital	Gem Hospital	11.338106, 77.7155077	30 km/h	Medium
63	clinic	Madhu Surgical Clinic	11.3386602, 77.7143441	30 km/h	Medium
64	pharmacy	Tava Drug Mart	11.3436578, 77.7182673	30 km/h	Medium
65	clinic	RB Kids Clinic	11.339221, 77.713915	30 km/h	Medium
66	hospital	Senthil Multispeciality Hospital	11.338983, 77.7138529	30 km/h	Medium
67	hospital	Erode Trust Hospital	11.3399422, 77.7134188	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
68	hospital	Sri Athi Sathya Hospital	11.3392651, 77.7126583	30 km/h	Medium
69	hospital	Arc Fertility Hospital	11.3397231, 77.7130655	30 km/h	Medium
70	clinic	Erode Women and Children Clinic	11.3420279, 77.7116815	30 km/h	Medium
71	hospital	Vanjee Multispeciality Dental Centre	11.3418385, 77.7132218	30 km/h	Medium
72	hospital	Arun Hospital	11.3447248, 77.7138215	30 km/h	Medium
73	hospital	Ranm Malathy Vijayakumar Hospital	11.3413334, 77.708922	30 km/h	Medium
75	hospital	K.G. Baby Hospital	11.343848, 77.699081	30 km/h	Medium
76	hospital	Veena Hospital	11.3367614, 77.6366566	30 km/h	Medium
78	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
80	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
81	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
82	clinic	P.M. Clinic	11.2281078, 77.4647296	30 km/h	Medium
84	hospital	Sri Renu Hospital	11.1990225, 77.4219937	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
16	school	Municipality Girls Higher secondary school	11.3495618, 77.7325011	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
23	school	E.V.R. Govt Girls Hr. Sec School	11.3371265, 77.7266283	30 km/h	Medium
34	school	Sengunthar matriculation School	11.3407075, 77.7195086	30 km/h	Medium
74	school	Nandha Central City School (City Campus)	11.3409392, 77.7047156	30 km/h	Medium
77	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium
79	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
83	marketplace	Weekly Market (sandhai)	11.2287229, 77.4646676	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: 11.17250, 77.26863



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.10249, 77.27146



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: 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: High

Speed Limit: 15 KM/Hr

Coordinates: 11.46314, 77.84928



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46302, 77.84874



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.36498, 77.74811



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.35874, 77.73842



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34219, 77.72834



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.33920, 77.72902



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.34079, 77.71710



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.34097, 77.71715



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34408, 77.69645



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33811, 77.64953



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.33900, 77.64123



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.33828, 77.63811



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.32831, 77.62967



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.32838, 77.62939



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16867, 77.26760



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.14597, 77.26362



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.13833, 77.26638



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10901, 77.27135



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10647, 77.27039



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.10187, 77.26520



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.10086, 77.26444



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10143, 77.25611



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10193, 77.25226



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.10138, 77.24891



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.09954, 77.24571
