



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SRI BALAJI 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

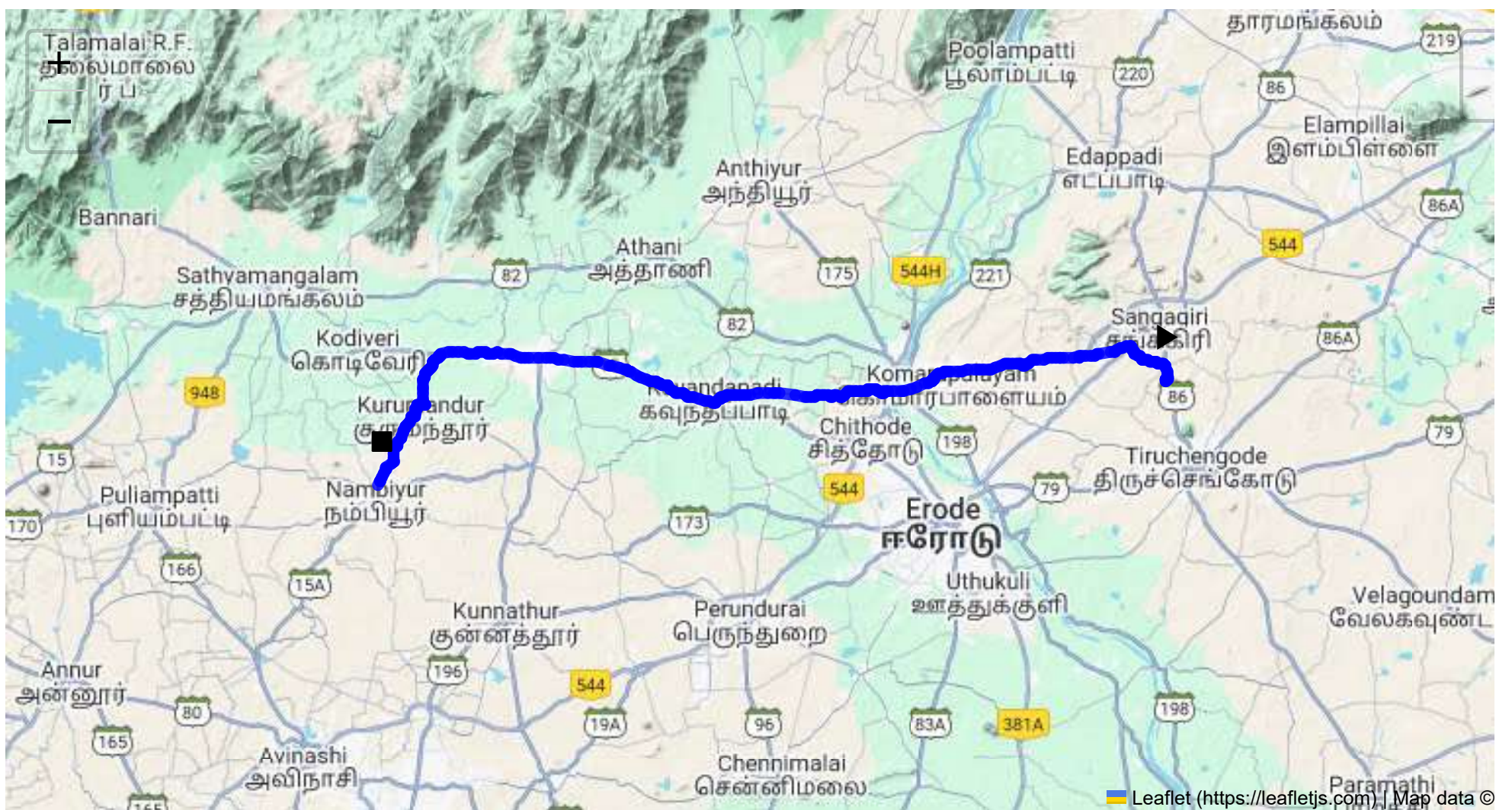
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 72.03 km
Estimated Duration: 1.6 hours
Adjusted Duration (Heavy Vehicle): 1.9 hours
Start: (11.4381, 77.8734)
End: (11.367616, 77.322557)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route covers approximately 72.03 kilometers starting from Sangagiri, passing through Bhavani, and ending at Nambiyur via Gobichettipalayam-Avinashi Road. It follows primarily local roads and state highways, requiring navigation through small towns and rural landscapes. The expected travel time for

heavy vehicles, particularly those carrying hazardous materials, is around 1 hour and 56 minutes under normal conditions.

2. Typical Weather Conditions and Potential Weather-related Hazards

The region generally experiences a tropical climate with hot summers and mild winters. During the monsoon season (June to September), heavy rainfall can occur, potentially leading to flooding and causing slippery roads that pose hazards for driving. The post-monsoon period may also see occasional storms.

3. Analysis of Traffic Patterns

- **Peak Hours:** Morning (8:00 AM - 10:00 AM) and evening (5:00 PM - 7:00 PM) hours may witness increased traffic due to daily commuting patterns.
- **Congestion-prone Areas:**
 - Bhavani junction can experience congestion due to market activities and local traffic.
 - Sangagiri and Gobichettipalayam town centers may witness slow-moving traffic during peak hours.

4. Assessment of Road Quality and Infrastructure

- **Road Conditions:** Mixed road quality is present across the route with some stretches of well-paved highways and others with potholes or uneven surfaces, especially on rural roads.
- **Infrastructure:** Bridges and culverts should be approached with caution during rainfall due to possible waterlogging.

5. Suggestions for Alternative Routes for Emergencies

- **Primary Alternative:** Access through Gobichettipalayam – Bhavani Road, by-passing heavily congested areas in Bhavani.
- **Secondary Alternative:** Using NH544 (Salem-Kochi Highway) as a bypass for longer stretches if significant incidents block local routes.

6. Summary of Local Regulations Affecting Hazardous Material Transport

The transport of hazardous materials is regulated with restrictions on vehicle types and times allowed through certain populated areas. Permits are often required, and specific parking zones are designated for breaks.

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

Historical data indicates occasional accidents mostly related to vehicle overturning due to sharp turns in rural areas or brake failures. Some incidents have involved spillage of non-hazardous cargo leading to road blocks.

8. Environmental Considerations and Sensitive Areas

Sensitive ecological areas around Bhavani river require strict adherence to transport guidelines to prevent contamination. Adequate precautions should be taken to protect local wildlife and farmland from hazardous material exposure.

9. Analysis of Communication Coverage

Cellular coverage is generally good in urban areas such as Sangagiri and Bhavani. Expect potential dead zones in rural stretches between Bhavani and Nambiyur; planning for alternative communication methods, such as radio, is advisable.

10. Estimated Emergency Response Times

Emergency response in urban areas like Bhavani is relatively swift, averaging 15-30 minutes. Rural sections can expect longer response times, potentially exceeding 45 minutes to 1 hour.

11. Overall Summary of Risk Assessment

While the route is generally manageable for heavy vehicles, specific challenges include variable road conditions, potential congestion, and weather-related risks. Hazardous material transport requires strict adherence to local regulations and proactive communication and contingency planning to ensure safety throughout the route. Enhanced training on handling adverse conditions and emergency response for drivers can mitigate potential risks associated with this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.45748, 77.36608	15 KM/Hr
1	Turn	Medium	11.43822, 77.87348	30 KM/Hr
2	Turn	High	11.43968, 77.87345	15 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	High	11.44898, 77.87410	15 KM/Hr
5	Turn	Medium	11.45357, 77.85789	30 KM/Hr
6	Turn	High	11.45352, 77.85698	15 KM/Hr
7	Turn	Medium	11.45847, 77.85140	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
8	Turn	Medium	11.46303, 77.84945	30 KM/Hr
9	Turn	Medium	11.46314, 77.84928	30 KM/Hr
10	Turn	Medium	11.45509, 77.81383	30 KM/Hr
11	Turn	High	11.43001, 77.67575	15 KM/Hr
12	Turn	Medium	11.43003, 77.67551	30 KM/Hr
13	Turn	High	11.43026, 77.67525	15 KM/Hr
14	Blind Spot	Blind Spot	11.43073, 77.67536	10 KM/Hr
15	Turn	Medium	11.43273, 77.67018	30 KM/Hr
16	Turn	Medium	11.43268, 77.66999	30 KM/Hr
17	Turn	Medium	11.43342, 77.66685	30 KM/Hr
18	Turn	Medium	11.43239, 77.66578	30 KM/Hr
19	Turn	Medium	11.43222, 77.65329	30 KM/Hr
20	Turn	Medium	11.42904, 77.57122	30 KM/Hr
21	Turn	Medium	11.42838, 77.56943	30 KM/Hr
22	Turn	Medium	11.42828, 77.56554	30 KM/Hr
23	Turn	Medium	11.42704, 77.56397	30 KM/Hr
24	Turn	High	11.42337, 77.55804	15 KM/Hr
25	Turn	Medium	11.42335, 77.55788	30 KM/Hr
26	Turn	Medium	11.45455, 77.36410	30 KM/Hr
27	Turn	Medium	11.44806, 77.35920	30 KM/Hr
28	Blind Spot	Blind Spot	11.42167, 77.35439	10 KM/Hr
29	Turn	High	11.42170, 77.34886	15 KM/Hr
30	Turn	High	11.41387, 77.34712	15 KM/Hr
31	Turn	Medium	11.41348, 77.34573	30 KM/Hr
32	Turn	Medium	11.38274, 77.33233	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

	type	name	coordinates	speed_limit	risk_level
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
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	Dr. Rathinasamy Hospital	11.457562, 77.4327752	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
28	hospital	Gobi Neuro Mind Care	11.4548344, 77.434649	30 km/h	Medium
29	hospital	Hariharan Hospital	11.4523578, 77.4299287	30 km/h	Medium
30	hospital	Vasanth Hospital	11.4526864, 77.4292173	30 km/h	Medium
31	clinic	Jeeva Nursing Home	11.4533031, 77.4294145	30 km/h	Medium
32	hospital	Sathya Hospital	11.4561856, 77.4298694	30 km/h	Medium
33	hospital	S K Hospital	11.4540106, 77.430108	30 km/h	Medium
34	hospital	Sivakami Hospital	11.4531846, 77.4299288	30 km/h	Medium
35	clinic	Sri Sudha Physiotherapy Clinic	11.4559915, 77.4300217	30 km/h	Medium
36	hospital	Best Hospital	11.4543558, 77.4263617	30 km/h	Medium
37	clinic	Anand Nursing Home	11.4553169, 77.4296248	30 km/h	Medium
38	clinic	Kanmani Child Care Clinic	11.4545273, 77.428668	30 km/h	Medium
39	hospital	Rajasekaran Hospital	11.454463, 77.4262	30 km/h	Medium
40	hospital	Samuel Hospital	11.4542555, 77.4271194	30 km/h	Medium
41	hospital	Sivasakthi Hospital	11.4544711, 77.4297229	30 km/h	Medium
42	hospital	SS Children's Hospital	11.4555386, 77.4296357	30 km/h	Medium
43	clinic	Sri Dhanvantari Siddha Clinic	11.4561216, 77.4295797	30 km/h	Medium
44	hospital	Neha Hospital	11.4560138, 77.4270219	30 km/h	Medium
45	hospital	M.S Children's Hospital	11.4556012, 77.4301006	30 km/h	Medium
46	hospital	Gobi Diabetic Hospital	11.455394, 77.4301181	30 km/h	Medium
47	clinic	Dr. Ramesh Babu Clinic	11.4560871, 77.4296353	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
48	hospital	Sankareswari Eye Hospital	11.4572997, 77.428765	30 km/h	Medium
49	hospital	Arun Hospital	11.4548852, 77.4250314	30 km/h	Medium
52	hospital	Government Hospital	11.4565126, 77.4288768	30 km/h	Medium
53	hospital	Sri Chakra Hospital	11.4544464, 77.4228363	30 km/h	Medium
54	hospital	U M Hospital	11.4544151, 77.4240386	30 km/h	Medium
55	hospital	Dr. Gopal Hospital	11.455258, 77.422901	30 km/h	Medium
56	clinic	VG Ortho Centre	11.4550504, 77.4225102	30 km/h	Medium
57	clinic	Palaniappa Clinic	11.4555925, 77.4202828	30 km/h	Medium
58	hospital	Abi SK Hospital	11.457163, 77.412487	30 km/h	Medium
59	clinic	Nalam Vazh S.K Siddha and Varma Clinic	11.457576, 77.412164	30 km/h	Medium
61	clinic	Sai Sri Kumaran Clinic	11.4474062, 77.3585448	30 km/h	Medium
62	hospital	Government Hospital	11.3713664, 77.3234618	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
50	school	Diamond Jubilee Higher Secondary School	11.4529541, 77.4280306	30 km/h	Medium
51	school	CKK Palaniammal School	11.4569211, 77.4276828	30 km/h	Medium
60	school	Saratha Techno School	11.4544819, 77.379986	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.45748, 77.36608



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44029, 77.87544



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: 11.46303, 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: Medium
Speed Limit: 30 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: 11.45455, 77.36410



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44806, 77.35920



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.42167, 77.35439



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.42170, 77.34886



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.41387, 77.34712



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.41348, 77.34573



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.38274, 77.33233
