



## **JOURNEY RISK MANAGEMENT (JRM) STUDY**

### **Salem Terminal To SRI BANNARIAMMAN ENTERPRISES**

#### **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.

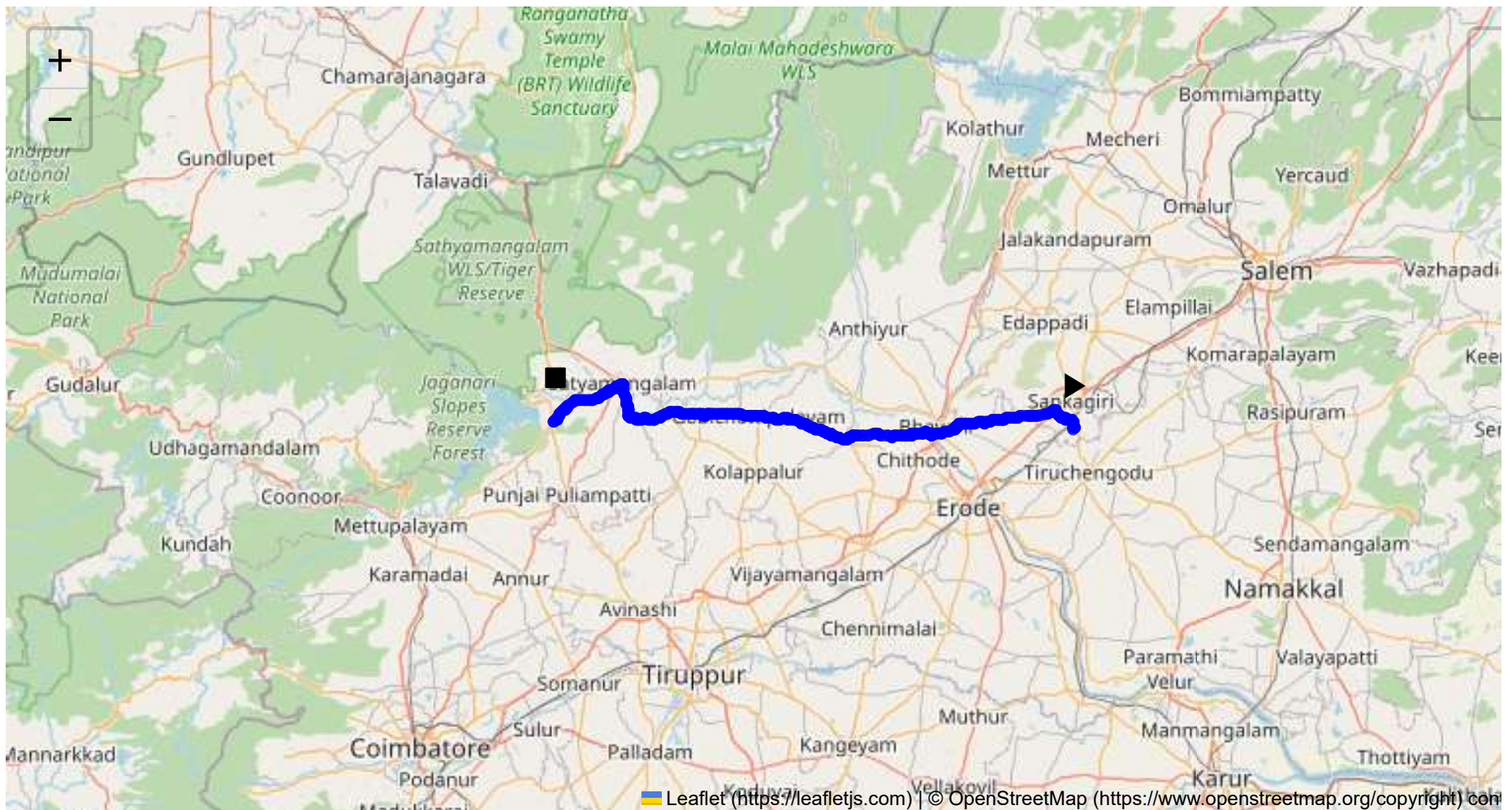
## Compliance with Government Directives

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: 91.33 km**  
**Estimated Duration: 2.0 hours**  
**Adjusted Duration (Heavy Vehicle): 2.5 hours**  
**Start: (11.4381, 77.8734)**  
**End: (11.447119, 77.149139)**



## Welcome to the Journey Risk Management Study

- Overview of the Route Map:** The route spans approximately 91.33 kilometers, starting from Sangagiri and ending in Nalroad. It passes through SH 79A, Periyapuliyur, Kavindapadi, and Sathyamangalam. The journey mainly follows state highways and rural roads.
- Typical Weather Conditions and Potential Weather-Related Hazards:** Tamil Nadu experiences a tropical climate with hot summers, monsoon rains, and mild winters. Monsoon season, typically from June to September, can cause heavy rainfall leading to slippery roads and flooding. Fog and mist might occur during early mornings in winter months, affecting visibility.
- Traffic Patterns:** Major congestion is observed during morning (8 AM - 10 AM) and evening (5 PM - 7 PM) peak hours, especially near urban centers and junctions like Sathyamangalam. Agricultural machinery and local traffic can also slow down movement, particularly on rural roads.
- Assessment of Road Quality and Infrastructure:** The road quality varies across the route. While the state highways generally maintain a decent surface, some rural sections may have potholes and uneven terrain. Infrastructure such as bridges and culverts are in place but may require caution during heavy rains.
- Suggestions for Alternative Routes for Emergencies:** In case of roadblocks or adverse conditions, consider taking the NH 544 (Salem - Coimbatore Highway) as an alternative route, though it may increase travel time.

6. **Local Regulations Affecting Hazardous Material Transport:** Transport of hazardous materials in Tamil Nadu is regulated, including restrictions on timing (no transport during school commuting hours) and mandatory permits. Adherence to safety protocols, signage, and vehicle labeling is required.
7. **Historical Incidents:** While not frequent, there have been occasional incidents involving overturned vehicles and materials spills, particularly on the winding roads near Sathyamangalam due to driver error and inadequate vehicle maintenance.
8. **Environmental Considerations and Sensitive Areas:** The route passes through agricultural regions and may intersect with wildlife corridors near Sathyamangalam. Drivers should be mindful of protected species and avoid littering.
9. **Communication Coverage:** Generally good mobile coverage along major parts of highways, but potential dead zones exist in rural stretches and forested areas near Sathyamangalam.
10. **Estimated Emergency Response Times:** Emergency services can take up to 45 minutes in rural stretches, while urban areas generally see response times within 20 minutes. It's important to note the location of nearby hospitals and emergency centers.
11. **Overall Summary of Risk Assessment:** Overall, the route through Tamil Nadu poses moderate risks. Weather conditions, particularly during monsoons, and traffic congestion are primary concerns. Proper planning, adherence to regulations, and awareness of environmental sensitivities are crucial for safe transport. Pre-trip vehicle inspections and maintaining communication with dispatch should be emphasized to mitigate risks.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.49613, 77.23785	15 KM/Hr
1	Turn	High	11.43961, 77.87341	15 KM/Hr
2	Turn	High	11.44029, 77.87544	15 KM/Hr
3	Turn	High	11.44893, 77.87413	15 KM/Hr
4	Turn	Medium	11.45127, 77.86734	30 KM/Hr
5	Turn	High	11.45350, 77.85700	15 KM/Hr
6	Turn	Medium	11.45845, 77.85141	30 KM/Hr
7	Turn	Medium	11.45889, 77.85136	30 KM/Hr
8	Turn	High	11.46303, 77.84945	15 KM/Hr
9	Turn	Medium	11.46317, 77.84906	30 KM/Hr
10	Turn	Medium	11.43175, 77.67757	30 KM/Hr
11	Turn	High	11.43000, 77.67564	15 KM/Hr
12	Turn	Medium	11.43009, 77.67540	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
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	11.43346, 77.66700	30 KM/Hr
16	Turn	Medium	11.43169, 77.66364	30 KM/Hr
17	Turn	Medium	11.43223, 77.65334	30 KM/Hr
18	Turn	Medium	11.42707, 77.56407	30 KM/Hr
19	Turn	High	11.42337, 77.55804	15 KM/Hr
20	Turn	High	11.45744, 77.36602	15 KM/Hr
21	Turn	Medium	11.45764, 77.36319	30 KM/Hr
22	Turn	Medium	11.45648, 77.35763	30 KM/Hr
23	Turn	Medium	11.45335, 77.29409	30 KM/Hr
24	Turn	Medium	11.45037, 77.28935	30 KM/Hr
25	Turn	Medium	11.45522, 77.25438	30 KM/Hr
26	Turn	High	11.49248, 77.24430	15 KM/Hr
27	Turn	High	11.49249, 77.24406	15 KM/Hr
28	Turn	High	11.49262, 77.24404	15 KM/Hr
29	Turn	Medium	11.49264, 77.24401	30 KM/Hr
30	Turn	High	11.49277, 77.24284	15 KM/Hr
31	Turn	High	11.49306, 77.24285	15 KM/Hr
32	Turn	High	11.49333, 77.24027	15 KM/Hr
33	Turn	High	11.49665, 77.23976	15 KM/Hr
34	Blind Spot	Blind Spot	11.49959, 77.24512	10 KM/Hr
35	Turn	High	11.49943, 77.24510	15 KM/Hr
36	Turn	Medium	11.47831, 77.17940	30 KM/Hr
37	Turn	High	11.44701, 77.14931	15 KM/Hr

### Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
4	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium



	type	name	coordinates	speed_limit	risk_level
5	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
6	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
8	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
9	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
10	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
11	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
12	hospital	PST Mahaa Hospital	11.4312903, 77.6585751	30 km/h	Medium
13	hospital	Dharun Hospital	11.4223638, 77.5597735	30 km/h	Medium
14	hospital	Dr. Ramaswamy Hospital	11.4249065, 77.5535658	30 km/h	Medium
15	hospital	Dakshin Trauma Centre	11.454593, 77.4461819	30 km/h	Medium
16	hospital	Dakshin Hospital	11.4546301, 77.445905	30 km/h	Medium
17	hospital	Sri Varahi Herbal Research Centre and Hospital	11.4539333, 77.4427438	30 km/h	Medium
18	clinic	Germen Homeopathy Clinic	11.4536305, 77.4394692	30 km/h	Medium
19	hospital	KKS Hospital	11.4551792, 77.4392927	30 km/h	Medium
20	hospital	Siranjeeve Hospitals	11.453132, 77.4344382	30 km/h	Medium
21	clinic	Anandhan Clinic	11.4548037, 77.4349074	30 km/h	Medium
22	hospital	Ramachandran Hospital	11.452242, 77.434641	30 km/h	Medium
23	hospital	Kumaran Hospital	11.4533971, 77.4349621	30 km/h	Medium
24	hospital	Dr. Rathinasamy Hospital	11.457562, 77.4327752	30 km/h	Medium
25	hospital	Gobi Neuro Mind Care	11.4548344, 77.434649	30 km/h	Medium
26	hospital	Hariharan Hospital	11.4523578, 77.4299287	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
27	hospital	Vasanth Hospital	11.4526864, 77.4292173	30 km/h	Medium
28	hospital	KKRS Hospital	11.45417, 77.430584	30 km/h	Medium
29	clinic	Jeeva Nursing Home	11.4533031, 77.4294145	30 km/h	Medium
30	hospital	Sathya Hospital	11.4561856, 77.4298694	30 km/h	Medium
31	hospital	S K Hospital	11.4540106, 77.430108	30 km/h	Medium
32	hospital	Sivakami Hospital	11.4531846, 77.4299288	30 km/h	Medium
33	clinic	Sri Sudha Physiotherapy Clinic	11.4559915, 77.4300217	30 km/h	Medium
34	hospital	Arun Hospital	11.4538121, 77.4305743	30 km/h	Medium
35	clinic	Sairam Clinic	11.4560122, 77.4306716	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	clinic	NMS Cardio Care Clinic	11.4550147, 77.430786	30 km/h	Medium
43	hospital	SS Children's Hospital	11.4555386, 77.4296357	30 km/h	Medium
44	hospital	Poorani Ravichandran Hospital	11.4550863, 77.4307802	30 km/h	Medium
45	hospital	Kavitha Children's Hospital	11.4565402, 77.4310815	30 km/h	Medium
46	hospital	SP Dhanapal Hospital	11.4559935, 77.4304406	30 km/h	Medium
47	clinic	Gobi Siddha Health Centre	11.455616, 77.4307062	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
48	clinic	Sri Dhanvantari Siddha Clinic	11.4561216, 77.4295797	30 km/h	Medium
49	hospital	Neha Hospital	11.4560138, 77.4270219	30 km/h	Medium
50	hospital	M.S Children's Hospital	11.4556012, 77.4301006	30 km/h	Medium
51	hospital	Gobi Diabetic Hospital	11.455394, 77.4301181	30 km/h	Medium
52	clinic	Dr. Ramesh Babu Clinic	11.4560871, 77.4296353	30 km/h	Medium
53	hospital	Sankareswari Eye Hospital	11.4572997, 77.428765	30 km/h	Medium
54	hospital	Dr. Moorthy Hospital	11.4546045, 77.4308533	30 km/h	Medium
55	hospital	SP Hospital	11.456607, 77.430302	30 km/h	Medium
58	hospital	Government Hospital	11.4565126, 77.4288768	30 km/h	Medium
59	pharmacy	Abirami Medicals	11.4550894, 77.4309286	30 km/h	Medium
60	hospital	Sri Chakra Hospital	11.4544464, 77.4228363	30 km/h	Medium
61	hospital	U M Hospital	11.4544151, 77.4240386	30 km/h	Medium
62	hospital	Dr. Gopal Hospital	11.455258, 77.422901	30 km/h	Medium
63	hospital	Arun Hospital	11.4548852, 77.4250314	30 km/h	Medium
64	clinic	VG Ortho Centre	11.4550504, 77.4225102	30 km/h	Medium
65	clinic	Palaniappa Clinic	11.4555925, 77.4202828	30 km/h	Medium
66	hospital	Abi SK Hospital	11.457163, 77.412487	30 km/h	Medium
67	clinic	Nalam Vazh S.K Siddha and Varma Clinic	11.457576, 77.412164	30 km/h	Medium
69	clinic	Singiripalayam Natarajan Siddha Ortho Care	11.4603252, 77.3183801	30 km/h	Medium
71	hospital	Pee Vee Hospital	11.4960866, 77.2437224	30 km/h	Medium
72	hospital	Sakthi Hospital	11.498927, 77.2433702	30 km/h	Medium



	type	name	coordinates	speed_limit	risk_level
73	hospital	Anush Hospital	11.500453, 77.2449535	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
56	school	Diamond Jubilee Higher Secondary School	11.4529541, 77.4280306	30 km/h	Medium
57	school	CKK Palaniammal School	11.4569211, 77.4276828	30 km/h	Medium
68	school	Saratha Techno School	11.4544819, 77.379986	30 km/h	Medium
70	school	Saratha International School	11.4541471, 77.3032962	30 km/h	Medium

## Route Photos of Risky Spots



**Risk Type:** Roundabout

**Risk Level:** High

**Speed Limit: 15 KM/Hr**

**Coordinates: 11.49613, 77.23785**



**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: 11.44893, 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: 11.45889, 77.85136**



**Risk Type: Turn**

**Risk Level: High**

**Speed Limit: 15 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:** 11.43175, 77.67757



**Risk Type:** Turn

**Risk Level:** High



**Speed Limit: 15 KM/Hr**

**Coordinates: 11.43000, 77.67564**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.43009, 77.67540**



**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:** 11.43346, 77.66700



**Risk Type:** Turn  
**Risk Level:** Medium



**Speed Limit: 30 KM/Hr**

**Coordinates: 11.43169, 77.66364**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.43223, 77.65334**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.42707, 77.56407**





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.42337, 77.55804



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.45744, 77.36602



**Risk Type:** Turn  
**Risk Level:** Medium



**Speed Limit: 30 KM/Hr**

**Coordinates: 11.45764, 77.36319**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.45648, 77.35763**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.45335, 77.29409**





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.45037, 77.28935



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.45522, 77.25438



**Risk Type:** Turn

**Risk Level:** High



Speed Limit: 15 KM/Hr

Coordinates: 11.49248, 77.24430



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.49249, 77.24406



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.49262, 77.24404





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.49264, 77.24401



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.49665, 77.23976



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot



Speed Limit: 10 KM/Hr

Coordinates: 11.49959, 77.24512



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.49943, 77.24510



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.47831, 77.17940





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.44701, 77.14931

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