

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO NANDA FUELS

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

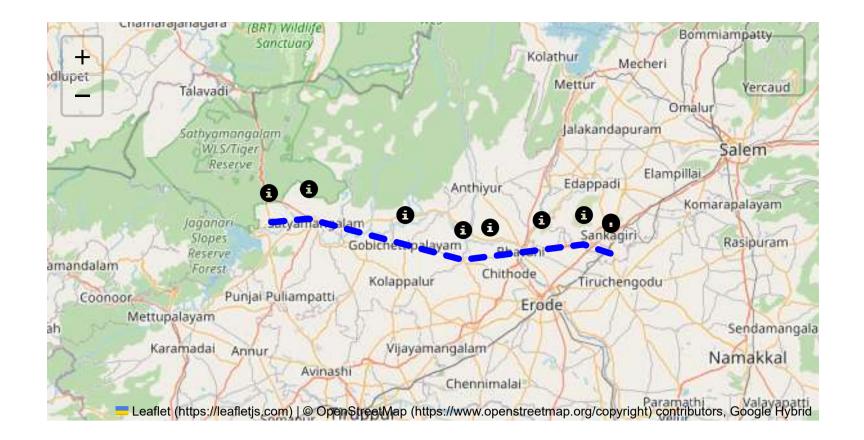
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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



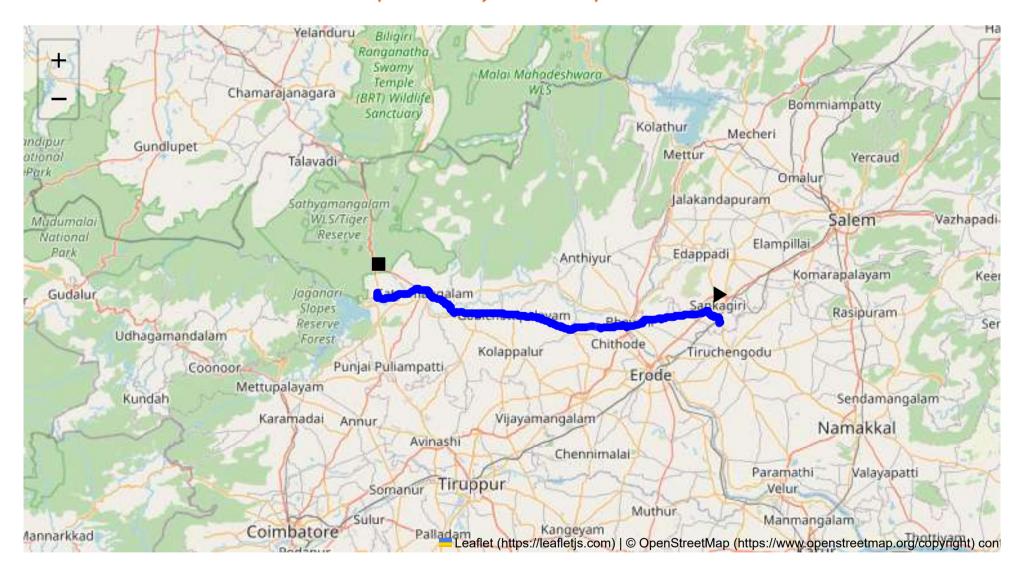
Route Summary:

Total Distance: 89.27 km

Estimated Duration: 2.0 hours

Adjusted Duration (Heavy Vehicle): 2.5 hours

Start: (11.4381, 77.8734) End: (11.5008, 77.1425)



Risk Spots

	RiskSpotType	Coordinates	Speed Limit	Distance from Start
0	Turn	11.43961, 77.87341	15 KM/Hr	0.08 km
1	Turn	11.44029, 77.87544	15 KM/Hr	0.28 km
2	Turn	11.44893, 77.87413	15 KM/Hr	1.29 km

	RiskSpotType	Coordinates	Speed Limit	Distance from Start
3	Turn	11.45127, 77.86734	15 KM/Hr	2.15 km
4	Turn	11.45350, 77.85700	15 KM/Hr	3.29 km
5	Turn	11.45845, 77.85141	15 KM/Hr	4.11 km
6	Turn	11.46303, 77.84945	15 KM/Hr	4.65 km
7	Turn	11.45542, 77.81725	15 KM/Hr	8.36 km
8	Blind Spot	11.45634, 77.81673	10 KM/Hr	8.50 km
9	Turn	11.43192, 77.67803	15 KM/Hr	24.41 km
10	Turn	11.43000, 77.67564	15 KM/Hr	24.82 km
11	Turn	11.43334, 77.66667	15 KM/Hr	25.92 km
12	Turn	11.43222, 77.65346	15 KM/Hr	27.35 km
13	Turn	11.42778, 77.64606	15 KM/Hr	28.36 km
14	Turn	11.42902, 77.57113	15 KM/Hr	36.58 km
15	Turn	11.42837, 77.56935	15 KM/Hr	36.80 km
16	Turn	11.42871, 77.56708	15 KM/Hr	37.03 km
17	Turn	11.42728, 77.56439	15 KM/Hr	37.42 km
18	Turn	11.42693, 77.56227	15 KM/Hr	37.68 km
19	Turn	11.42329, 77.55798	15 KM/Hr	38.35 km
20	Turn	11.45748, 77.36608	15 KM/Hr	59.69 km
21	Turn	11.45763, 77.36309	15 KM/Hr	60.21 km
22	Turn	11.45750, 77.35617	15 KM/Hr	61.11 km
23	Turn	11.45959, 77.30751	15 KM/Hr	66.43 km
24	Turn	11.46855, 77.30035	15 KM/Hr	67.71 km
25	Turn	11.47154, 77.29802	15 KM/Hr	68.15 km
26	Turn	11.47289, 77.29866	15 KM/Hr	68.36 km
27	Turn	11.47522, 77.29448	15 KM/Hr	68.93 km
28	Turn	11.47625, 77.29425	15 KM/Hr	69.06 km
29	Turn	11.47740, 77.28980	15 KM/Hr	69.48 km
30	Turn	11.48260, 77.28591	15 KM/Hr	70.15 km
31	Turn	11.49549, 77.25646	15 KM/Hr	73.71 km
32	Turn	11.50748, 77.25020	15 KM/Hr	75.31 km
33	Turn	11.50934, 77.22979	15 KM/Hr	77.58 km
34	Turn	11.50957, 77.22736	15 KM/Hr	77.87 km
35	Turn	11.49832, 77.19782	15 KM/Hr	81.27 km
36	Turn	11.49983, 77.19093	15 KM/Hr	82.15 km

	RiskSpotType	Coordinates	Speed Limit	Distance from Start
37	Turn	11.49600, 77.18810	15 KM/Hr	82.58 km
38	Turn	11.49256, 77.17885	15 KM/Hr	83.65 km
39	Turn	11.49127, 77.17739	15 KM/Hr	84.01 km
40	Turn	11.49181, 77.17517	15 KM/Hr	84.19 km
41	Turn	11.49045, 77.14450	15 KM/Hr	87.56 km
42	Turn	11.49397, 77.14452	15 KM/Hr	88.03 km
43	Turn	11.49732, 77.14431	15 KM/Hr	88.38 km
44	Turn	11.49765, 77.14315	15 KM/Hr	88.54 km

Emergency Services

	type	name	coordinates	side_of_road
2	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	Opposite Side
3	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	Opposite Side
4	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	Driver's Side
5	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	Driver's Side
8	hospital	Thanish Siddha Hospital	11.430003, 77.674964	Driver's Side
9	clinic	Harshitha Clinic	11.4313207, 77.674718	Opposite Side
10	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	Opposite Side
11	clinic	G.K Clinic	11.4297244, 77.6749715	Driver's Side
12	hospital	PST Mahaa Hospital	11.4312903, 77.6585751	Driver's Side
13	hospital	Dharun Hospital	11.4223638, 77.5597735	Driver's Side
14	hospital	Dr. Ramaswamy Hospital	11.4249065, 77.5535658	Opposite Side
15	hospital	Dakshin Trauma Centre	11.454593, 77.4461819	Opposite Side
16	hospital	Dakshin Hospital	11.4546301, 77.445905	Opposite Side

	type	name	coordinates	side_of_road
17	hospital	Sri Varahi Herbal Research Centre and Hospital	11.4539333, 77.4427438	Driver's Side
18	clinic	Anandhan Clinic	11.4548037, 77.4349074	Driver's Side
19	hospital	Kumaran Hospital	11.4533971, 77.4349621	Driver's Side
20	clinic	Germen Homeopathy Clinic	11.4536305, 77.4394692	Driver's Side
21	hospital	JP Hospital	11.454765, 77.438257	Driver's Side
22	hospital	KKS Hospital	11.4551792, 77.4392927	Opposite Side
23	hospital	Hariharan Hospital	11.4523578, 77.4299287	Driver's Side
24	hospital	Vasanth Hospital	11.4526864, 77.4292173	Driver's Side
25	hospital	KKRS Hospital	11.45417, 77.430584	Driver's Side
26	clinic	Jeeva Nursing Home	11.4533031, 77.4294145	Driver's Side
27	hospital	Sathya Hospital	11.4561856, 77.4298694	Opposite Side
28	hospital	S K Hospital	11.4540106, 77.430108	Driver's Side
29	hospital	Sivakami Hospital	11.4531846, 77.4299288	Driver's Side
30	clinic	Sri Sudha Physiotherapy Clinic	11.4559915, 77.4300217	Opposite Side
31	hospital	Arun Hospital	11.4538121, 77.4305743	Driver's Side
32	clinic	Sairam Clinic	11.4560122, 77.4306716	Opposite Side
33	clinic	Anand Nursing Home	11.4553169, 77.4296248	Opposite Side
34	clinic	Kanmani Child Care Clinic	11.4545273, 77.428668	Driver's Side
35	hospital	Sivasakthi Hospital	11.4544711, 77.4297229	Driver's Side
36	clinic	NMS Cardio Care Clinic	11.4550147, 77.430786	Opposite Side
37	hospital	SS Children's Hospital	11.4555386, 77.4296357	Opposite Side

	type	name	coordinates	side_of_road
38	hospital	Poorani Ravichandran Hospital	11.4550863, 77.4307802	Opposite Side
39	hospital	Kavitha Children's Hospital	11.4565402, 77.4310815	Opposite Side
40	hospital	SP Dhanapal Hospital	11.4559935, 77.4304406	Opposite Side
41	clinic	Gobi Siddha Health Centre	11.455616, 77.4307062	Opposite Side
42	clinic	Sri Dhanvantari Siddha Clinic	11.4561216, 77.4295797	Opposite Side
43	hospital	M.S Children's Hospital	11.4556012, 77.4301006	Opposite Side
44	hospital	Gobi Diabetic Hospital	11.455394, 77.4301181	Opposite Side
45	clinic	Dr. Ramesh Babu Clinic	11.4560871, 77.4296353	Opposite Side
46	hospital	Sankareswari Eye Hospital	11.4572997, 77.428765	Opposite Side
47	hospital	Dr. Moorthy Hospital	11.4546045, 77.4308533	Driver's Side
48	hospital	SP Hospital	11.456607, 77.430302	Opposite Side
49	hospital	Government Hospital	11.4565126, 77.4288768	Opposite Side
50	pharmacy	Abirami Medicals	11.4550894, 77.4309286	Opposite Side
51	hospital	Best Hospital	11.4543558, 77.4263617	Driver's Side
52	hospital	Rajasekaran Hospital	11.454463, 77.4262	Driver's Side
53	hospital	Samuel Hospital	11.4542555, 77.4271194	Driver's Side
54	hospital	Neha Hospital	11.4560138, 77.4270219	Opposite Side
55	hospital	Arun Hospital	11.4548852, 77.4250314	Opposite Side
56	hospital	Sri Chakra Hospital	11.4544464, 77.4228363	Driver's Side
57	hospital	U M Hospital	11.4544151, 77.4240386	Driver's Side

	type	name	coordinates	side_of_road
58	hospital	Dr. Gopal Hospital	11.455258, 77.422901	Opposite Side
59	clinic	VG Ortho Centre	11.4550504, 77.4225102	Opposite Side
60	clinic	Palaniappa Clinic	11.4555925, 77.4202828	Opposite Side
61	hospital	Abi SK Hospital	11.457163, 77.412487	Driver's Side
62	clinic	Nalam Vazh S.K Siddha and Varma Clinic	11.457576, 77.412164	Opposite Side
63	clinic	Singiripalayam Natarajan Siddha Ortho Care	11.4603252, 77.3183801	Opposite Side
64	hospital	Assisi Hospital	11.4636431, 77.30493	Opposite Side
65	hospital	Sathyamangalam Government Hospital	11.5016489, 77.2582814	Opposite Side
66	hospital	Vijaya Hospital	11.5051709, 77.2480971	Driver's Side
67	hospital	Amudha Poly Clinic & Hospital	11.5053476, 77.2466406	Driver's Side
68	hospital	Emmanuvel Hospital	11.5063418, 77.2470483	Driver's Side
69	hospital	Udhayam Hospital	11.5064193, 77.2467814	Driver's Side
70	clinic	KGR Surgical Nursing Home	11.5050605, 77.2453693	Driver's Side

Rest Stops

	type	name	coordinates	side_of_road
0	fuel	SLOA Bunk - Unit II	11.4543854, 77.8052665	Driver's Side
1	restaurant	Canteen	11.4478386, 77.7705441	Driver's Side
6	fuel	Reliance	11.4325168, 77.6912865	Opposite Side
7	fuel	Indian Oil	11.4321177, 77.6765153	Opposite Side
71	restaurant	SBS chicken biriyani	11.5071557, 77.2333442	Driver's Side

Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Bhavanisagar via the specified waypoints spans approximately 89.27 kilometers. The journey begins at Sangagiri, passes through several towns, and ends at Bhavanisagar. The primary roads involved include NH 944 and NH 948, which are part of India's national highway network. The route weaves through rural and semi-urban areas, characterized by a mix of agricultural landscapes and urbanized zones.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu generally experiences a tropical climate. Key weather conditions include:

- Summer (March to June): High temperatures, potential for heat stress.
- Monsoon (July to September): Heavy rain, possible flooding, reduced visibility.
- Winter (October to February): Moderate conditions, but occasional fog, particularly in the mornings.

Weather-related hazards include slippery roads during the monsoon, which may lead to hydroplaning, and poor visibility due to fog in winter.

3. Analysis of Traffic Patterns

- **Peak Hours:** Generally, peak traffic is experienced in the morning (8:00 AM to 10:00 AM) and evening (5:00 PM to 8:00 PM), coinciding with local office and school timings.
- Congestion-Prone Areas: Urban sections in Gobichettipalayam and Sathyamangalam might experience congestion, particularly near markets and junctions. Traffic near Kavindapadi can also be slow due to narrow roads and local traffic.

4. Assessment of Road Quality and Infrastructure

While national highways (NH 944 and NH 948) are well-maintained, some rural sections may experience wear and tear, especially post-monsoon. Road quality can vary, with potential potholes and erosion in less maintained areas, affecting stability and safety, particularly for heavy vehicles.

5. Suggestions for Alternative Routes for Emergencies

For detours, consider:

- NH 544: Offers a route from Coimbatore to Bhavani, useful if NH 948 is blocked.
- State Highways: Smaller highways like SH could serve as alternatives, though road conditions may vary.

6. Summary of Local Regulations Affecting Hazardous Material

Transport

Ensure compliance with Tamil Nadu's transport regulations for hazardous materials which include:

- Transport permits
- Clearly marked vehicles
- Use of designated routes and times, avoiding densely populated areas when feasible.

7. Overview of Historical Incidents

While there are no notable large-scale incidents on this specific route, Tamil Nadu sees occasional heavy vehicle accidents, often attributed to overloading or poor road conditions. Regular incidents include vehicle breakdowns and minor collisions, especially during monsoons.

8. Environmental Considerations and Sensitive Areas

The route crosses several agricultural zones; care is needed to prevent chemical spills. In Sathyamangalam, near forested areas, environmental protection norms may restrict hazardous transport, especially near wildlife movement corridors.

9. Analysis of Communication Coverage

Mobile coverage is generally good along NH 944 and NH 948, though brief dead zones may occur in less populated rural areas. Providers like Jio and Airtel have extensive coverage.

10. Estimated Emergency Response Times

- Urban Sections (e.g., Gobichettipalayam): 30-45 minutes.
- Rural Areas (e.g., Kavindapadi): 45-60 minutes.
- Remote Sections: May exceed 1 hour due to distance from emergency services.

12. Overall Summary of Risk Assessment

The main risks identified include weather-induced road conditions, traffic congestion in urban areas, variable road quality, and occasional communication dead zones. Predictive planning for adverse weather, thorough vehicle checks, adherence to regulations, and accurate time management are recommended to mitigate risks. Enhanced communication with local authorities and regular updates on road conditions through GPS and local advisories are essential for safe passage along this route.



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 0.28 km
Coordinates: 11.44029, 77.87544



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 1.29 km
Coordinates: 11.44893, 77.87413

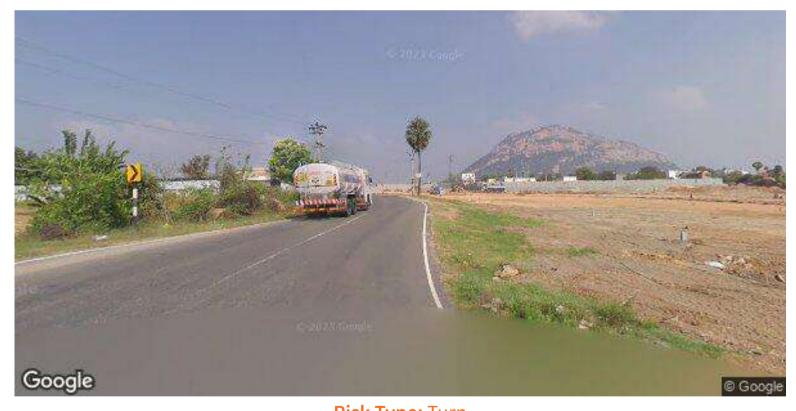


Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 2.15 km

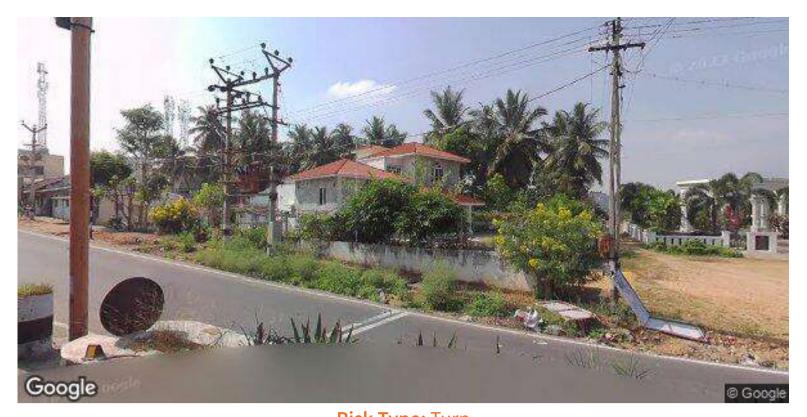
Coordinates: 11.45127, 77.86734



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 3.29 km
Coordinates: 11.45350, 77.85700



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 4.11 km
Coordinates: 11.45845, 77.85141



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 4.65 km
Coordinates: 11.46303, 77.84945



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 8.36 km
Coordinates: 11.45542, 77.81725



Risk Type: Blind Spot Speed Limit: 10 KM/Hr Distance from Start: 8.50 km

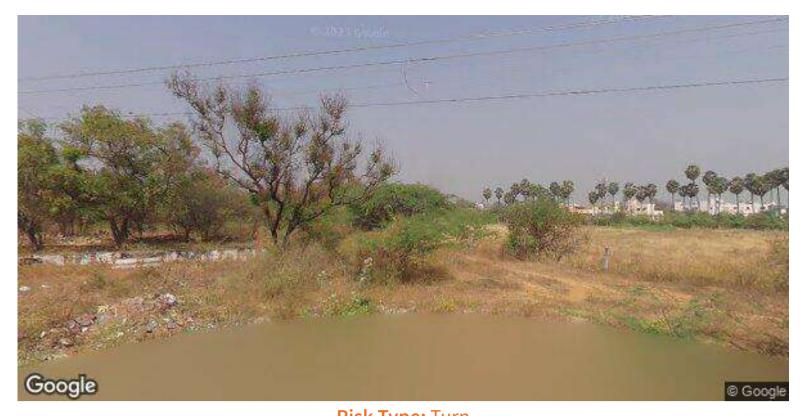
Coordinates: 11.45634, 77.81673



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 24.41 km
Coordinates: 11.43192, 77.67803



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 24.82 km
Coordinates: 11.43000, 77.67564



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 25.92 km
Coordinates: 11.43334, 77.66667



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 27.35 km
Coordinates: 11.43222, 77.65346



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 28.36 km

Coordinates: 11.42778, 77.64606



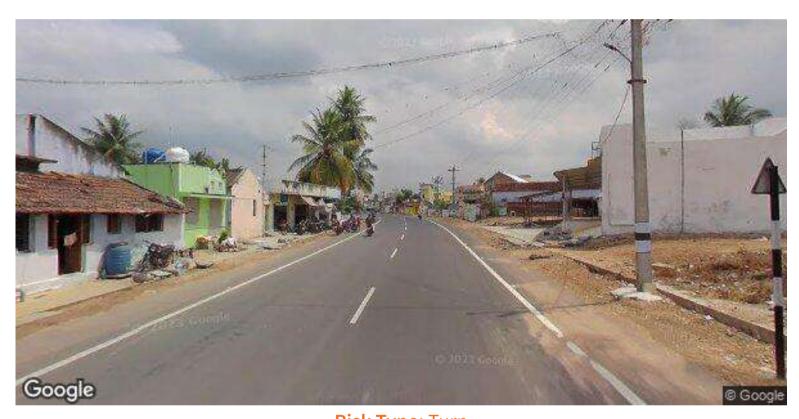
Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 36.58 km
Coordinates: 11.42902, 77.57113



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 36.80 km
Coordinates: 11.42837, 77.56935



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 37.03 km
Coordinates: 11.42871, 77.56708



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 37.42 km
Coordinates: 11.42728, 77.56439



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 37.68 km

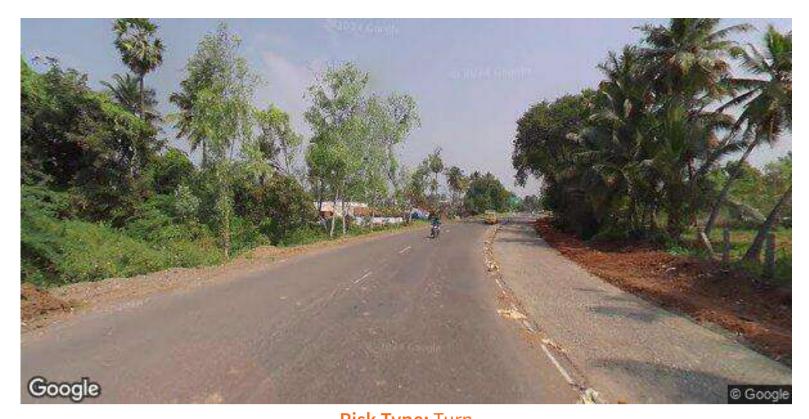
Coordinates: 11.42693, 77.56227



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 38.35 km
Coordinates: 11.42329, 77.55798



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 59.69 km
Coordinates: 11.45748, 77.36608



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 60.21 km
Coordinates: 11.45763, 77.36309



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 61.11 km
Coordinates: 11.45750, 77.35617



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 66.43 km

Coordinates: 11.45959, 77.30751



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 67.71 km
Coordinates: 11.46855, 77.30035



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 68.15 km
Coordinates: 11.47154, 77.29802



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 68.36 km
Coordinates: 11.47289, 77.29866



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 68.93 km
Coordinates: 11.47522, 77.29448



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 69.06 km

Coordinates: 11.47625, 77.29425



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 69.48 km
Coordinates: 11.47740, 77.28980



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 70.15 km
Coordinates: 11.48260, 77.28591



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 73.71 km
Coordinates: 11.49549, 77.25646



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 75.31 km
Coordinates: 11.50748, 77.25020



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 77.58 km

Coordinates: 11.50934, 77.22979



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 77.87 km
Coordinates: 11.50957, 77.22736



Risk Type: Turn
Speed Limit: 15 KM/Hr
Distance from Start: 81.27 km
Coordinates: 11.49832, 77.19782

Download Interactive Map