



# IndianOil

## JOURNEY RISK MANAGEMENT (JRM) STUDY

**Salem Terminal TO RAMASAMY & CO**

### 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.

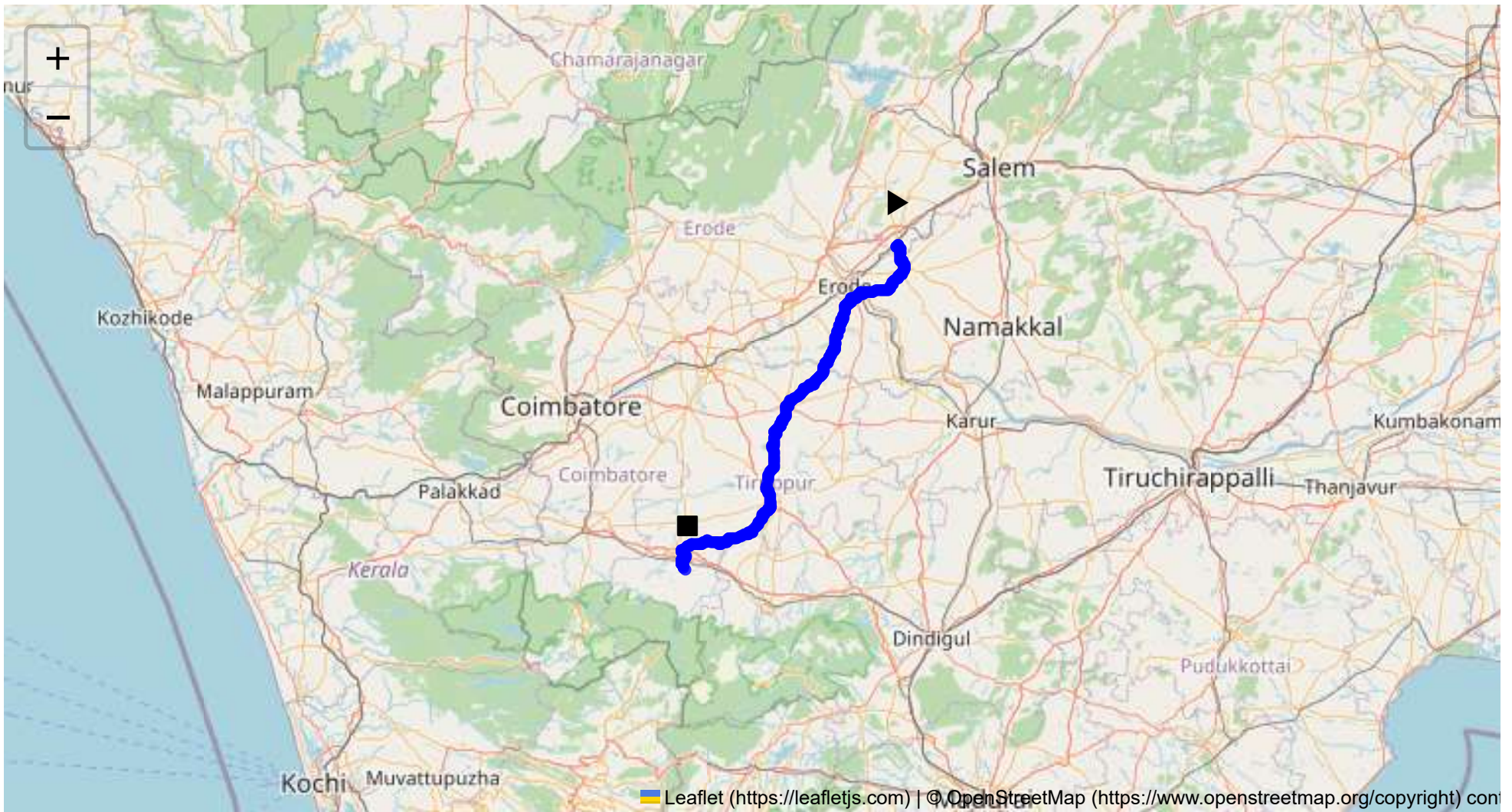
## **Compliance with Government Directives**

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: 144.43 km**  
**Estimated Duration: 3.2 hours**  
**Adjusted Duration (Heavy Vehicle): 4.1 hours**  
**Start: (11.4381, 77.8734)**  
**End: (10.55472, 77.2839)**



## Risk Spots

	RiskSpotType	Coordinates	Speed Limit	Distance from Start
3	Turn	11.43961, 77.87341	15 KM/Hr	0.08 km
4	Turn	11.44029, 77.87544	15 KM/Hr	0.28 km
5	Turn	11.43111, 77.88170	15 KM/Hr	1.51 km



	RiskSpotType	Coordinates	Speed Limit	Distance from Start
6	Turn	11.39983, 77.88377	15 KM/Hr	5.04 km
7	Turn	11.39706, 77.88825	15 KM/Hr	5.62 km
0	Roundabout	11.38395, 77.89480	15 KM/Hr	7.41 km
8	Turn	11.37868, 77.89498	15 KM/Hr	7.77 km
9	Turn	11.36602, 77.88875	15 KM/Hr	9.44 km
10	Turn	11.33882, 77.86218	15 KM/Hr	13.35 km
11	Turn	11.33713, 77.86222	15 KM/Hr	13.91 km
12	Turn	11.30951, 77.77608	15 KM/Hr	24.32 km
13	Turn	11.31096, 77.77049	15 KM/Hr	24.98 km
14	Turn	11.30938, 77.76674	15 KM/Hr	25.35 km
15	Turn	11.29473, 77.74685	15 KM/Hr	28.31 km
16	Turn	11.29133, 77.74660	15 KM/Hr	28.67 km
17	Turn	11.28890, 77.74349	15 KM/Hr	29.02 km
18	Turn	11.28558, 77.74271	15 KM/Hr	29.51 km
19	Turn	11.27314, 77.72962	15 KM/Hr	31.52 km
20	Blind Spot	11.27330, 77.72711	10 KM/Hr	31.79 km
21	Turn	11.23090, 77.71808	15 KM/Hr	36.63 km
22	Turn	11.15943, 77.70068	15 KM/Hr	44.87 km
23	Turn	11.11943, 77.67799	15 KM/Hr	50.04 km
24	Turn	11.11783, 77.67283	15 KM/Hr	50.61 km
25	Turn	11.11680, 77.67167	15 KM/Hr	50.85 km
26	Turn	11.10471, 77.67058	15 KM/Hr	52.19 km
27	Turn	11.08722, 77.66431	15 KM/Hr	54.22 km
28	Turn	11.08274, 77.65832	15 KM/Hr	54.95 km
29	Turn	11.06242, 77.63999	15 KM/Hr	58.09 km
30	Turn	11.06173, 77.63591	15 KM/Hr	58.57 km
31	Turn	11.00847, 77.56981	15 KM/Hr	67.87 km
32	Turn	11.00090, 77.56888	15 KM/Hr	68.92 km
1	Roundabout	11.00172, 77.56268	15 KM/Hr	69.47 km
33	Turn	10.94900, 77.54681	15 KM/Hr	75.88 km
34	Turn	10.94764, 77.54709	15 KM/Hr	76.14 km
35	Turn	10.93853, 77.53921	15 KM/Hr	77.46 km
36	Turn	10.93794, 77.53764	15 KM/Hr	77.64 km
37	Turn	10.93006, 77.53262	15 KM/Hr	78.41 km

	RiskSpotType	Coordinates	Speed Limit	Distance from Start
38	Turn	10.89465, 77.52809	15 KM/Hr	82.67 km
39	Turn	10.89088, 77.52645	15 KM/Hr	83.11 km
40	Turn	10.83431, 77.52934	15 KM/Hr	89.27 km
41	Turn	10.77602, 77.50716	15 KM/Hr	96.60 km
42	Turn	10.75794, 77.51938	15 KM/Hr	98.75 km
43	Turn	10.72791, 77.52050	15 KM/Hr	102.05 km
2	Roundabout	10.72668, 77.52217	15 KM/Hr	102.61 km
44	Turn	10.63703, 77.40475	15 KM/Hr	119.70 km
45	Turn	10.62890, 77.38654	15 KM/Hr	122.20 km
46	Turn	10.62278, 77.30128	15 KM/Hr	131.83 km
47	Turn	10.60476, 77.27080	15 KM/Hr	135.88 km
48	Blind Spot	10.58776, 77.28345	10 KM/Hr	138.14 km
49	Turn	10.58678, 77.27840	15 KM/Hr	138.70 km
50	Turn	10.58112, 77.27578	15 KM/Hr	139.31 km
51	Blind Spot	10.57756, 77.27601	10 KM/Hr	139.86 km
52	Turn	10.57798, 77.27185	15 KM/Hr	140.29 km
53	Turn	10.56747, 77.27326	15 KM/Hr	141.46 km
54	Turn	10.56625, 77.27365	15 KM/Hr	141.64 km

### Emergency Services

	type	name	coordinates	side_of_road
0	hospital	Tiruchengode, Goverment Hospital	11.3903328, 77.8920627	Opposite Side
1	hospital	SPM Medical Centre,Tiruchengode	11.3881331, 77.8931963	Opposite Side
2	clinic	Kongu Nursing Home	11.3783065, 77.8961134	Driver's Side
3	hospital	T.C.A Hospital Tiruchengode	11.3791885, 77.8965774	Driver's Side
4	hospital	Soorya Multispecialty Hospital	11.3786429, 77.8931912	Opposite Side
5	hospital	Tiruchengode Government Hospital	11.37645, 77.89426	Opposite Side
7	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	Opposite Side
8	hospital	Government Hospital	11.2343326, 77.719226	Driver's Side
10	police	Kangeyam Police Station	11.0011411, 77.562688	Opposite Side
11	hospital	J K Hospital	11.0042298, 77.5603345	Opposite Side
15	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	Driver's Side
16	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	Opposite Side

	type	name	coordinates	side_of_road
18	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	Driver's Side
19	clinic	Punitha Nursing Home	10.72901, 77.520148	Driver's Side
20	hospital	Ponnaiah Hospital, Dharapuram	10.72916, 77.520131	Driver's Side

## Rest Stops

	type	name	coordinates	side_of_road
6	restaurant	Lijo	11.3805115, 77.8946385	Opposite Side
9	fuel	Hindustan Petroleum	11.001711, 77.565054	Opposite Side
12	restaurant	Hotel Surya Pure Veg	11.0016663, 77.5638487	Driver's Side
13	fuel	Bharat Petroleum	11.0017719, 77.5629134	Driver's Side
14	fuel	Bharat Petroleum	10.9903599, 77.5638924	Opposite Side
17	restaurant	Amaravathi Lodge	10.7341612, 77.5177641	Opposite Side

## Welcome to the Journey Risk Management Study

### 1. Overview of the Route Map

The route from Sangagiri to Kannamanaickanur via Tiruchengode, Erode, Kangeyam, Uthiyur, Dharapuram, and Tiruppur comprises mostly state highways and district roads. The distance of approximately 144.43 kilometers includes various towns where the roads might narrow, requiring careful navigation, particularly for large vehicles.

### 2. Typical Weather Conditions and Potential Weather-Related Hazards

The region generally experiences a tropical climate. The summer months (March to June) can be very hot, which may affect vehicle performance. Monsoon season (July to September) can bring heavy rain, leading to potential flooding and reduced road visibility. Winter months (November to February) are mild, with less weather-related disruptions but occasional fog in the mornings.

### 3. Traffic Patterns and Congestion-Prone Areas

- **Peak Traffic Hours:** Generally, traffic builds up during morning hours (8:00 AM - 10:00 AM) and evening hours (5:00 PM - 8:00 PM).
- **Congestion Zones:**
  - Sankagiri - Tiruchengode Road near schools and petrol bunks due to local traffic.

- Urban areas such as Erode, Kangeyam, and Tiruppur can experience slow-moving traffic and congestion, especially during peak hours.

## 4. Road Quality and Infrastructure

- **General Road Conditions:** Varies from well-maintained highways to narrow rural roads.
- **Highway Sections:** Generally in good condition, though truck traffic may cause delays.
- **Rural and Urban Sections:** Some roads might have potholes and lack proper signage, increasing travel time and the risk of accidents.

## 5. Suggestions for Alternative Routes for Emergencies

- **Alternate Route 1:** In case of major roadblocks near Tiruppur, consider bypassing via the Erode outer ring road.
- **Alternate Route 2:** Use NH 47 bypass if heavy congestion is identified in Kangeyam.

## 6. Local Regulations Affecting Hazardous Material Transport

- Heavy vehicles carrying hazardous materials are restricted during night-time in certain sections. Regular checks by local traffic police are common.
- Ensure compliance with Tamil Nadu State Transport rules regarding hazardous cargo carriage, including necessary permits and safety checks.

## 7. Historical Incidents Involving Heavy Vehicles or Hazardous Materials

- Recorded incidents involve mechanical failures leading to roadblocks. Awareness of previous accident hotspots in Erode and Kangeyam is essential.
- Occasional spill incidents have occurred; preventive measures include regular maintenance and cautious driving, especially during rain.

## 8. Environmental Considerations and Sensitive Areas

- Sensitive zones include schools, hospitals, and residential areas in Tiruchengode and Erode.
- Wildlife crossings may occasionally be encountered, notably in more rural segments closer to Uthiyur.

## 9. Communication Coverage and Potential Dead Zones

- Mobile network coverage is generally good in urban areas.
- Possible dead zones in Uthiyur and stretches between Dharapuram and Tiruppur; it is advisable to have a satellite communication option in these regions.

## 10. Estimated Emergency Response Times

- Urban areas such as Erode and Tiruppur have quicker emergency response times (approx. 15-30 minutes).
- Rural sections such as near Uthiyur may experience delays up to an hour for emergency services due to distance and road conditions.

## 12. Overall Summary of Risk Assessment

This route involves a combination of well-maintained highways and challenging rural roads. Primary risks include weather-induced visibility issues, road congestion, and potential communication breakdowns in remote areas. Adherence to weather forecasts, strategic planning around peak traffic, and rigorous adherence to safety regulations for hazardous materials are crucial for safe transit. The understanding of alternative routes can make a significant difference during emergencies. Prior knowledge of local regulations and road conditions is essential to mitigate risks effectively while ensuring timely transport of hazardous materials.

### Route Photos of Risky Spots



**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: 1.51 km**

**Coordinates: 11.43111, 77.88170**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 5.04 km**

**Coordinates: 11.39983, 77.88377**





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 5.62 km**

**Coordinates: 11.39706, 77.88825**



**Risk Type: Roundabout**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 7.41 km**

**Coordinates: 11.38395, 77.89480**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 7.77 km**

**Coordinates: 11.37868, 77.89498**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 9.44 km

**Coordinates:** 11.36602, 77.88875



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 13.35 km

**Coordinates:** 11.33882, 77.86218





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 13.91 km**

**Coordinates: 11.33713, 77.86222**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 24.32 km**

**Coordinates: 11.30951, 77.77608**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 24.98 km**

**Coordinates: 11.31096, 77.77049**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 25.35 km

**Coordinates:** 11.30938, 77.76674



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 28.31 km

**Coordinates:** 11.29473, 77.74685





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 28.67 km**

**Coordinates: 11.29133, 77.74660**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 29.02 km**

**Coordinates: 11.28890, 77.74349**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 29.51 km**

**Coordinates: 11.28558, 77.74271**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 31.52 km

**Coordinates:** 11.27314, 77.72962



**Risk Type:** Blind Spot

**Speed Limit:** 10 KM/Hr

**Distance from Start:** 31.79 km

**Coordinates:** 11.27330, 77.72711





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 36.63 km**

**Coordinates: 11.23090, 77.71808**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 44.87 km**

**Coordinates: 11.15943, 77.70068**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 50.04 km**

**Coordinates: 11.11943, 77.67799**





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 50.61 km**

**Coordinates: 11.11783, 77.67283**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 50.85 km**

**Coordinates: 11.11680, 77.67167**





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 52.19 km**

**Coordinates: 11.10471, 77.67058**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 54.22 km**

**Coordinates: 11.08722, 77.66431**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 54.95 km**

**Coordinates: 11.08274, 77.65832**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 58.09 km

**Coordinates:** 11.06242, 77.63999



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 58.57 km

**Coordinates:** 11.06173, 77.63591





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 67.87 km**

**Coordinates: 11.00847, 77.56981**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 68.92 km**

**Coordinates: 11.00090, 77.56888**



**Risk Type: Roundabout**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 69.47 km**

**Coordinates: 11.00172, 77.56268**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 75.88 km

**Coordinates:** 10.94900, 77.54681



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 76.14 km

**Coordinates:** 10.94764, 77.54709





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 77.46 km**

**Coordinates: 10.93853, 77.53921**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 77.64 km**

**Coordinates: 10.93794, 77.53764**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 78.41 km**

**Coordinates: 10.93006, 77.53262**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 82.67 km

**Coordinates:** 10.89465, 77.52809



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 83.11 km

**Coordinates:** 10.89088, 77.52645





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 89.27 km

**Coordinates:** 10.83431, 77.52934



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 96.60 km

**Coordinates:** 10.77602, 77.50716



**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 98.75 km

**Coordinates:** 10.75794, 77.51938





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 102.05 km

**Coordinates:** 10.72791, 77.52050



**Risk Type:** Roundabout

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 102.61 km

**Coordinates:** 10.72668, 77.52217





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 119.70 km**

**Coordinates: 10.63703, 77.40475**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 122.20 km**

**Coordinates: 10.62890, 77.38654**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 131.83 km**

**Coordinates: 10.62278, 77.30128**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 135.88 km

**Coordinates:** 10.60476, 77.27080



**Risk Type:** Blind Spot

**Speed Limit:** 10 KM/Hr

**Distance from Start:** 138.14 km

**Coordinates:** 10.58776, 77.28345





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 138.70 km**

**Coordinates: 10.58678, 77.27840**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 139.31 km**

**Coordinates: 10.58112, 77.27578**



**Risk Type: Blind Spot**

**Speed Limit: 10 KM/Hr**

**Distance from Start: 139.86 km**

**Coordinates: 10.57756, 77.27601**





**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 140.29 km**

**Coordinates: 10.57798, 77.27185**



**Risk Type: Turn**

**Speed Limit: 15 KM/Hr**

**Distance from Start: 141.46 km**

**Coordinates: 10.56747, 77.27326**





**Risk Type:** Turn

**Speed Limit:** 15 KM/Hr

**Distance from Start:** 141.64 km

**Coordinates:** 10.56625, 77.27365

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