



# IndianOil

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

### **Salem Terminal to THE VELAN PETROLEIUM 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.

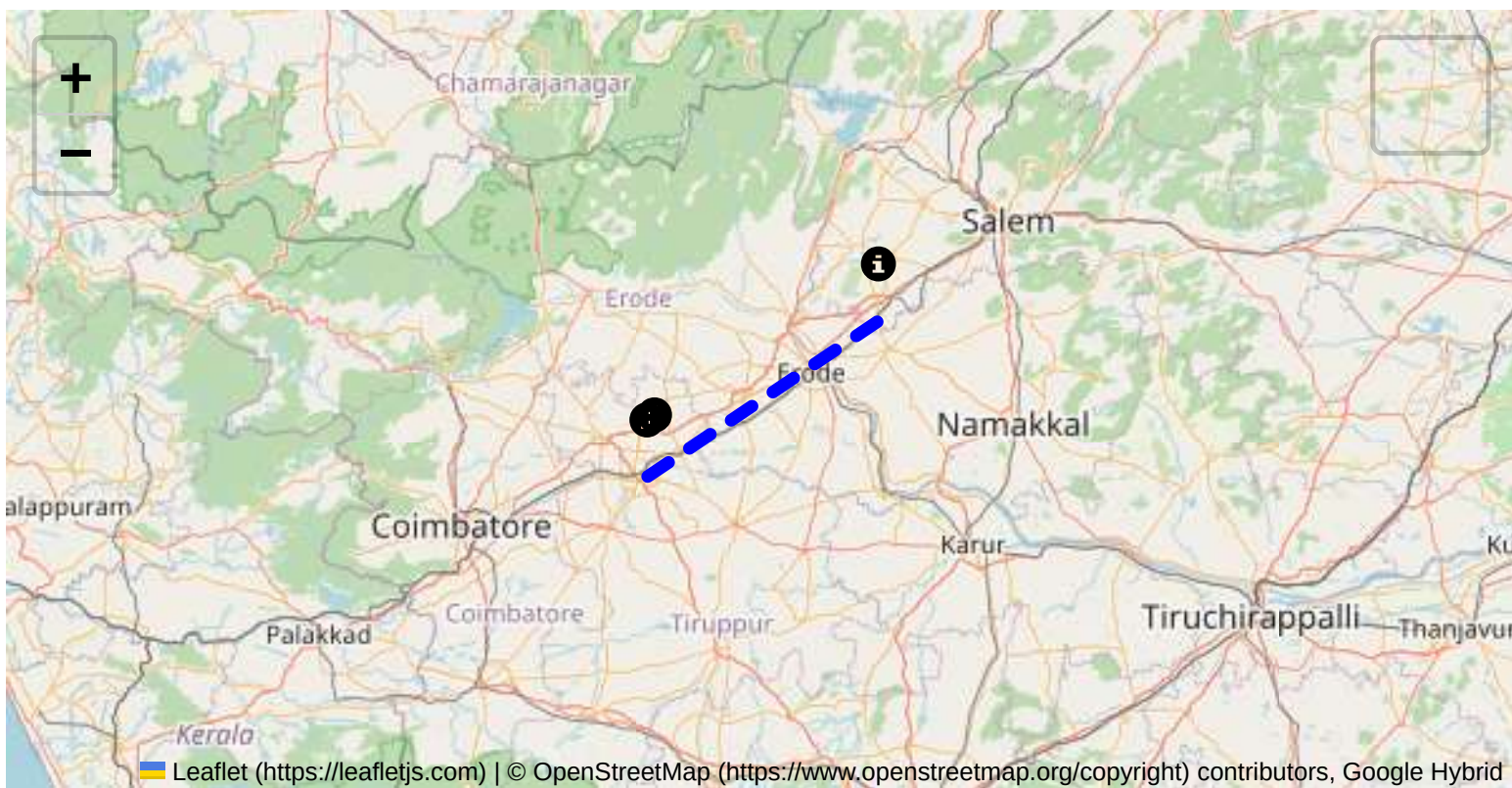
## **Journey Risk Mitigation**

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.

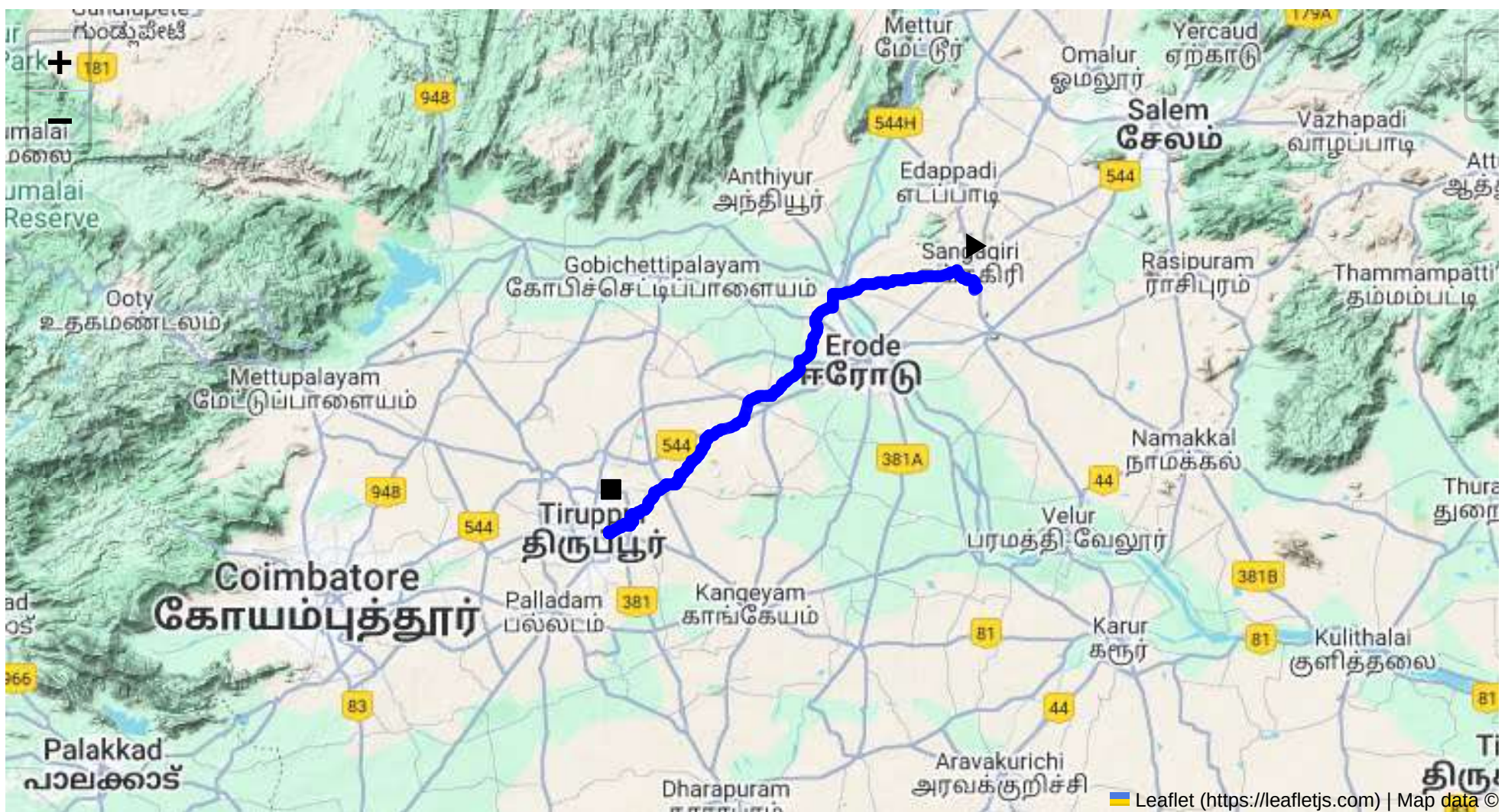
## **Compliance with Government Directives**

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: 81.40 km**  
**Estimated Duration: 1.8 hours**  
**Adjusted Duration (Heavy Vehicle): 2.2 hours**  
**Start: (11.4381, 77.8734)**  
**End: (11.103155, 77.364311)**



## Welcome to the Journey Risk Management Study

Certainly, here's a detailed analysis of the route from Sangagiri to Tiruppur, focusing on safety aspects for a truck carrying hazardous materials:

### 1. Overview of the Route Map:

- The route from Sangagiri to Tiruppur covers approximately 81.40 kilometers. It primarily follows state highways and major district roads, passing through suburban and industrial areas of Tamil



Nadu.

**2. Typical Weather Conditions and Potential Weather-Related Hazards:**

- The region experiences a tropical climate, with high temperatures most of the year. The monsoon season, typically from June to September, can bring heavy rains leading to potential flooding and waterlogging.
- Drivers should be cautious during foggy conditions, particularly in the early morning or late evening during the winter months (December-February).

**3. Analysis of Traffic Patterns:**

- Traffic congestion is typically higher during weekdays, especially during morning (8 AM to 10 AM) and evening (5 PM to 7 PM) peak hours.
- Key congestion-prone areas include urban stretches around Tiruchengode and Erode due to local commuter traffic and market deliveries.

**4. Assessment of Road Quality and Infrastructure:**

- The highways and major roads are generally in good condition, but some patches of the district roads might have potholes or surface wear.
- Narrow sections and sharp turns might be present, which require cautious navigation.

**5. Suggestions for Alternative Routes for Emergencies:**

- In case of road blockages or heavy congestion, consider taking the SH 81 or NH 544 as alternate routes. Ensure that vehicles are compliant with weight and hazardous material restrictions on these roads.

**6. Summary of Local Regulations Affecting Hazardous Material Transport:**

- Specific permits may be required for the transportation of hazardous materials. It is essential to comply with local hazardous material vehicle markings and follow all safety guidelines provided by the Tamil Nadu Pollution Control Board (TNPCB).

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

- There have been occurrences of accidents involving heavy vehicles, primarily due to overloading or poor maintenance. A few incidents have involved spillage of materials, mandating strict adherence to safety protocols.

**8. Environmental Considerations and Sensitive Areas:**

- The route passes through areas close to water bodies and agricultural lands. It is crucial to prevent contamination by ensuring all cargo is securely sealed.
- Drivers should adhere to designated truck routes to avoid sensitive urban areas, especially near schools or hospitals.

**9. Analysis of Communication Coverage:**

- Mobile network coverage is generally stable in urban and semi-urban areas, but there could be potential dead zones in remote stretches or areas with dense vegetation.
- Keep emergency contact numbers and a satellite communication device as a backup, if possible.

**10. Estimated Emergency Response Times:**

- Urban areas like Erode and Tiruppur have quicker emergency response times (within 15-30 minutes).
- Rural or remote sections may experience delays, with response times extending up to 45-60 minutes.

11. Overall Summary of Risk Assessment:

- The route is mostly safe for transporting hazardous materials, provided that drivers adhere to safety protocols and are prepared for potential weather and traffic challenges.
- Regular route assessments, vehicle maintenance checks, and driver training on emergency response can further mitigate risks.
- Awareness of local regulations and continuous monitoring of route conditions will help ensure the safe and efficient delivery of materials.

This careful evaluation of potential hazards helps to enhance the safety and reliability of transporting hazardous materials along this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.43968, 77.87345	15 KM/Hr
1	Turn	High	11.44024, 77.87528	15 KM/Hr
2	Turn	High	11.44898, 77.87410	15 KM/Hr
3	Turn	Medium	11.45357, 77.85789	30 KM/Hr
4	Turn	High	11.45352, 77.85698	15 KM/Hr
5	Turn	Medium	11.45847, 77.85140	30 KM/Hr
6	Turn	Medium	11.45898, 77.85135	30 KM/Hr
7	Turn	High	11.46303, 77.84945	15 KM/Hr
8	Turn	Medium	11.45509, 77.81383	30 KM/Hr
9	Turn	Medium	11.45085, 77.77020	30 KM/Hr
10	Turn	Medium	11.43165, 77.67734	30 KM/Hr
11	Turn	Medium	11.23724, 77.50686	30 KM/Hr
12	Turn	High	11.23704, 77.50676	15 KM/Hr
13	Blind Spot	Blind Spot	11.23686, 77.50216	10 KM/Hr
14	Turn	Medium	11.23649, 77.50219	30 KM/Hr
15	Turn	High	11.23396, 77.50105	15 KM/Hr
16	Turn	Medium	11.23329, 77.49966	30 KM/Hr
17	Turn	Medium	11.17851, 77.46169	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
18	Turn	Medium	11.17368, 77.45730	30 KM/Hr
19	Turn	Medium	11.17111, 77.45547	30 KM/Hr
20	Turn	High	11.16959, 77.44396	15 KM/Hr
21	Turn	Medium	11.16381, 77.43700	30 KM/Hr
22	Turn	Medium	11.16280, 77.43139	30 KM/Hr
23	Turn	Medium	11.15217, 77.42418	30 KM/Hr
24	Turn	Medium	11.15134, 77.42300	30 KM/Hr
25	Turn	Medium	11.15023, 77.42247	30 KM/Hr
26	Turn	Medium	11.14925, 77.42065	30 KM/Hr
27	Turn	Medium	11.13848, 77.41611	30 KM/Hr
28	Turn	Medium	11.13578, 77.41299	30 KM/Hr
29	Turn	Medium	11.12989, 77.40302	30 KM/Hr
30	Turn	High	11.12775, 77.39347	15 KM/Hr
31	Turn	High	11.11863, 77.39473	15 KM/Hr
32	Turn	Medium	11.11846, 77.39460	30 KM/Hr
33	Turn	High	11.11833, 77.39390	15 KM/Hr
34	Turn	High	11.11512, 77.39305	15 KM/Hr
35	Turn	Medium	11.11497, 77.38987	30 KM/Hr
36	Turn	High	11.11473, 77.38961	15 KM/Hr
37	Turn	Medium	11.11539, 77.38469	30 KM/Hr
38	Turn	Medium	11.11174, 77.37877	30 KM/Hr
39	Turn	Medium	11.11154, 77.37815	30 KM/Hr
40	Turn	High	11.11110, 77.37768	15 KM/Hr
41	Turn	High	11.11034, 77.37776	15 KM/Hr
42	Turn	Medium	11.11013, 77.37747	30 KM/Hr
43	Turn	Medium	11.10613, 77.36798	30 KM/Hr
44	Turn	High	11.10560, 77.36161	15 KM/Hr
45	Blind Spot	Blind Spot	11.10271, 77.36193	10 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
5	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
7	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	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
10	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
11	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
12	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
14	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
16	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
17	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
19	hospital	Aravind Eye Care Hospital	11.1729469, 77.4574467	30 km/h	Medium
20	clinic	Sri Maha Annai Clinic	11.1707162, 77.4536498	30 km/h	Medium
21	hospital	Ram Doctor Hospital	11.1709391, 77.4532808	30 km/h	Medium
22	clinic	Kumaran Clinic	11.1697553, 77.451543	30 km/h	Medium
23	hospital	Sri Aravindhar Hospital	11.1697756, 77.4448276	30 km/h	Medium
24	clinic	Dr. Raja Clinic	11.1278464, 77.3927768	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
6	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium
13	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium
15	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
18	college	Sasurie Engineering College	11.2171482, 77.4898552	30 km/h	Medium

## Route Photos of Risky Spots



**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:** 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:** 11.45898, 77.85135





**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:** 11.45509, 77.81383





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.45085, 77.77020



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.43165, 77.67734



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.23724, 77.50686





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.23704, 77.50676



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot

**Speed Limit:** 10 KM/Hr

**Coordinates:** 11.23686, 77.50216





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.23649, 77.50219



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.23396, 77.50105



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.23329, 77.49966





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.17851, 77.46169



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.17368, 77.45730





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.17111, 77.45547



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.16959, 77.44396



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.16381, 77.43700





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.16280, 77.43139



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.15217, 77.42418





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.15134, 77.42300



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.15023, 77.42247



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.14925, 77.42065





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.13848, 77.41611



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.13578, 77.41299





**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.12989, 77.40302**



**Risk Type: Turn**

**Risk Level: High**

**Speed Limit: 15 KM/Hr**

**Coordinates: 11.12775, 77.39347**



**Risk Type: Turn**

**Risk Level: High**

**Speed Limit: 15 KM/Hr**

**Coordinates: 11.11863, 77.39473**





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.11846, 77.39460



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.11833, 77.39390





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.11512, 77.39305



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.11497, 77.38987



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.11473, 77.38961





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.11539, 77.38469



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.11174, 77.37877





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.11154, 77.37815



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.11110, 77.37768



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.11034, 77.37776





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.11013, 77.37747

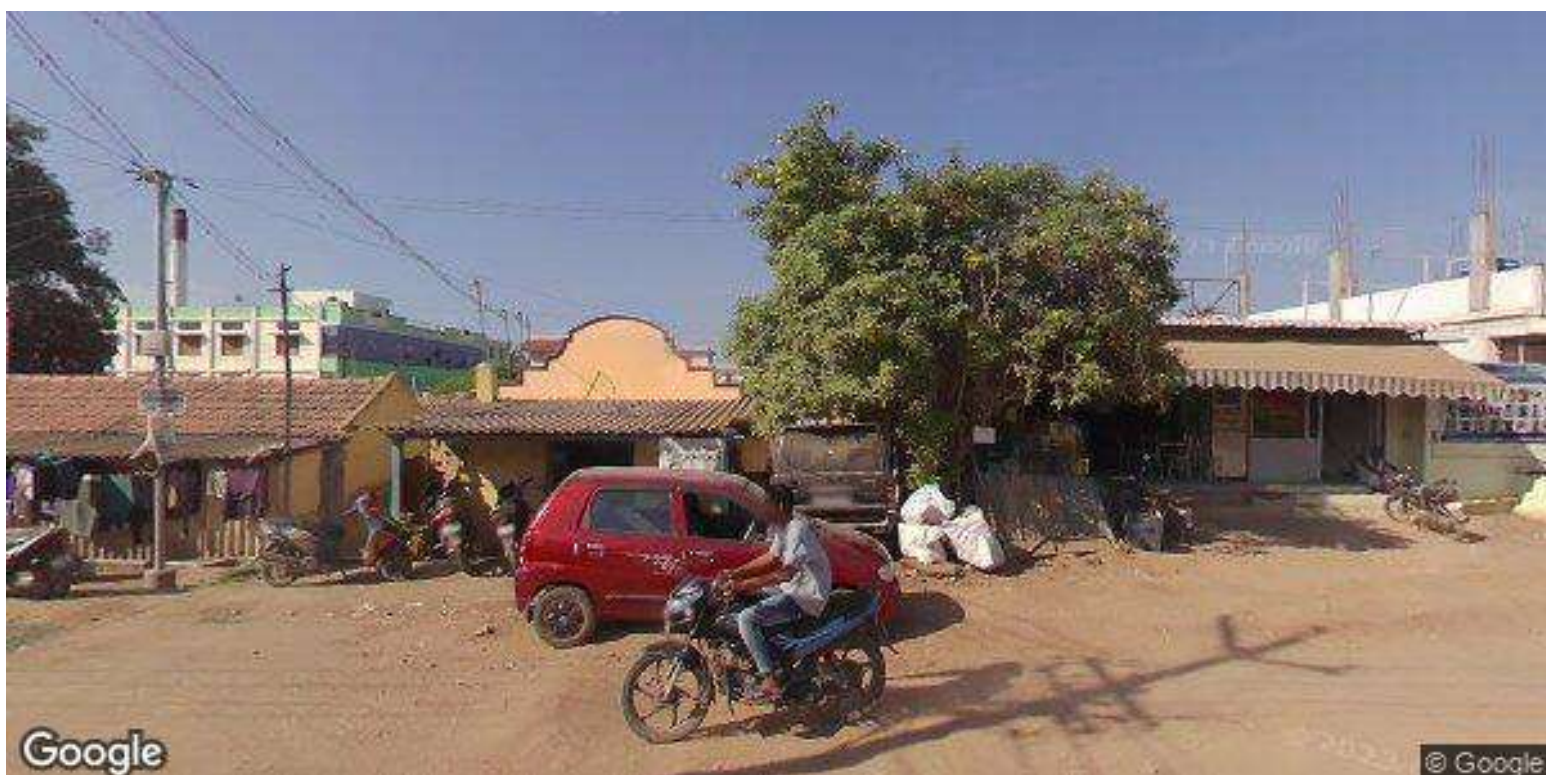


**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.10613, 77.36798





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.10560, 77.36161



**Risk Type:** Blind Spot

**Risk Level:** Blind Spot

**Speed Limit:** 10 KM/Hr

**Coordinates:** 11.10271, 77.36193

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