



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

### **Salem Terminal To SHREE SARATHAMBAL 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.

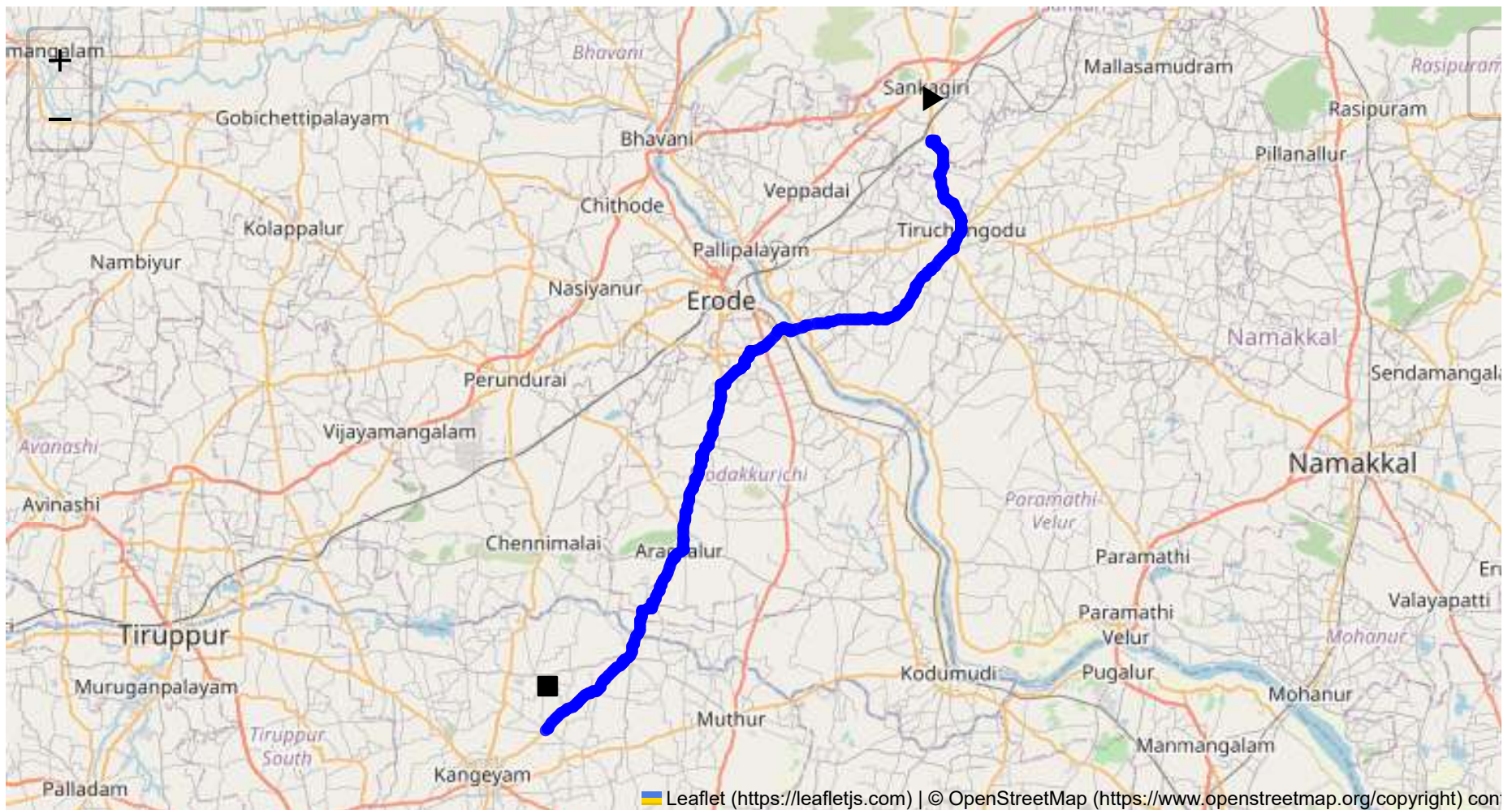
## Compliance with Government Directives

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: 63.79 km**  
**Estimated Duration: 1.5 hours**  
**Adjusted Duration (Heavy Vehicle): 1.9 hours**  
**Start: (11.4381, 77.8734)**  
**End: (11.036127, 77.604003)**



## Welcome to the Journey Risk Management Study

### Route Overview

The route from Sangagiri to Varathappampalayam via the specified waypoints in Tamil Nadu generally follows a combination of state highways and district roads, covering approximately 63.79 kilometers. This route passes through several towns and rural areas, providing a mix of traffic conditions and road quality types.

### Weather Conditions

Tamil Nadu typically experiences a tropical climate. This route may encounter:

- **Summer:** Extreme heat from March to May, potentially affecting vehicle performance.
- **Monsoon:** Heavy rainfalls from June to September can lead to slippery roads and flooding.
- **Winter:** Mild from November to February, with generally safer driving conditions due to less rainfall.

Extreme weather events like heavy rain can exacerbate road conditions, leading to potential delays and increased risk of road accidents.

### Traffic Patterns

- **Peak Hours:** Traffic congestion is generally higher in morning (8-10 AM) and evening (5-7 PM), especially near town centers like Tiruchengode and Erode.

- **Congestion Areas:** Specific areas such as market streets in Tiruchengode and Erode are prone to congestion. Narrow rural roads may also slow down large vehicles, causing bottlenecks.

## Road Quality and Infrastructure

- Roads are a mix of well-paved highways and narrower, less maintained roads in rural stretches.
- Certain segments, particularly rural roads, may have potholes or uneven surfaces that require cautious driving.
- Street lighting may be limited in rural areas, posing visibility challenges at night.

## Alternative Routes

- **Emergency Alternate Routes:** The NH79 offers a broader, faster alternative route in case of emergency or roadblock, although it may increase travel distance.

## Local Regulations

- Tamil Nadu has specific guidelines for the transport of hazardous materials, including timing restrictions and required permits.
- Checkpoint inspections may occur, especially at major town entries, to ensure compliance with these regulations.

## Historical Incidents

- Past incidents in this region have included road accidents involving heavy vehicles, often attributed to overspeeding or poor road conditions.
- Specific data on hazardous material incidents might be limited but should be assumed to adhere to general logistics challenges in similar rural-urban corridors.

## Environmental Considerations

- Sensitive areas include agricultural zones, which the route traverses extensively.
- Wildlife crossings may be encountered, especially in rural and less developed stretches.

## Communication Coverage

- Urban areas such as Erode and Tiruchengode have good mobile network coverage.
- Potential dead zones may exist in rural stretches between towns; thus, ensuring communication preparedness is crucial.

## Emergency Response Times

- **Urban Areas:** Faster response times, estimated at 20-30 minutes due to proximity to emergency services.
- **Rural Areas:** Slower response times, potentially exceeding 45 minutes due to distance.

## Overall Summary of Risk Assessment

This route presents moderate risk due to variable road conditions, traffic patterns, and weather impacts. Major concerns include:

- Potential vehicle performance issues due to heat.
- Risk of accidents in rural segments due to narrow and under-maintained roads.
- Communication gaps in rural stretches.
- Reliance on local emergency response, which may be slow in less accessible areas.

Truck drivers transporting hazardous material should be thoroughly briefed on these challenges, equipped with updated GPS for navigation, ensure vehicle maintenance to withstand harsh climates, and have emergency communication tools. Adherence to local regulations and road safety guidelines is imperative to mitigate risks.

### Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Turn	Medium	11.43822, 77.87348	30 KM/Hr
2	Turn	High	11.43961, 77.87341	15 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	Medium	11.39671, 77.88878	30 KM/Hr
5	Turn	High	11.37862, 77.89488	15 KM/Hr
6	Turn	High	11.37850, 77.89453	15 KM/Hr
7	Turn	Medium	11.36616, 77.88885	30 KM/Hr
8	Turn	Medium	11.36602, 77.88875	30 KM/Hr
9	Turn	Medium	11.34632, 77.86836	30 KM/Hr
10	Turn	Medium	11.33882, 77.86218	30 KM/Hr
11	Turn	Medium	11.31118, 77.77139	30 KM/Hr
12	Turn	Medium	11.30970, 77.76705	30 KM/Hr
13	Turn	High	11.29490, 77.74685	15 KM/Hr
14	Turn	High	11.29133, 77.74660	15 KM/Hr
15	Turn	Medium	11.28844, 77.74319	30 KM/Hr
16	Turn	Medium	11.28558, 77.74271	30 KM/Hr
17	Turn	Medium	11.27326, 77.72991	30 KM/Hr
18	Blind Spot	Blind Spot	11.27330, 77.72711	10 KM/Hr
19	Turn	Medium	11.23054, 77.71796	30 KM/Hr
20	Turn	Medium	11.22387, 77.71385	30 KM/Hr
21	Turn	Medium	11.16078, 77.70122	30 KM/Hr



	Risk Type	Risk Level	Coordinates	Speed Limit
22	Turn	Medium	11.15953, 77.70067	30 KM/Hr
23	Turn	High	11.15944, 77.70068	15 KM/Hr
24	Turn	Medium	11.11918, 77.67766	30 KM/Hr
25	Turn	Medium	11.11740, 77.67198	30 KM/Hr
26	Turn	Medium	11.10481, 77.67060	30 KM/Hr
27	Turn	Medium	11.09509, 77.66612	30 KM/Hr
28	Turn	Medium	11.08730, 77.66436	30 KM/Hr
29	Turn	Medium	11.08282, 77.65837	30 KM/Hr
30	Turn	High	11.06189, 77.63943	15 KM/Hr

### Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Tiruchengode, Goverment Hospital	11.3903328, 77.8920627	30 km/h	Medium
1	hospital	SPM Medical Centre,Tiruchengode	11.3881331, 77.8931963	30 km/h	Medium
5	clinic	Kongu Nursing Home	11.3783065, 77.8961134	30 km/h	Medium
6	hospital	T.C.A Hospital Tiruchengode	11.3791885, 77.8965774	30 km/h	Medium
7	hospital	Soorya Multispecialty Hospital	11.3786429, 77.8931912	30 km/h	Medium
8	hospital	Tiruchengode Government Hospital	11.37645, 77.89426	30 km/h	Medium
9	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
10	hospital	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
13	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium

### Crowded Spots

	type	name	coordinates	speed_limit	risk_level
2	school	அரசு ஆண்கள் மேல்நிலைப் பள்ளி	11.3850439, 77.8948279	30 km/h	Medium
3	school	அரசு பெண்கள் மேல்நிலைப் பள்ளி	11.3844247, 77.8949053	30 km/h	Medium
4	marketplace	திருச்செங்கோடு தினசரி காய்கறி சந்தை	11.3833608, 77.8970145	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
11	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
12	school	MDV School	11.3719843, 77.8915244	30 km/h	Medium
14	college	Government Arts and Science College, Kangeyam	11.0626738, 77.636227	30 km/h	Medium

## Route Photos of Risky Spots



**Risk Type:** Roundabout

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.38395, 77.89480



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.44029, 77.87544





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.39671, 77.88878



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.37862, 77.89488



**Risk Type:** Turn

**Risk Level:** High



**Speed Limit: 15 KM/Hr**

**Coordinates: 11.37850, 77.89453**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.36616, 77.88885**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.36602, 77.88875**





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.34632, 77.86836



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.33882, 77.86218



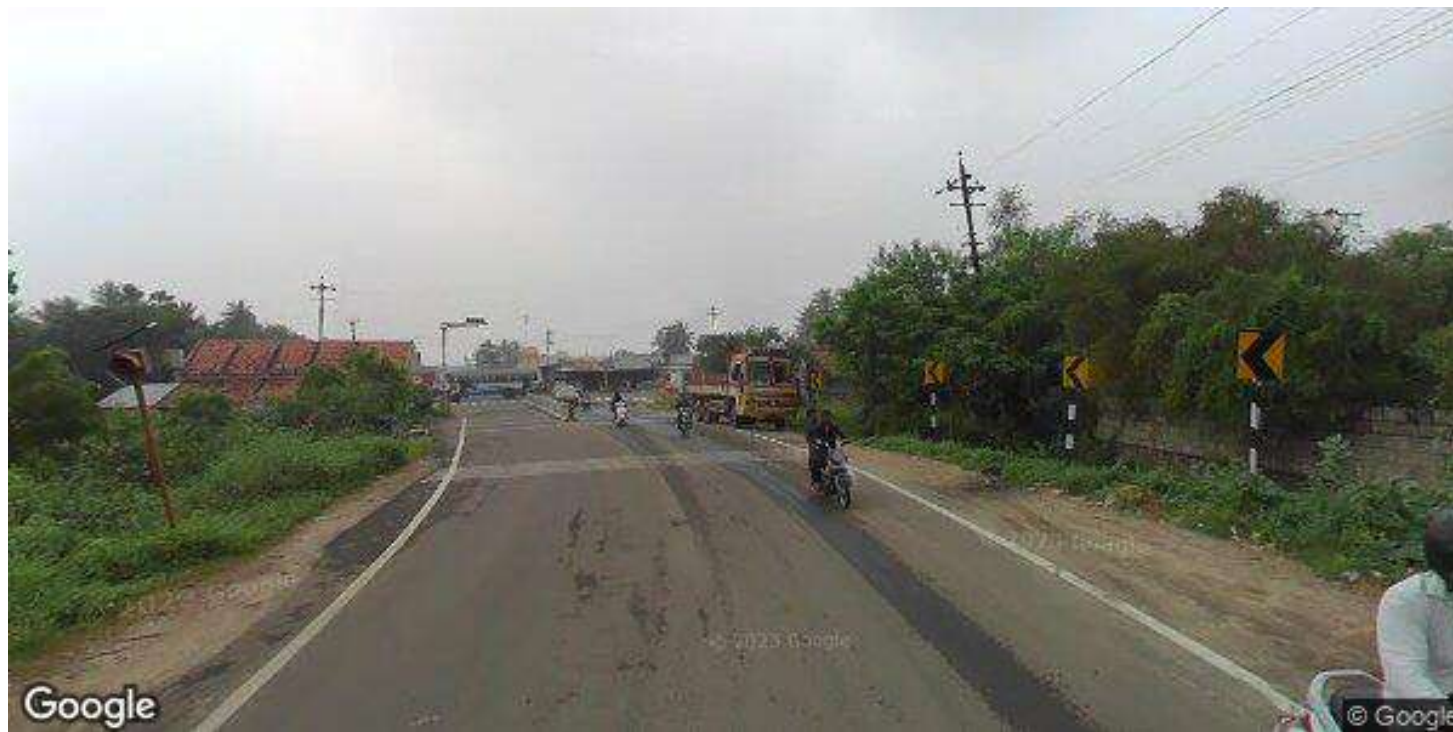
**Risk Type:** Turn

**Risk Level:** Medium



**Speed Limit: 30 KM/Hr**

**Coordinates: 11.31118, 77.77139**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.30970, 77.76705**



**Risk Type: Turn**

**Risk Level: High**

**Speed Limit: 15 KM/Hr**

**Coordinates: 11.29490, 77.74685**





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.29133, 77.74660



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.28844, 77.74319



**Risk Type:** Turn

**Risk Level:** Medium



**Speed Limit: 30 KM/Hr**

**Coordinates: 11.28558, 77.74271**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.27326, 77.72991**



**Risk Type: Blind Spot**

**Risk Level: Blind Spot**

**Speed Limit: 10 KM/Hr**

**Coordinates: 11.27330, 77.72711**





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.23054, 77.71796



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.22387, 77.71385



**Risk Type:** Turn

**Risk Level:** Medium



Speed Limit: 30 KM/Hr

Coordinates: 11.16078, 77.70122



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.15953, 77.70067



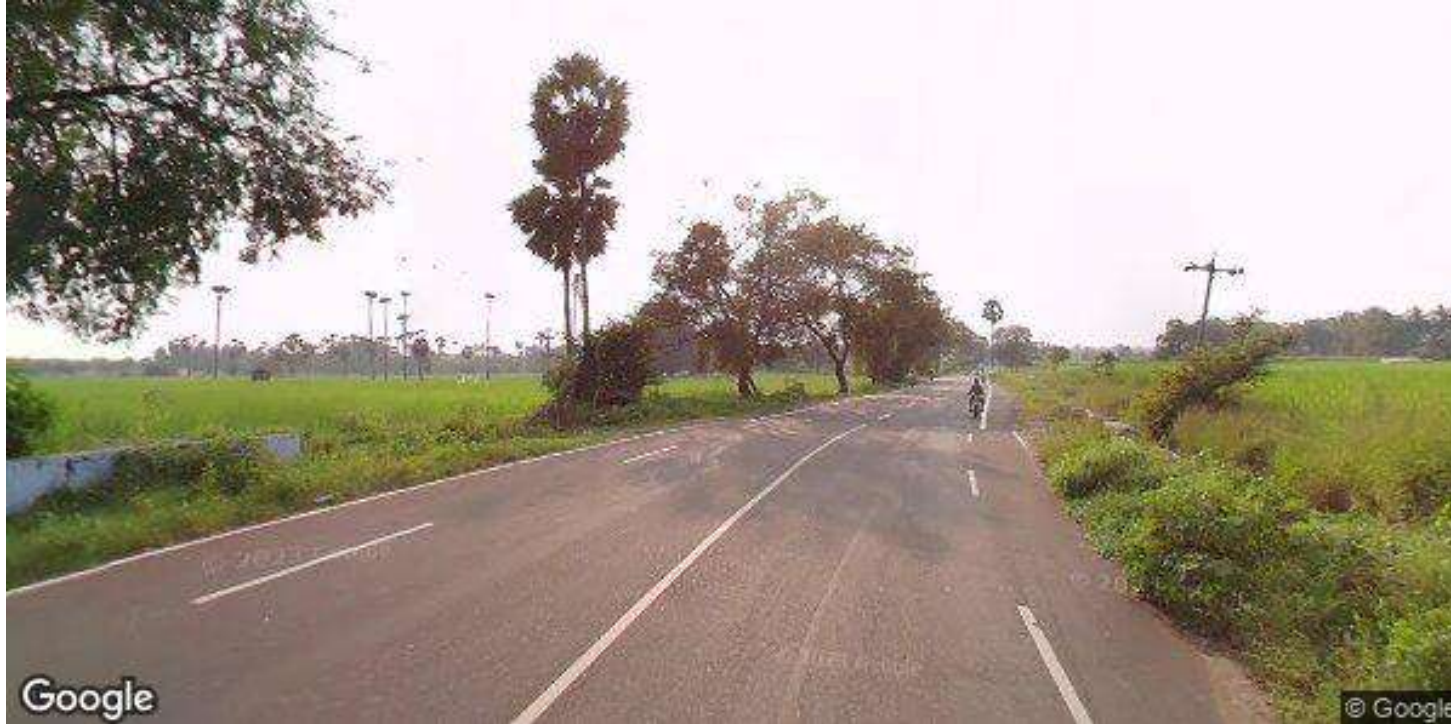
Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.15944, 77.70068





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.11918, 77.67766



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.11740, 77.67198



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



**Speed Limit: 30 KM/Hr**

**Coordinates: 11.10481, 77.67060**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.09509, 77.66612**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.08730, 77.66436**





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.08282, 77.65837



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.06189, 77.63943

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