



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to ARAVINTH 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

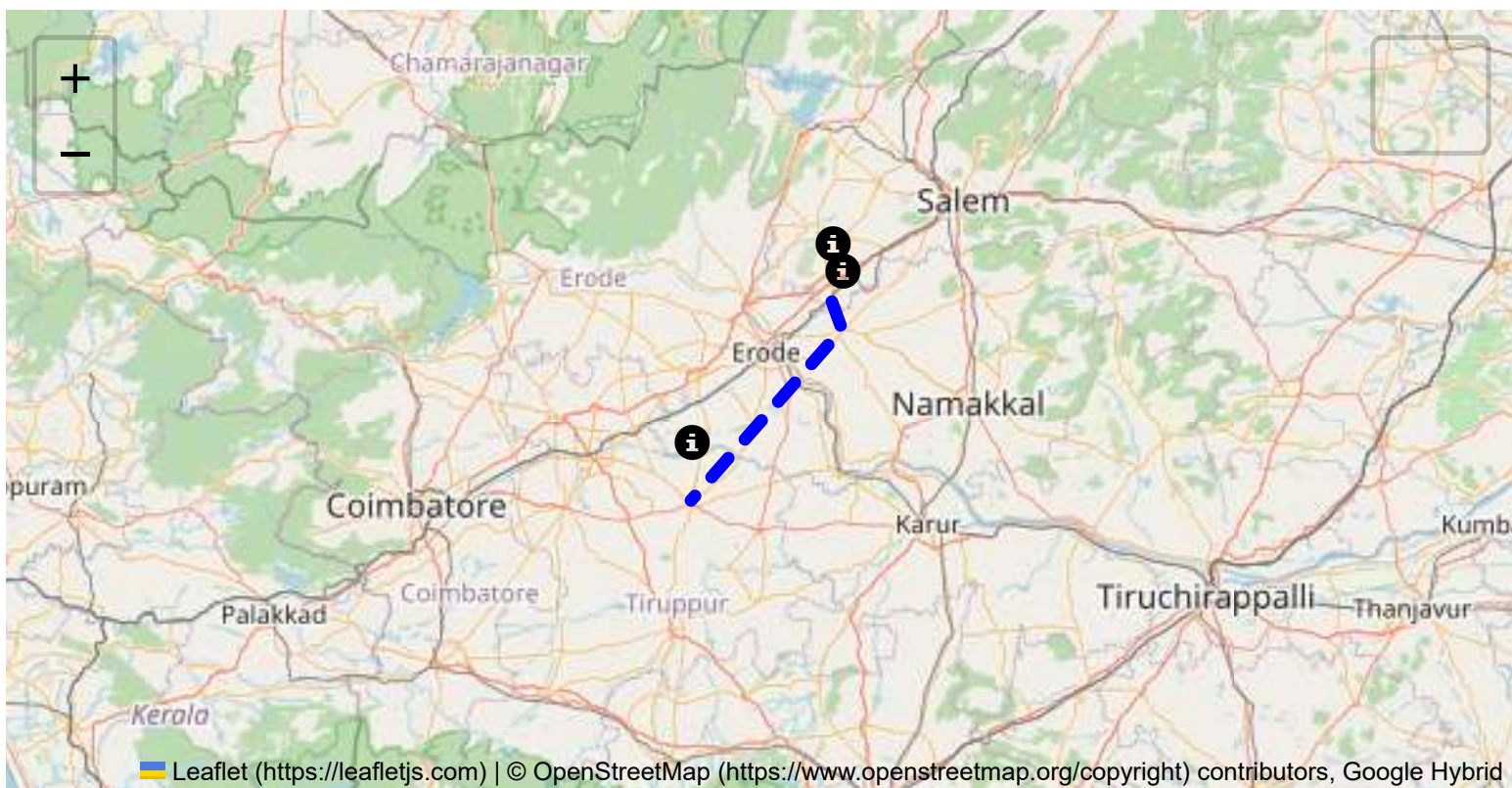
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

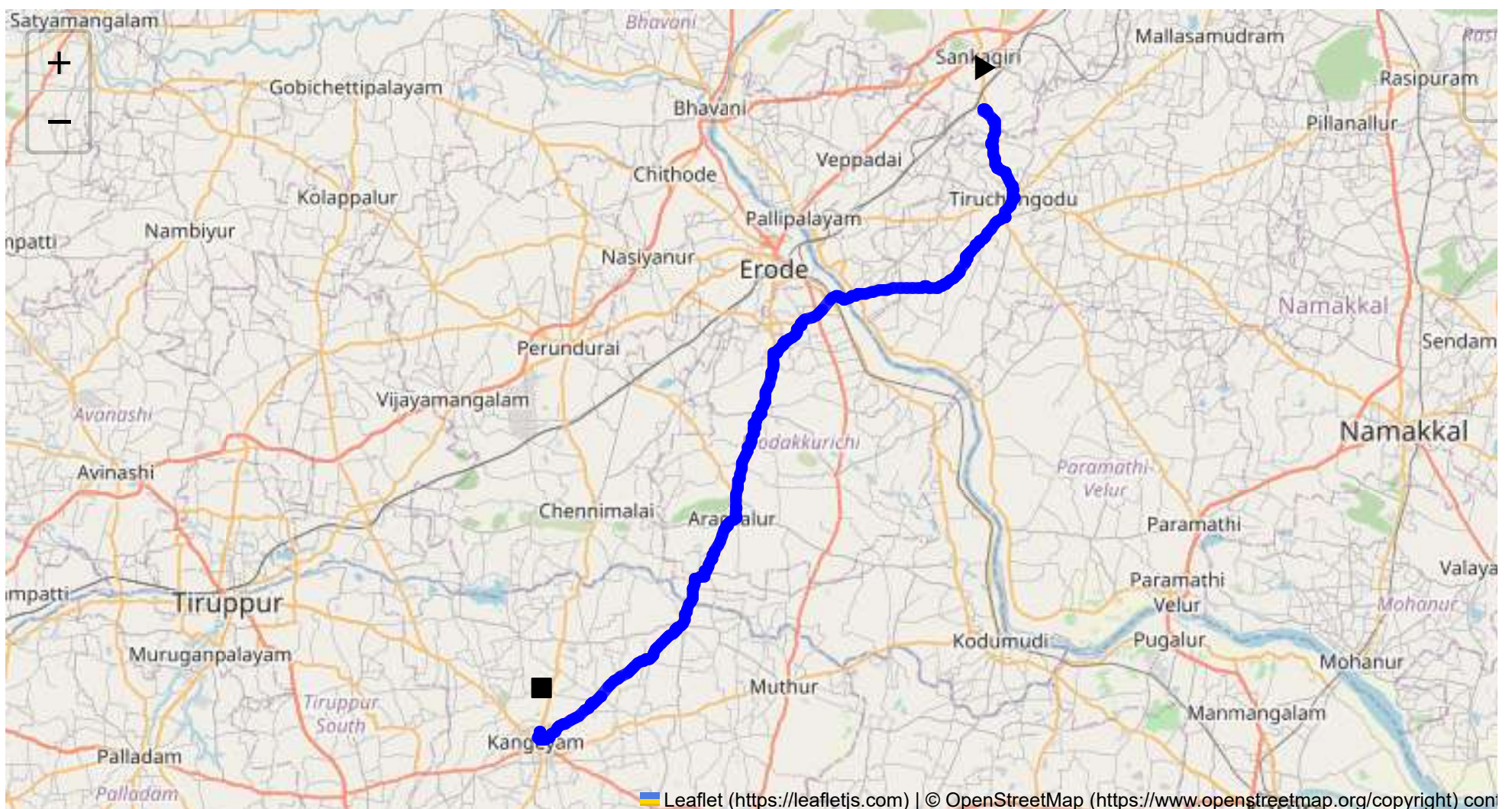
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 70.31 km
Estimated Duration: 1.7 hours
Adjusted Duration (Heavy Vehicle): 2.1 hours
Start: (11.4381, 77.8734)
End: (11.012105, 77.563606)



Welcome to the Journey Risk Management Study

Route Safety Analysis for the Route between Sangagiri to Kangeyam via Tiruchengode, Tamil Nadu, India

1. Overview of the Route Map

The route traverses from Sangagiri through Tiruchengode, and terminates in Kangeyam via a combination of state highways and rural roads. The path mainly follows local roads, which are often narrower and less developed than national highways.

2. Typical Weather Conditions and Potential Hazards

The region generally experiences a tropical climate with the following weather-related considerations:

- **Summer (March to May):** High temperatures, sometimes exceeding 40°C, can cause engine overheating and tire blowouts.
- **Monsoon (June to September):** Heavy rainfall can lead to flooded roads and reduced visibility, increasing the risk of hydroplaning.
- **Winter (November to February):** Mild conditions but fog can sometimes be a factor during early mornings.

3. Traffic Patterns and Congestion

- **Peak Hours:** Morning between 8:00 AM to 10:00 AM and late afternoon from 4:30 PM to 6:30 PM.
- **Congestion-Prone Areas:** Tiruchengode is a bustling town, especially during market days which may lead to further delays.

4. Road Quality and Infrastructure

- **Road Surface:** Mixed quality; portions near towns are well-maintained but rural sections may have potholes and uneven surfaces.
- **Infrastructure:** Limited availability of rest stops and repair facilities, particularly in rural stretches.

5. Suggestions for Alternative Routes

- **Emergency Detours:** Using NH544 near Erode or NH83 towards Dharapuram as potential alternatives during substantial blockages.

6. Local Regulations on Hazardous Material Transport

- Transport of hazardous materials typically requires specific permits, and there are regulations regarding allowable travel times through populated areas to minimize risks.

7. Historical Incidents Involving Heavy Vehicles

- **Common Issues:** Minor accidents related to overturned trucks during monsoon due to slippery roads.
- **Serious Incidents:** Rare but tend to occur where roads are poorly lit or marked.

8. Environmental Considerations and Sensitive Areas

- **Ecologically Sensitive Zones:** Parts of the route pass near agricultural fields where spills could impact local crops.

- **Presence of Wildlife:** Limited wildlife interventions, but rural areas might present occasional livestock on roads.

9. Communication Coverage and Potential Dead Zones

- Generally good mobile network coverage; however, certain rural patches could have weak signals. It's advisable to have multiple network SIM cards.

10. Estimated Emergency Response Times

- **Urban Areas like Tiruchengode:** Response times of around 15-30 minutes.
- **Rural Segments:** Response could take up to an hour depending on the severity of the incident and accessibility.

12. Overall Summary of Risk Assessment

This route is moderately challenging for heavy vehicles carrying hazardous materials due to a mix of road quality, weather conditions, and traffic congestion. While urban centers like Tiruchengode offer better infrastructure and potential emergency assistance, rural stretches could pose significant challenges due to communication shortcomings and limited emergency access. Safe navigation demands rigorous adherence to driving regulations, consistent monitoring of weather conditions, and readiness to adjust routes as needed.

Recommendations for Drivers:

- Frequent stop inspections during transit, specifically after transitioning from urban to rural roads.
- Pre-checking weather forecasts and planning travel to avoid peak congestion times.
- Ensure compliance with local hazardous material transport regulations.
- Remain vigilant for potential route diversions or communications from local traffic management authorities.

Overall, prudent driving practices combined with comprehensive pre-trip planning are crucial to ensure the safety and timeliness of transit along this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	U-Turn	High	11.0131468, 77.5636391	10 KM/Hr
2	Turn	High	11.43968, 77.87345	15 KM/Hr
3	Turn	High	11.44022, 77.87546	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
4	Turn	High	11.37868, 77.89498	15 KM/Hr
5	Blind Spot	Blind Spot	11.37862, 77.89530	10 KM/Hr
6	Turn	Medium	11.37857, 77.89473	30 KM/Hr
7	Turn	Medium	11.37842, 77.89452	30 KM/Hr
8	Turn	Medium	11.36919, 77.88934	30 KM/Hr
9	Turn	Medium	11.36616, 77.88885	30 KM/Hr
10	Turn	Medium	11.36602, 77.88875	30 KM/Hr
11	Turn	Medium	11.34067, 77.86347	30 KM/Hr
12	Turn	Medium	11.33854, 77.86216	30 KM/Hr
13	Turn	Medium	11.33778, 77.86236	30 KM/Hr
14	Turn	Medium	11.31752, 77.84260	30 KM/Hr
15	Turn	Medium	11.30963, 77.76695	30 KM/Hr
16	Turn	High	11.29490, 77.74685	15 KM/Hr
17	Turn	High	11.29141, 77.74662	15 KM/Hr
18	Turn	Medium	11.29125, 77.74646	30 KM/Hr
19	Turn	Medium	11.28844, 77.74319	30 KM/Hr
20	Turn	Medium	11.28573, 77.74281	30 KM/Hr
21	Turn	High	11.27319, 77.72981	15 KM/Hr
22	Blind Spot	Blind Spot	11.27330, 77.72715	10 KM/Hr
23	Turn	Medium	11.23054, 77.71796	30 KM/Hr
24	Turn	Medium	11.22387, 77.71385	30 KM/Hr
25	Turn	Medium	11.16078, 77.70122	30 KM/Hr
26	Turn	Medium	11.15953, 77.70067	30 KM/Hr
27	Turn	High	11.15944, 77.70068	15 KM/Hr
28	Turn	Medium	11.11918, 77.67766	30 KM/Hr
29	Turn	Medium	11.11740, 77.67198	30 KM/Hr
30	Turn	Medium	11.10481, 77.67060	30 KM/Hr
31	Turn	Medium	11.09509, 77.66612	30 KM/Hr
32	Turn	Medium	11.08730, 77.66436	30 KM/Hr
33	Turn	Medium	11.08282, 77.65837	30 KM/Hr
34	Turn	High	11.06189, 77.63943	15 KM/Hr
35	Turn	Medium	11.00744, 77.56586	30 KM/Hr
36	Turn	High	11.00915, 77.56212	15 KM/Hr
37	Blind Spot	Blind Spot	11.01315, 77.56364	10 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	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
10	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
12	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
14	clinic	Senthil Dental Clinic	11.0054794, 77.5638863	30 km/h	Medium
15	hospital	Raja Children's Hospital	11.0060531, 77.5639063	30 km/h	Medium
17	clinic	Priya Nursing Home	11.00622, 77.563094	30 km/h	Medium
18	hospital	ARC Hospital	11.0056814, 77.562434	30 km/h	Medium
19	fire_station	Kangeyam Fire Station	11.0080494, 77.5613364	30 km/h	Medium
23	clinic	Dhivya Nursing Home	11.0129842, 77.5640559	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
11	school	MDV School	11.3719843, 77.8915244	30 km/h	Medium
13	college	Government Arts and Science College, Kangeyam	11.0626738, 77.636227	30 km/h	Medium
16	school	Panchayat Union Middle School, Kangeyam	11.006326, 77.5634525	30 km/h	Medium
20	marketplace	Daily market	11.0071223, 77.560606	30 km/h	Medium
21	marketplace	Daily market	11.0069287, 77.5604531	30 km/h	Medium
22	marketplace	Weekly Vegetable Market	11.0075738, 77.5605157	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: U-Turn

Risk Level: High

Speed Limit: 10 KM/Hr

Coordinates: 11.0131468, 77.5636391



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44022, 77.87546



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.37868, 77.89498



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.37862, 77.89530



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.37857, 77.89473



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.37842, 77.89452



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.36919, 77.88934



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: 11.34067, 77.86347



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33854, 77.86216



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33778, 77.86236



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.31752, 77.84260



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30963, 77.76695



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: 11.29141, 77.74662



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29125, 77.74646



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: 11.28573, 77.74281



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.27319, 77.72981



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.27330, 77.72715



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

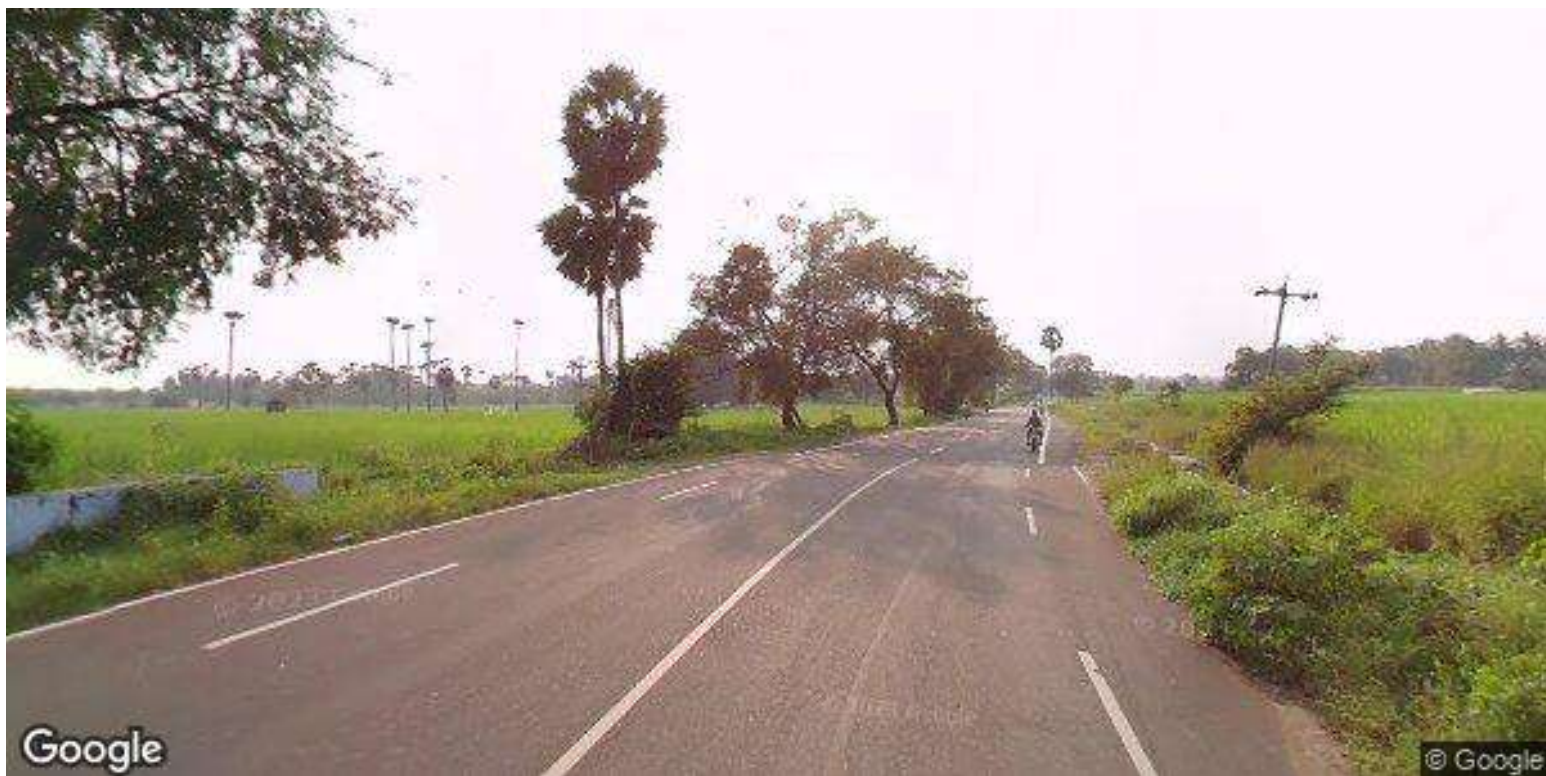


Risk Type: Turn

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



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00744, 77.56586



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.00915, 77.56212



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.01315, 77.56364
