



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SUBHA MITRAA 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

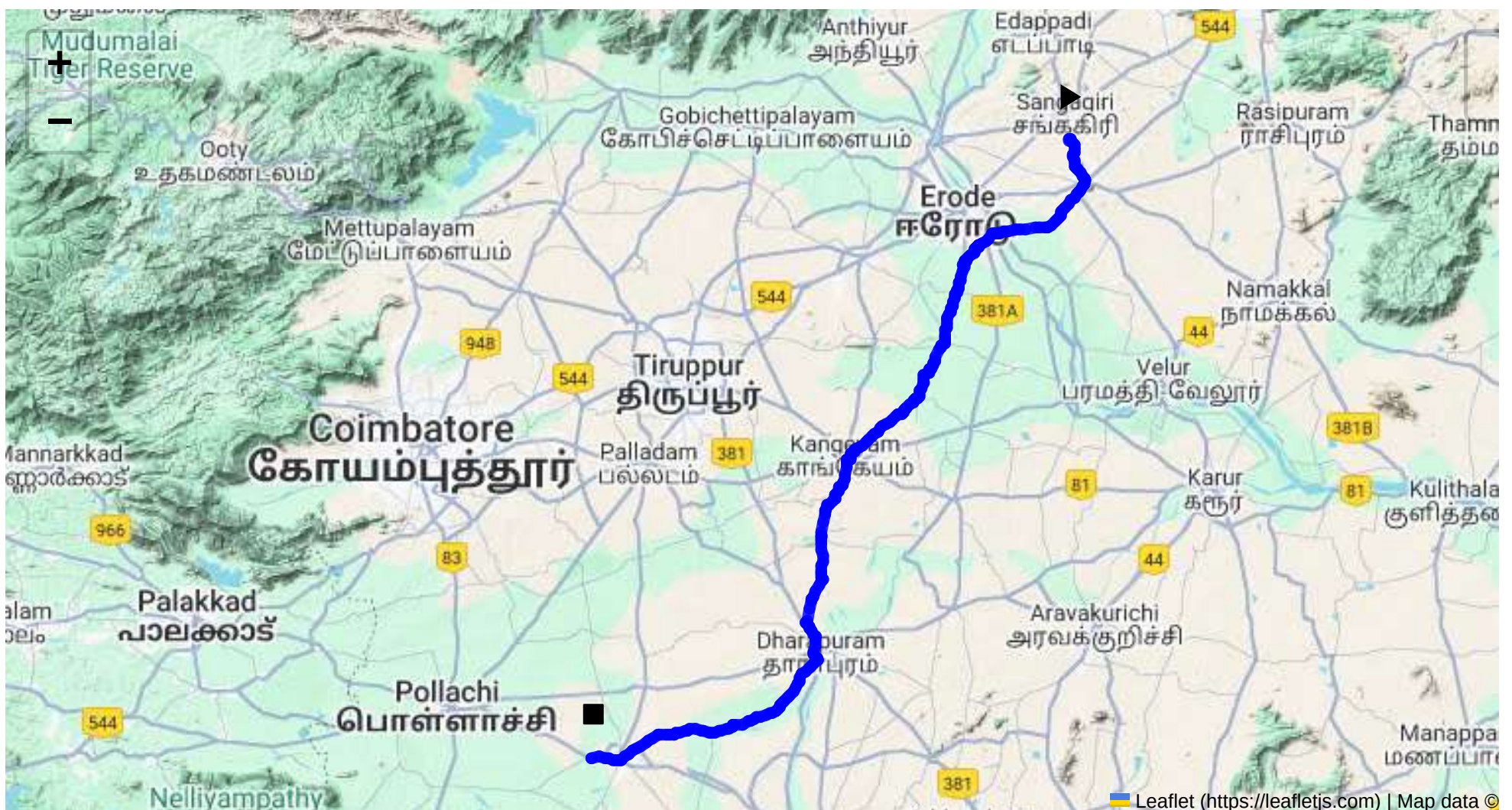
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 144.49 km
Estimated Duration: 3.2 hours
Adjusted Duration (Heavy Vehicle): 4.0 hours
Start: (11.4381, 77.8734)
End: (10.591277, 77.207579)



Welcome to the Journey Risk Management Study

1. **Overview of the Route Map:** The route spans approximately 144.49 kilometers and mainly travels through rural and semi-urban areas. It begins at Sangagiri, traveling through Tiruchengode, continuing via Udumalpet - Dharapuram Road, and concludes near NH209 in Tamil Nadu. The path is characterized by a mix of state and national highways, and local roads. Given the transition through agricultural and small-town areas, diversions and occasional localized routes are expected.

2. **Typical Weather Conditions and Potential Weather-Related Hazards:** The region experiences a tropical climate with the potential for hot and dry conditions during summers (March to May), and significant rainfall during the monsoon season (June to September). This can lead to slippery roads, reduced visibility, and flooding in low-lying areas, particularly between Udumalpet and Dharapuram.
3. **Analysis of Traffic Patterns:** Traffic peaks usually coincide with school and work commute times: early morning (7-9 AM) and late afternoon (4-6 PM). Roads near Tiruchengode and Udumalpet might experience congestion during these peak times, with additional delays due to local markets and festivals. Traffic density is lower in rural stretches but can suddenly increase near towns and urban areas.
4. **Assessment of Road Quality and Infrastructure:** The majority of the route is on well-paved roads. However, periodic maintenance might result in unpaved sections or detours. Some areas may have narrow roads, especially in village sections, which could pose challenges for heavy vehicles. Road signage and lighting are generally adequate, but caution should be exercised on less-marked local roads.
5. **Suggestions for Alternative Routes for Emergencies:** In case of blockages, alternate routes include local roads parallel to the main highways. For major detours, using NH544 via Erode to NH209 is advisable, although this might increase travel time. Local knowledge is crucial for navigating smaller bypasses efficiently.
6. **Summary of Local Regulations Affecting Hazardous Material Transport:** Transport of hazardous materials may be restricted during certain hours in populated areas, typically avoiding peak congestion periods. Compliance with licensing and signage regulations is mandatory, and carrying appropriate documentation is essential. Restrictions on entering certain town centers should also be reviewed in advance.
7. **Overview of Historical Incidents:** Historical data indicates occasional road accidents involving heavy vehicles; however, these mostly occurred due to driver fatigue and poor road conditions during monsoons. Hazardous material incidents are rare but tend to be concentrated around more populated areas where traffic is dense.
8. **Environmental Considerations and Sensitive Areas:** The route travels through agricultural areas and vicinity forests near the Western Ghats, which are environmentally sensitive. Efforts should be made to minimize pollution and potential contamination of soil and water bodies near these regions. Noise pollution should also be considered when traveling through quieter towns.
9. **Analysis of Communication Coverage:** Most of the route is well-covered by mobile networks, although there are potential communication dead zones around forested or mountainous parts near the Western Ghats. Ensuring continuous communication availability via multi-network SIM cards is advisable.
10. **Estimated Emergency Response Times:** In town areas, emergency services might reach within 30 minutes. In more rural or mountainous areas, response times can extend to 1-2 hours depending on proximity to significant urban centers.
11. **Overall Summary of Risk Assessment:** Overall, the route presents moderate risk due to weather variability and road conditions, balanced by generally good road infrastructure. Key risks include

weather disruptions, traffic congestion in towns, and potential communication gaps. Mitigation strategies should focus on timing travel to avoid peak congestion and ensuring preparedness for weather-related issues. Transporters should remain informed of local regulations and maintain a flexible approach to route adjustments as needed.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Roundabout	High	11.00172, 77.56268	15 KM/Hr
2	Roundabout	High	10.72668, 77.52217	15 KM/Hr
3	Roundabout	High	10.58763, 77.24722	15 KM/Hr
4	Turn	High	11.43968, 77.87345	15 KM/Hr
5	Turn	High	11.44022, 77.87546	15 KM/Hr
6	Turn	Medium	11.43107, 77.88171	30 KM/Hr
7	Turn	Medium	11.39976, 77.88382	30 KM/Hr
8	Turn	Medium	11.39690, 77.88852	30 KM/Hr
9	Turn	Medium	11.36593, 77.88847	30 KM/Hr
10	Turn	Medium	11.33561, 77.86176	30 KM/Hr
11	Turn	Medium	11.31790, 77.84330	30 KM/Hr
12	Turn	Medium	11.30951, 77.77598	30 KM/Hr
13	Turn	Medium	11.31109, 77.77183	30 KM/Hr
14	Turn	Medium	11.30911, 77.76654	30 KM/Hr
15	Turn	High	11.29496, 77.74717	15 KM/Hr
16	Turn	High	11.29128, 77.74656	15 KM/Hr
17	Turn	Medium	11.28859, 77.74323	30 KM/Hr
18	Turn	Medium	11.28533, 77.74247	30 KM/Hr
19	Turn	Medium	11.27310, 77.72938	30 KM/Hr
20	Turn	High	11.27330, 77.72720	15 KM/Hr
21	Turn	Medium	11.23062, 77.71799	30 KM/Hr
22	Turn	Medium	11.15942, 77.70068	30 KM/Hr
23	Turn	Medium	11.12126, 77.67929	30 KM/Hr
24	Turn	Medium	11.11935, 77.67790	30 KM/Hr
25	Turn	Medium	11.11765, 77.67237	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
26	Turn	Medium	11.11660, 77.67164	30 KM/Hr
27	Turn	Medium	11.10462, 77.67055	30 KM/Hr
28	Turn	Medium	11.08701, 77.66412	30 KM/Hr
29	Turn	Medium	11.06229, 77.63986	30 KM/Hr
30	Turn	Medium	11.00834, 77.56962	30 KM/Hr
31	Blind Spot	Blind Spot	11.00065, 77.56884	10 KM/Hr
32	Turn	Medium	10.94873, 77.54679	30 KM/Hr
33	Turn	High	10.94732, 77.54710	15 KM/Hr
34	Turn	Medium	10.93774, 77.53723	30 KM/Hr
35	Turn	Medium	10.92953, 77.53274	30 KM/Hr
36	Turn	Medium	10.89225, 77.52651	30 KM/Hr
37	Turn	Medium	10.83362, 77.52899	30 KM/Hr
38	Turn	High	10.77658, 77.50715	15 KM/Hr
39	Turn	Medium	10.75748, 77.51939	30 KM/Hr
40	Turn	Medium	10.73682, 77.51732	30 KM/Hr
41	Turn	Medium	10.63697, 77.41792	30 KM/Hr
42	Turn	Medium	10.63715, 77.40497	30 KM/Hr
43	Turn	Medium	10.62891, 77.38715	30 KM/Hr
44	Turn	Medium	10.62505, 77.37856	30 KM/Hr
45	Turn	Medium	10.63103, 77.34392	30 KM/Hr
46	Turn	High	10.59171, 77.20777	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
10	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
11	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
14	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
15	hospital	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium
18	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
19	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	30 km/h	Medium
22	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	30 km/h	Medium
23	clinic	Punitha Nursing Home	10.72901, 77.520148	30 km/h	Medium
24	hospital	Ponnaiah Hospital, Dharapuram	10.72916, 77.520131	30 km/h	Medium
25	pharmacy	Apollo Pharmacy	10.5860212, 77.2456546	30 km/h	Medium
26	hospital	Anitha Hospital	10.58568, 77.248727	30 km/h	Medium
27	hospital	ARVI Hospital	10.58528, 77.249095	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
9	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
12	college	Government Arts and Science College, Kangeyam	11.0626738, 77.636227	30 km/h	Medium
13	school	Carmel Girls Higher Secondary School	11.0009019, 77.5710182	30 km/h	Medium
16	school	Global Matriculation Higher Secondary School	10.965994, 77.5591898	30 km/h	Medium
17	college	Maharani College	10.7625655, 77.5157126	30 km/h	Medium
20	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
21	school	Thenmalar Higher Secondary School	10.7333748, 77.5166481	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: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.00172, 77.56268



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72668, 77.52217



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.58763, 77.24722



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44022, 77.87546



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.43107, 77.88171



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39976, 77.88382



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39690, 77.88852



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.36593, 77.88847



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.33561, 77.86176



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31790, 77.84330



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30951, 77.77598



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.31109, 77.77183



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30911, 77.76654



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29496, 77.74717



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29128, 77.74656



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.28859, 77.74323



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28533, 77.74247



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27310, 77.72938



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.27330, 77.72720



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23062, 77.71799



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.15942, 77.70068

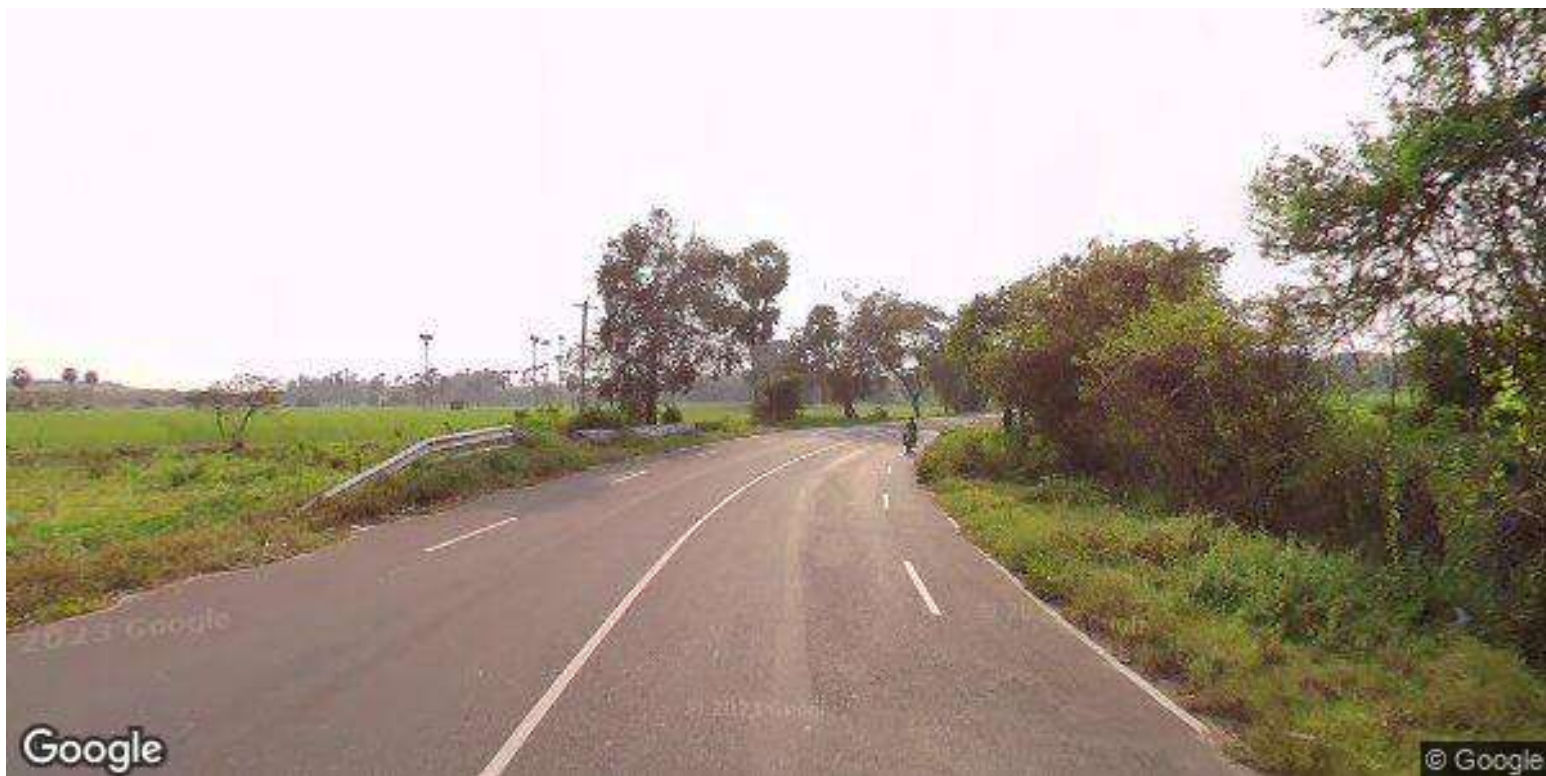


Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.12126, 77.67929



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.11935, 77.67790



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11765, 77.67237



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11660, 77.67164



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10462, 77.67055



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08701, 77.66412



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.06229, 77.63986



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.00834, 77.56962



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.00065, 77.56884



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.94873, 77.54679



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.94732, 77.54710



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.93774, 77.53723



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.92953, 77.53274



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.89225, 77.52651



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.83362, 77.52899



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.77658, 77.50715



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75748, 77.51939



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.73682, 77.51732



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.63697, 77.41792



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.63715, 77.40497



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.62891, 77.38715



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.62505, 77.37856



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.63103, 77.34392



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.59171, 77.20777
