



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to AADHI 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

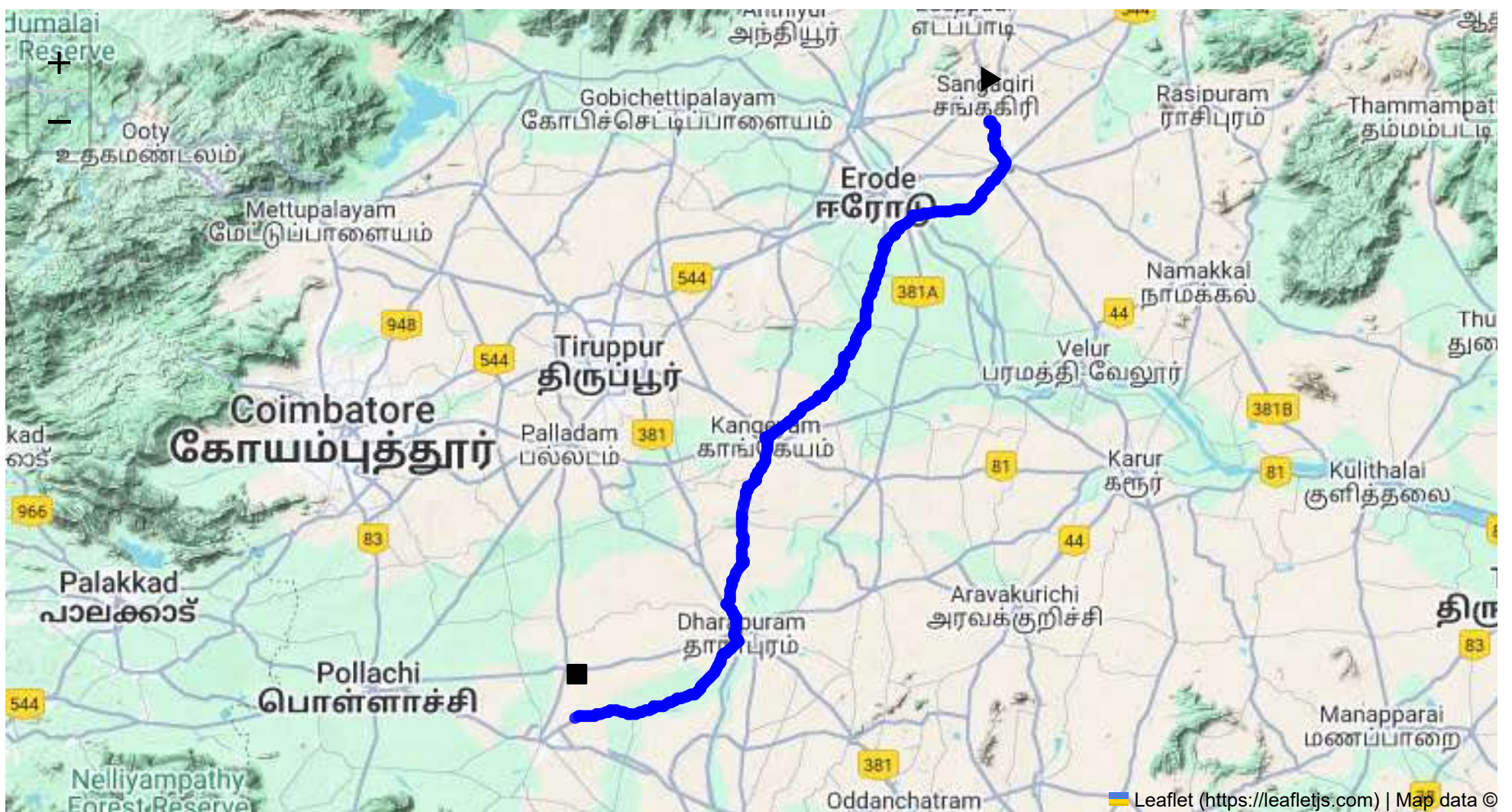
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 133.77 km
Estimated Duration: 3.0 hours
Adjusted Duration (Heavy Vehicle): 3.7 hours
Start: (11.4381, 77.8734)
End: (10.618953, 77.293005)



Welcome to the Journey Risk Management Study

Route Overview

The route from Sangagiri to Thanthoni via Kangeyam covers approximately 134 kilometers and is a mix of state highways and local roads. The journey is primarily through rural and semi-urban areas, with occasional stretches passing through smaller towns. The primary landmarks include the starting point

near CVQF+23W in Sangagiri, the mid-point near Kangeyam, and the endpoint in Thanthoni on the Udumalpet-Dharapuram Road.

Weather Conditions

1. **Typical Weather:** Tamil Nadu typically experiences a tropical climate. The region sees heavy rains during the monsoon season (June to October), with potential for localized flooding. The dry season is hot, particularly from March to May.
2. **Weather Hazards:** During monsoons, roads might become slippery, and visibility could reduce due to heavy rain. Also, potholes may develop or worsen. Strong winds and thunderstorms can also pose hazards.

Traffic Patterns

1. **Congestion Spots:** Congestion is likely in Kangeyam and the approach to Udumalpet, especially during morning (8-10 AM) and evening (5-7 PM) rush hours. Markets in smaller towns can cause unexpected delays.
2. **Peak Hours:** The route is moderately busy in the mornings and evenings due to local commuting. Agricultural activities in the region also influence traffic patterns.

Road Quality and Infrastructure

1. **Infrastructure:** Most sections of the route are single-lane to two-lane roads with variable road conditions. State highways are generally well-maintained, but local roads may have potholes and inadequate signage.
2. **Rural Roads:** Some sections lack proper markings and may have abrupt edges. Pay attention to sudden road narrowing and pedestrian movement in village areas.

Alternative Routes

In case of emergencies or significant road closures, consider rerouting via NH44 or NH83, though these may add travel time. Be aware of the additional distance and potentially increased traffic density.

Local Regulations for Hazardous Material Transport

1. **Regulations:** Permits are required for transporting hazardous materials, and routes must comply with Indian transport regulations. Movement might be restricted during nighttime in certain areas.
2. **Checkpoints:** Expect checks at district borders and city limits, especially near Kangeyam.

Historical Incidents

No significant industrial accidents or incidents involving heavy vehicles are reported in recent history along this route. However, caution in monsoon months is advised due to increased risk of accidents.

Environmental Considerations

- 1. **Sensitive Areas:** The route passes through agricultural zones; therefore, caution is advised to prevent spillage affecting crops. Avoid environmentally sensitive areas and be mindful near water bodies during rains.
- 2. **Wildlife:** There may be stray cattle or wildlife crossing particularly close to village fringes.

Communication Coverage

- 1. **Cell Coverage:** Major towns have good cellular coverage. Expect potential dead zones in isolated rural stretches, primarily after Kangeyam toward Dharapuram.
- 2. **Emergency Services:** Ensure you have essential contact numbers saved and offline maps available.

Estimated Emergency Response Times

- 1. **Sangagiri to Kangeyam:** Emergency response (medical or police) could range from 15 to 30 minutes, with better response expected in populated towns.
- 2. **Kangeyam to Thanthoni:** Response times might extend up to 45 minutes in remote stretches.

Risk Assessment Summary

The overall route is moderate risk with weather-related hazards during monsoon seasons and potential delays due to agricultural activities. Be prepared for variable road conditions and exercise caution in towns to avoid congestion. Follow local transport regulations diligently to ensure compliance when carrying hazardous materials. Regular maintenance checks on vehicles are advised to mitigate risks from road hardships, especially during bad weather conditions.

This assessment serves as a guide for truck drivers to plan and operate efficiently along the designated route while emphasizing safety and compliance.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Roundabout	High	11.00535, 77.56114	15 KM/Hr
2	Roundabout	High	10.72668, 77.52217	15 KM/Hr
3	Turn	High	11.43968, 77.87345	15 KM/Hr
4	Turn	High	11.44022, 77.87546	15 KM/Hr
5	Turn	Medium	11.43107, 77.88171	30 KM/Hr
6	Turn	Medium	11.39976, 77.88382	30 KM/Hr
7	Turn	Medium	11.39690, 77.88852	30 KM/Hr
8	Turn	Medium	11.36593, 77.88847	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
9	Turn	Medium	11.33561, 77.86176	30 KM/Hr
10	Turn	Medium	11.31777, 77.84310	30 KM/Hr
11	Turn	Medium	11.30952, 77.77587	30 KM/Hr
12	Turn	Medium	11.31111, 77.77178	30 KM/Hr
13	Turn	Medium	11.30973, 77.76712	30 KM/Hr
14	Turn	High	11.29490, 77.74685	15 KM/Hr
15	Turn	High	11.29125, 77.74646	15 KM/Hr
16	Turn	Medium	11.29076, 77.74528	30 KM/Hr
17	Turn	Medium	11.28844, 77.74319	30 KM/Hr
18	Turn	Medium	11.28518, 77.74231	30 KM/Hr
19	Turn	Medium	11.27307, 77.72916	30 KM/Hr
20	Blind Spot	Blind Spot	11.27330, 77.72715	10 KM/Hr
21	Turn	Medium	11.23054, 77.71796	30 KM/Hr
22	Turn	Medium	11.22949, 77.71670	30 KM/Hr
23	Turn	Medium	11.15942, 77.70068	30 KM/Hr
24	Turn	Medium	11.12102, 77.67919	30 KM/Hr
25	Turn	Medium	11.11932, 77.67786	30 KM/Hr
26	Turn	Medium	11.11763, 77.67232	30 KM/Hr
27	Turn	Medium	11.09491, 77.66603	30 KM/Hr
28	Turn	Medium	11.08696, 77.66407	30 KM/Hr
29	Turn	Medium	11.08296, 77.65857	30 KM/Hr
30	Turn	Medium	11.06183, 77.63924	30 KM/Hr
31	Turn	Medium	11.00831, 77.56943	30 KM/Hr
32	Turn	Medium	10.94862, 77.54680	30 KM/Hr
33	Turn	High	10.94722, 77.54709	15 KM/Hr
34	Turn	Medium	10.93765, 77.53710	30 KM/Hr
35	Turn	Medium	10.93135, 77.53302	30 KM/Hr
36	Turn	Medium	10.89213, 77.52646	30 KM/Hr
37	Turn	Medium	10.83409, 77.52932	30 KM/Hr
38	Turn	High	10.77642, 77.50712	15 KM/Hr
39	Turn	Medium	10.75864, 77.51918	30 KM/Hr
40	Turn	Medium	10.75722, 77.51935	30 KM/Hr
41	Turn	Medium	10.73670, 77.51731	30 KM/Hr
42	Turn	Medium	10.63682, 77.41748	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
43	Turn	Medium	10.63707, 77.40481	30 KM/Hr
44	Turn	Medium	10.63096, 77.39875	30 KM/Hr
45	Turn	Medium	10.62891, 77.38675	30 KM/Hr
46	Turn	Medium	10.62501, 77.37810	30 KM/Hr
47	Turn	Medium	10.63099, 77.34357	30 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
11	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
13	hospital	ARC Hospital	11.0056814, 77.562434	30 km/h	Medium
14	clinic	Priya Nursing Home	11.00622, 77.563094	30 km/h	Medium
16	fire_station	Kangeyam Fire Station	11.0080494, 77.5613364	30 km/h	Medium
17	clinic	Senthil Dental Clinic	11.0054794, 77.5638863	30 km/h	Medium
18	hospital	Raja Children's Hospital	11.0060531, 77.5639063	30 km/h	Medium
20	pharmacy	Bharani medicals	11.0073077, 77.5592308	30 km/h	Medium
21	hospital	Government Hospital	11.005636, 77.5601252	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
24	hospital	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium
25	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
29	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
30	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	30 km/h	Medium
32	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	30 km/h	Medium
33	clinic	Punitha Nursing Home	10.72901, 77.520148	30 km/h	Medium
34	hospital	Ponnaiah Hospital, Dharapuram	10.72916, 77.520131	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
15	marketplace	Weekly Vegetable Market	11.0075738, 77.5605157	30 km/h	Medium
19	school	Panchayat Union Middle School, Kangeyam	11.006326, 77.5634525	30 km/h	Medium
22	marketplace	Daily market	11.0071223, 77.560606	30 km/h	Medium
23	marketplace	Daily market	11.0069287, 77.5604531	30 km/h	Medium
26	school	Global Matriculation Higher Secondary School	10.965994, 77.5591898	30 km/h	Medium
27	college	Maharani College	10.7625655, 77.5157126	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
28	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium
31	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: 11.00535, 77.56114



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.72668, 77.52217



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: 11.31777, 77.84310



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30952, 77.77587



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.31111, 77.77178



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.30973, 77.76712



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: 11.29125, 77.74646



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.29076, 77.74528



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: 11.28518, 77.74231



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.27307, 77.72916



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: 11.22949, 77.71670



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: 11.12102, 77.67919



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11932, 77.67786



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11763, 77.67232



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.09491, 77.66603



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08696, 77.66407



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.08296, 77.65857



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.06183, 77.63924



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00831, 77.56943



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.94862, 77.54680



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.94722, 77.54709



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.93765, 77.53710



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.93135, 77.53302



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.89213, 77.52646



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.83409, 77.52932



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.77642, 77.50712



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75864, 77.51918



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.75722, 77.51935



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.73670, 77.51731



Risk Type: Turn

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Speed Limit: 30 KM/Hr

Coordinates: 10.63682, 77.41748



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.63707, 77.40481



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.63096, 77.39875



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.62891, 77.38675



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.62501, 77.37810



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.63099, 77.34357
