



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to SUN 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

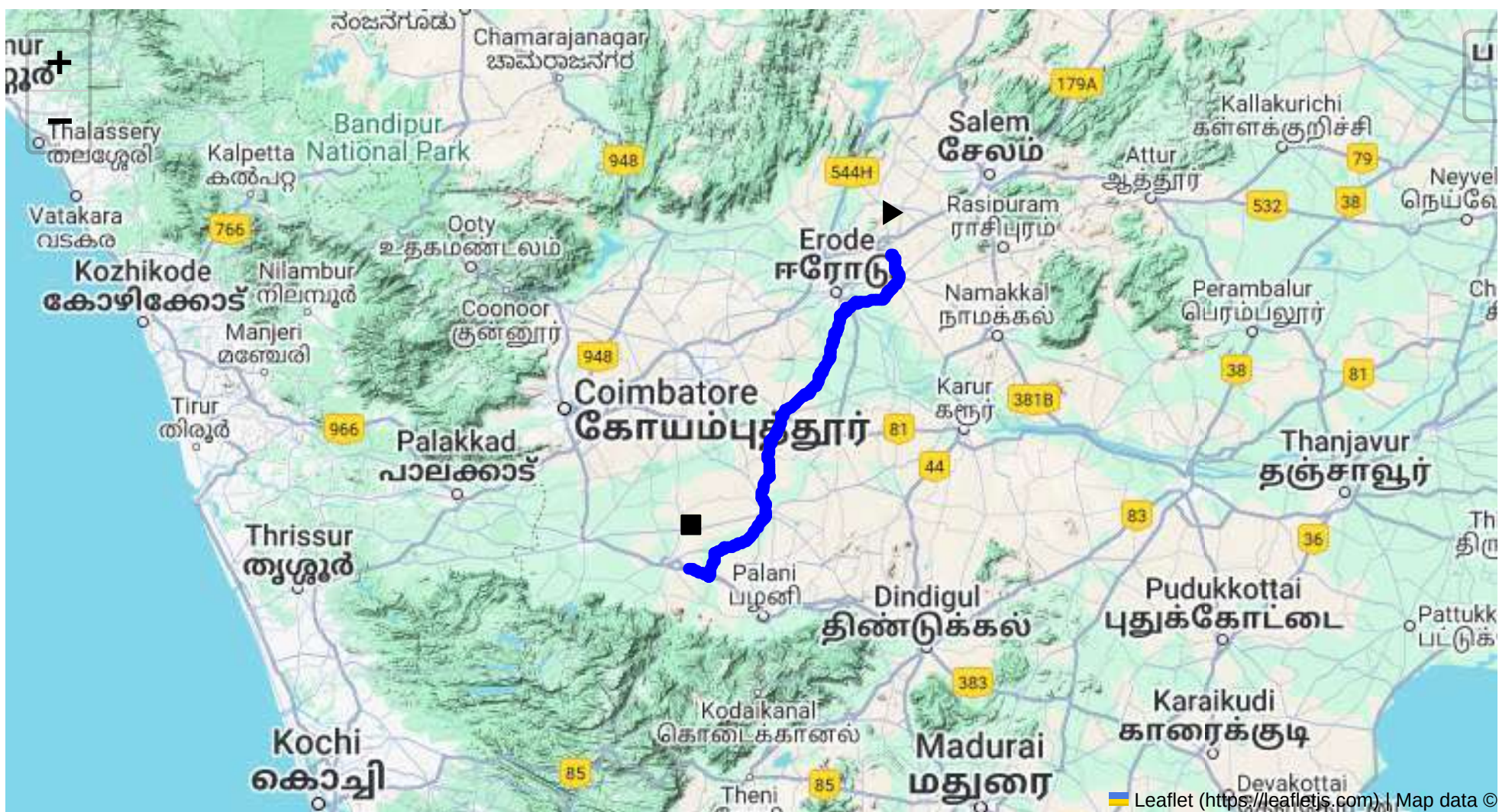
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 138.88 km
Estimated Duration: 3.1 hours
Adjusted Duration (Heavy Vehicle): 3.9 hours
Start: (11.4381, 77.8734)
End: (10.58037, 77.307032)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri to Palappampatti travels through MDR149 and Madathukulam, covering approximately 138.88 kilometers. This path traverses various terrains, including semi-urban areas, rural regions, and highways.

2. Typical Weather Conditions and Potential Hazards

Tamil Nadu generally experiences a tropical climate with hot summers, a monsoon season predominantly from October to December, and mild winters. Potential weather-related hazards include:

- **Monsoon Season:** Increased risk of flooding and waterlogged roads.
- **Summer Heat:** High temperatures can affect vehicle performance and driver fatigue.
- **Fog:** Common during early mornings in winter, reducing visibility.

3. Traffic Patterns and Congestion

- **Peak Hours:** Expect increased traffic between 8-10 AM and 5-7 PM, especially near towns and junctions.
- **Congestion-Prone Areas:** Around cities like Salem, Coimbatore, and Erode, traffic can be dense, particularly near market areas and school zones.

4. Road Quality and Infrastructure

- **Highways:** Generally well-maintained, but construction work or road widening can disrupt travel.
- **Rural Roads:** Some sections, especially MDRs, might be narrow or have uneven surfaces. Watch for potholes during the rainy season.
- **Signage and Lighting:** Adequate along major roads but can be insufficient in rural stretches.

5. Alternative Routes for Emergencies

- **Option 1:** Via NH544 (Coimbatore Kochi Highway) - A more reliable and faster route but might involve longer distance.
- **Option 2:** Use of state highways through Salem and Dindigul for bypassing congested areas.

6. Local Regulations Affecting Hazardous Material Transport

- **Permits Required:** Transport of hazardous materials requires specific permits and adherence to the Motor Vehicles Act, 1988.
- **Timing Restrictions:** Movement in some towns and cities may be time-bound, restricting entry during peak hours for heavy vehicles.

7. Historical Incidents Involving Heavy Vehicles

- **Patterns:** Recorded incidents typically involve vehicle overturns due to sharp curves and narrow roads.
- **Mitigation:** Adequate driver training and adherence to speed limits can prevent most accidents.

8. Environmental Considerations and Sensitive Areas

- **Wildlife Crossings:** Some segments near forested areas may have wildlife crossings. Drive cautiously and adhere to speed limits.
- **Cultural Sites:** Certain towns might have places of religious or cultural significance; noise and pollution restrictions may apply.

9. Communication Coverage

- **Major Carriers:** Mostly good coverage from leading telecom providers.
- **Dead Zones:** Anticipate potential dead zones in remote rural areas. Satellite communication devices could be beneficial.

10. Estimated Emergency Response Times

- **Urban Areas:** Typically under 30 minutes due to proximity to hospitals and fire services.
- **Rural Areas:** Could exceed 45 minutes, depending on the remoteness and accessibility.

12. Overall Summary of Risk Assessment

The route from Sangagiri to Palappampatti poses moderate risk. While the infrastructure supports heavy vehicle transit, challenges include weather impacts, rural road conditions, and potential communication dead zones. Adequate preparation, adherence to regulations, and emergency readiness reduce risks substantially. In urban areas, expect traffic and potentially longer travel durations during peak times, while rural sections require attention to road conditions and wildlife crossings.

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	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
9	Turn	Medium	11.33561, 77.86176	30 KM/Hr
10	Turn	Medium	11.31777, 77.84310	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
11	Turn	Medium	11.30952, 77.77587	30 KM/Hr
12	Turn	Medium	11.31111, 77.77178	30 KM/Hr
13	Turn	Medium	11.30900, 77.76647	30 KM/Hr
14	Turn	Medium	11.29503, 77.74747	30 KM/Hr
15	Turn	Medium	11.29414, 77.74685	30 KM/Hr
16	Turn	High	11.29125, 77.74646	15 KM/Hr
17	Turn	Medium	11.29076, 77.74528	30 KM/Hr
18	Turn	Medium	11.28844, 77.74319	30 KM/Hr
19	Turn	Medium	11.28518, 77.74231	30 KM/Hr
20	Turn	Medium	11.27307, 77.72916	30 KM/Hr
21	Blind Spot	Blind Spot	11.27330, 77.72715	10 KM/Hr
22	Turn	Medium	11.23054, 77.71796	30 KM/Hr
23	Turn	Medium	11.22949, 77.71670	30 KM/Hr
24	Turn	Medium	11.15942, 77.70068	30 KM/Hr
25	Turn	Medium	11.12102, 77.67919	30 KM/Hr
26	Turn	Medium	11.11932, 77.67786	30 KM/Hr
27	Turn	Medium	11.11763, 77.67232	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	11.06225, 77.63983	30 KM/Hr
31	Turn	High	11.00826, 77.56962	15 KM/Hr
32	Blind Spot	Blind Spot	11.00058, 77.56882	10 KM/Hr
33	Turn	Medium	10.94862, 77.54680	30 KM/Hr
34	Turn	High	10.94722, 77.54709	15 KM/Hr
35	Turn	Medium	10.93765, 77.53710	30 KM/Hr
36	Turn	Medium	10.93135, 77.53302	30 KM/Hr
37	Turn	Medium	10.89213, 77.52646	30 KM/Hr
38	Turn	Medium	10.83409, 77.52932	30 KM/Hr
39	Turn	High	10.77642, 77.50712	15 KM/Hr
40	Turn	Medium	10.75864, 77.51918	30 KM/Hr
41	Turn	Medium	10.75722, 77.51935	30 KM/Hr
42	Turn	Medium	10.73670, 77.51731	30 KM/Hr
43	Turn	Medium	10.63682, 77.41748	30 KM/Hr
44	Turn	Medium	10.63657, 77.40427	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
45	Turn	Medium	10.63096, 77.39875	30 KM/Hr
46	Turn	Medium	10.62891, 77.38675	30 KM/Hr
47	Turn	Medium	10.62501, 77.37810	30 KM/Hr
48	Turn	Medium	10.62530, 77.37509	30 KM/Hr
49	Turn	High	10.62510, 77.37461	15 KM/Hr
50	Blind Spot	Blind Spot	10.55909, 77.36238	10 KM/Hr
51	Turn	Medium	10.58010, 77.30729	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
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
19	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
20	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

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
18	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium
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: 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: 11.30900, 77.76647



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29503, 77.74747



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.29414, 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: 11.08696, 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: 11.06225, 77.63983



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.00826, 77.56962



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.00058, 77.56882



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
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Speed Limit: 15 KM/Hr
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Risk Type: Turn
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Speed Limit: 30 KM/Hr
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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

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.63682, 77.41748



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.63657, 77.40427



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: 10.62530, 77.37509



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.62510, 77.37461



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 10.55909, 77.36238



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.58010, 77.30729

