



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal to BRIGHT AUTO 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

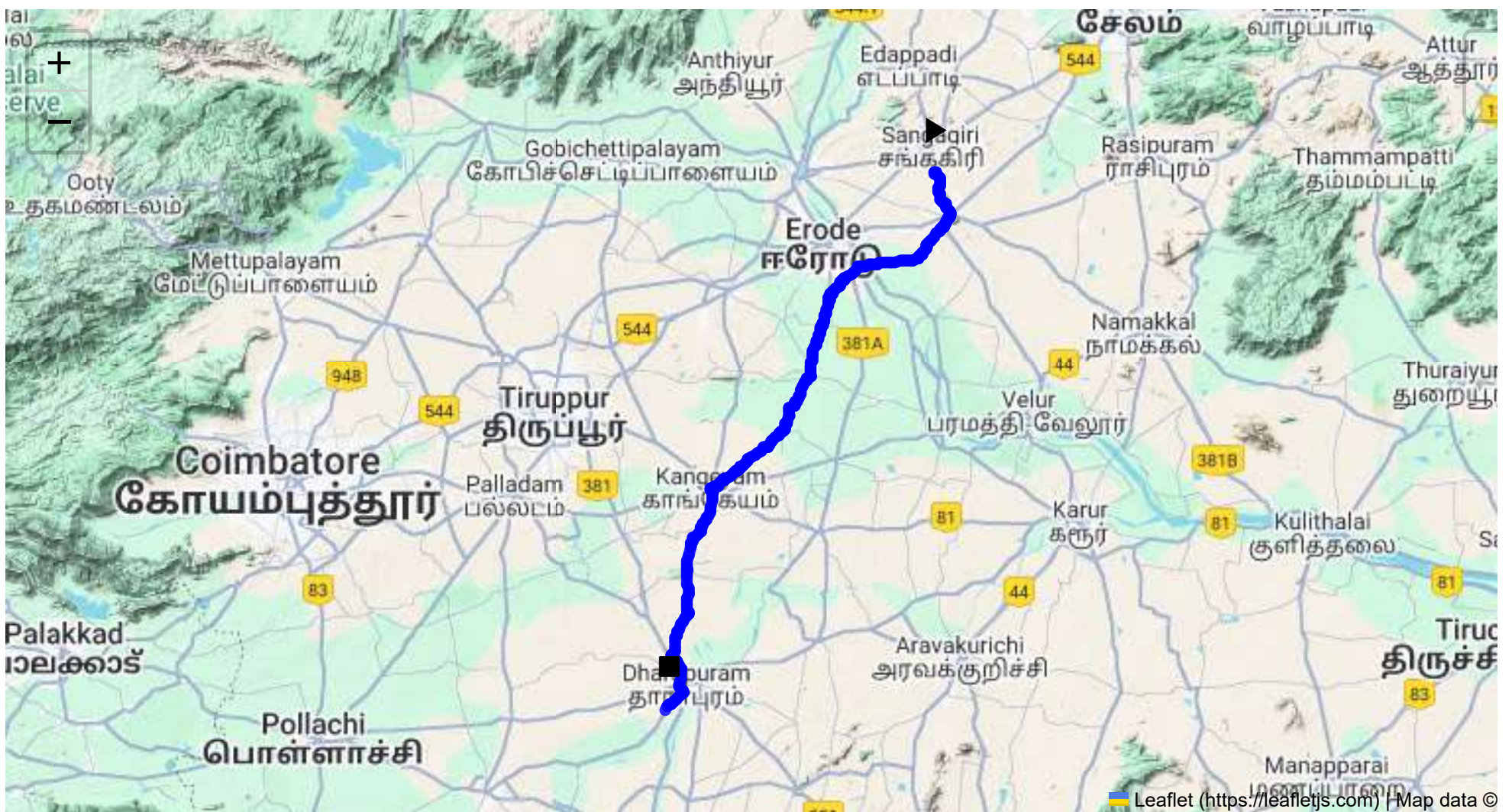
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 107.37 km
Estimated Duration: 2.4 hours
Adjusted Duration (Heavy Vehicle): 3.0 hours
Start: (11.4381, 77.8734)
End: (10.699795, 77.498985)



Welcome to the Journey Risk Management Study

1. Overview of the Route Map

The route from Sangagiri, Tamil Nadu to the destination near SH 97 runs through several smaller towns and rural areas, primarily following state highways and local roads. The major waypoints include Palayakottai Road in Kangeyam. This route is approximately 107.37 kilometers long and takes about 2.44 hours to drive with heavy vehicles, depending on traffic and road conditions.

2. Typical Weather Conditions and Potential Weather-Related Hazards

Tamil Nadu generally has a tropical climate, with high temperatures year-round. The western region, including your route, can experience heavy monsoons from June to September. Monsoon rains can cause flooding, reduced visibility, and slippery roads, particularly in rural and poorly drained areas. Additionally, strong winds and storms are potential hazards, affecting the stability and control of heavy trucks.

3. Analysis of Traffic Patterns

The road from Sangagiri to Kangeyam and beyond typically sees increased traffic during the early morning (7-9 AM) and late afternoon (5-7 PM), primarily due to local commute patterns. Congestion may occur near towns and junctions, particularly in Kangeyam, due to local market activity and narrow streets.

4. Assessment of Road Quality and Infrastructure

Road quality varies along this route. Major highways are generally well-maintained, while some local roads, especially in rural and less-trafficked areas, may have potholes and uneven surfaces. There are sections with limited signage and potentially inadequate nighttime lighting, increasing risk factors.

5. Suggestions for Alternative Routes for Emergencies

In case of emergencies, alternative routes may include deviations through NH 544 and NH 81. These highways offer more consistent conditions and connect to other major roads; however, they may require detours extending travel time.

6. Summary of Local Regulations Affecting Hazardous Material Transport

Transport of hazardous materials is regulated with restrictions on timings and roads, particularly in urban areas. The state enforces specific rules for hazardous cargo, such as prohibitions during rush hours and requirements for special clearance, which should be carefully noted by the driver.

7. Overview of Historical Incidents

There have been incidents involving heavy vehicles on these routes mostly due to the lack of proper road maintenance and heavy rains causing road erosion. There have been occasional reports of overturns and spillage due to vehicles losing control on slick surfaces or during abrupt braking on congested roads.

8. Environmental Considerations and Sensitive Areas

The route passes through agricultural zones, and there may be local wildlife near forest fringes. Minimizing noise pollution and proper disposal of waste and emissions are crucial to reduce environmental impact.

9. Analysis of Communication Coverage

Mobile network coverage is generally good in towns but can be spotty in rural sections between towns. Drivers should expect potential dead zones and plan communication needs accordingly, perhaps by pre-programming emergency contacts or using satellite communication if necessary.

10. Estimated Emergency Response Times

Response times can vary significantly. Proximity to towns like Erode and Kangeyam can facilitate relatively quick responses (approximately 30-45 minutes), while more remote stretches may take longer—up to 90 minutes—due to road access and distance from emergency facilities.

12. Overall Summary of Risk Assessment

The transport route from Sangagiri to SH 97 through Kangeyam involves moderate risk due to uneven road quality, potential monsoon-related hazards, and traffic congestion. While the route is commonly used, drivers should remain vigilant, maintain regular vehicle checks, ensure compliance with local transport regulations, and plan for contingencies, particularly during adverse weather conditions. Prior knowledge and understanding of local infrastructure can enhance route safety and reduce hazards associated with transportation.

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	11.39976, 77.88382	30 KM/Hr
6	Turn	Medium	11.39690, 77.88852	30 KM/Hr
7	Turn	High	11.36616, 77.88885	15 KM/Hr
8	Turn	Medium	11.34067, 77.86347	30 KM/Hr
9	Turn	High	11.33854, 77.86216	15 KM/Hr
10	Turn	Medium	11.33778, 77.86236	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

	Risk Type	Risk Level	Coordinates	Speed Limit
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	High	11.27319, 77.72981	15 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	11.20776, 77.70916	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	11.11710, 77.67175	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	High	10.94722, 77.54709	15 KM/Hr
33	Turn	Medium	10.93895, 77.53976	30 KM/Hr
34	Turn	Medium	10.93054, 77.53265	30 KM/Hr
35	Turn	Medium	10.89213, 77.52646	30 KM/Hr
36	Turn	Medium	10.83409, 77.52932	30 KM/Hr
37	Turn	Medium	10.77642, 77.50712	30 KM/Hr
38	Turn	Medium	10.77580, 77.50724	30 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

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
13	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
15	clinic	Senthil Dental Clinic	11.0054794, 77.5638863	30 km/h	Medium
16	hospital	Raja Children's Hospital	11.0060531, 77.5639063	30 km/h	Medium
18	hospital	ARC Hospital	11.0056814, 77.562434	30 km/h	Medium
19	clinic	Priya Nursing Home	11.00622, 77.563094	30 km/h	Medium
21	fire_station	Kangeyam Fire Station	11.0080494, 77.5613364	30 km/h	Medium
22	pharmacy	Bharani medicals	11.0073077, 77.5592308	30 km/h	Medium
23	hospital	Government Hospital	11.005636, 77.5601252	30 km/h	Medium
26	hospital	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium
27	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
31	hospital	Sri Balaji Surya Hospital	10.735518, 77.5185388	30 km/h	Medium
32	hospital	Ramana Hospital, Dharapuram	10.7351092, 77.517107	30 km/h	Medium
34	hospital	Janani Hospital, Dharapuram	10.7294033, 77.5210119	30 km/h	Medium
35	clinic	Punitha Nursing Home	10.72901, 77.520148	30 km/h	Medium
36	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
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
17	school	Panchayat Union Middle School, Kangeyam	11.006326, 77.5634525	30 km/h	Medium
20	marketplace	Weekly Vegetable Market	11.0075738, 77.5605157	30 km/h	Medium
24	marketplace	Daily market	11.0071223, 77.560606	30 km/h	Medium
25	marketplace	Daily market	11.0069287, 77.5604531	30 km/h	Medium
28	school	Global Matriculation Higher Secondary School	10.965994, 77.5591898	30 km/h	Medium
29	college	Maharani College	10.7625655, 77.5157126	30 km/h	Medium
30	school	Vishnu Lakshmi Matriculation Higher Secondary School	10.7340392, 77.5164506	30 km/h	Medium
33	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: 11.39976, 77.88382



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.39690, 77.88852



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.36616, 77.88885



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.34067, 77.86347



Risk Type: Turn

Risk Level: High

Speed Limit: 15 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: 11.30952, 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: 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: 11.20776, 77.70916



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: 11.11710, 77.67175



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: High

Speed Limit: 15 KM/Hr

Coordinates: 10.94722, 77.54709



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.93895, 77.53976



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 10.93054, 77.53265



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: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.77642, 77.50712



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 10.77580, 77.50724



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
