



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO MITHRAN AGENCY

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

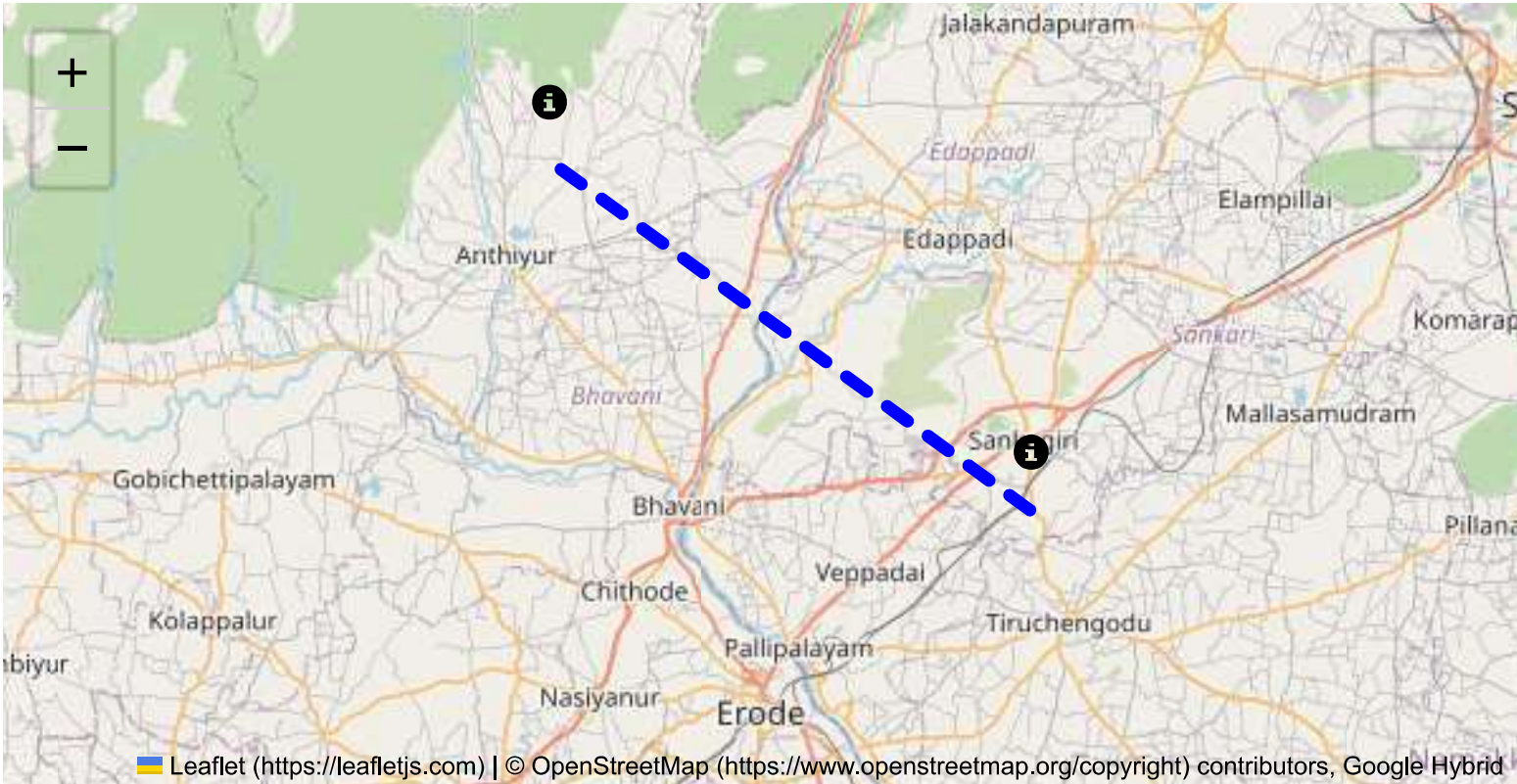
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental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

Journey Risk Mitigation

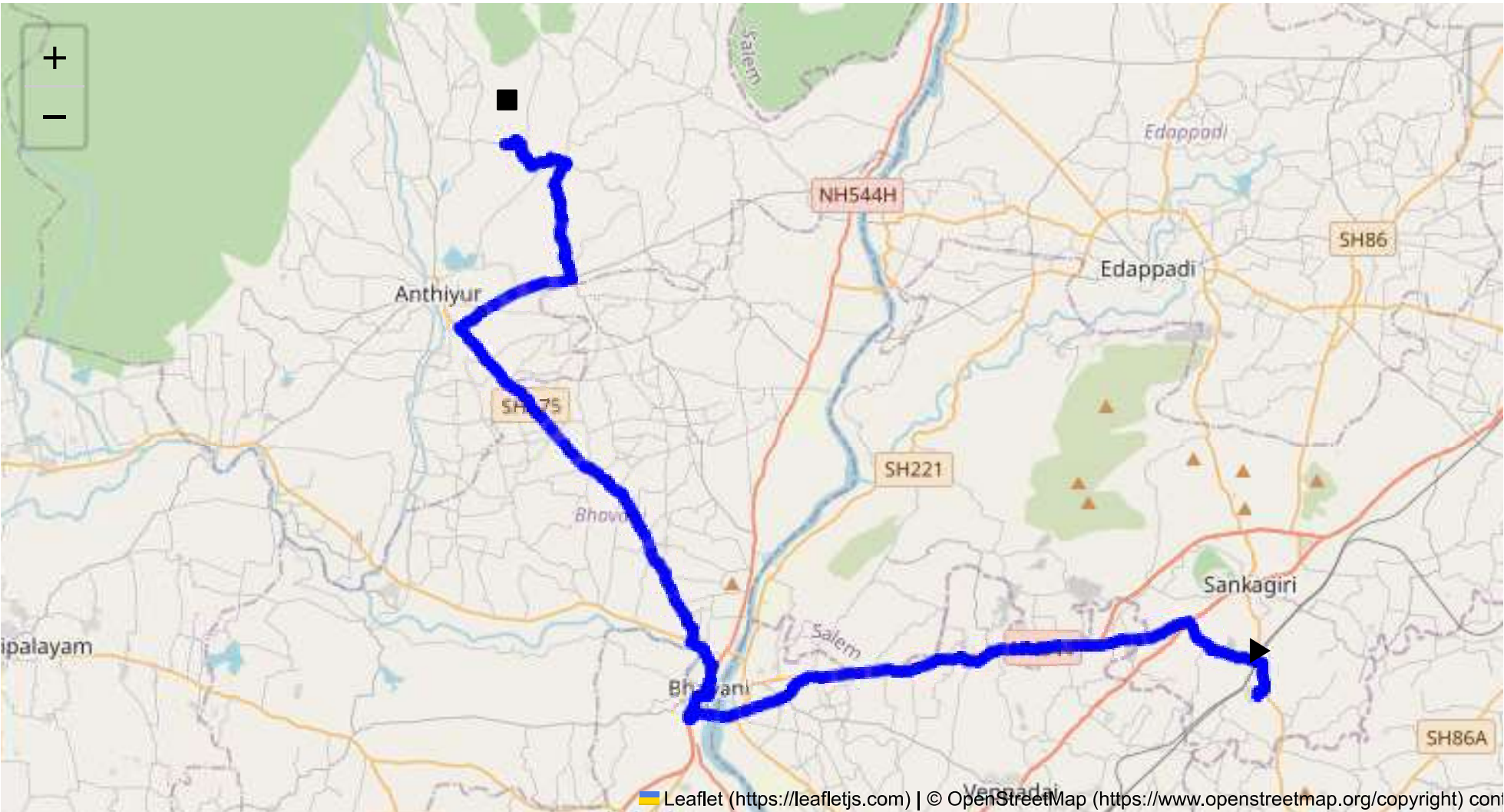
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 56.20 km
Estimated Duration: 1.3 hours
Adjusted Duration (Heavy Vehicle): 1.6 hours
Start: (11.4381, 77.8734)
End: (11.6257681, 77.6117597)



Welcome to the Journey Risk Management Study

1. Route Overview

The route from CVQF+23W, Sangagiri to JJG6+9P2, Vellithiruppur Rd, Aalampalayam covers approximately 56.2 kilometers through the state highways and local roads in Tamil Nadu. This route will typically move southeast, passing through a mix of rural and semi-urban areas. Certain segments may include narrower roads and bridges which could impact the travel of heavy vehicles carrying hazardous materials.

2. Typical Weather Conditions

Tamil Nadu experiences a tropical climate. Key weather considerations include:

- **Monsoon Season (October to December):** Heavy rains can cause road flooding and slick driving conditions.
- **Summer Months (March to May):** High temperatures may affect vehicle performance and road fatigue.
- **Winter (December to February):** Mild conditions, minimal impact.

3. Traffic Patterns

Traffic analysis indicates:

- **Peak hours:** 8:00-10:00 AM and 5:00-7:00 PM, primarily around larger towns.
- **Congestion-prone areas:** Entrance/exits of towns and near market areas, especially on state highways.

4. Road Quality and Infrastructure

- **State Highways:** Generally maintained but expect occasional potholes and uneven surfaces.
- **Local Roads:** Narrow and may not be regularly maintained; increased chances of road obstructions.

5. Alternative Routes for Emergencies

- **NH44 and NH544:** Nearby national highways could serve as redirection points, although they may increase travel distance.
- Local knowledge of side roads could assist in minor diversions around obstacles.

6. Local Regulations on Hazardous Material Transport

- Restrictions during daytime in crowded town areas.
- Permits required for hazardous material transport; verify with local transport authorities.
- Designated transport route adherence is critical.

7. Historical Incidents

- **Accidents and Road Closures:** Occasional incidents reported, especially during the monsoon season, due to road slips and visibility issues during heavy rains.
- **Hazardous Material Incidents:** Rare but local response mechanisms are typically in place.

8. Environmental Considerations

- **Sensitive Areas:** Agricultural zones and occasional small forests; caution necessary to prevent contamination.
- **Wildlife Crossings:** Limited, but present near forested areas.

9. Communication Coverage

- Urban and suburban areas typically have reliable mobile network coverage.
- **Potential Dead Zones:** Rural stretches may have intermittent coverage; advisable to carry alternative communication tools.

10. Emergency Response Times

- **Urban Segments:** Response times range within 15-30 minutes.
- **Rural Segments:** Can extend to an hour or more due to distance from fire stations/hospitals.

11. Overall Summary of Risk Assessment

- **High-risk periods:** Monsoon season brings significant challenges in terms of road conditions and potential flooding.
- **Medium-risk periods:** High temperatures in summer can stress vehicles.
- Traffic congestion is manageable but expect delays in towns.
- Proper preparation, including route knowledge and adherence to local regulations, can mitigate most risks.

Overall, while the route is generally navigable by heavy vehicles carrying hazardous materials, drivers need to be prepared for weather variations and road quality. Alternative routing and emergency preparedness plans should be established in advance. Regular communication checks and equipment readiness are essential for safety compliance.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.56355, 77.59597	15 KM/Hr
1	Turn	Medium	11.43822, 77.87348	30 KM/Hr
2	Turn	High	11.43968, 77.87345	15 KM/Hr
3	Turn	High	11.44029, 77.87544	15 KM/Hr
4	Turn	Medium	11.44898, 77.87410	30 KM/Hr
5	Turn	Medium	11.45357, 77.85789	30 KM/Hr
6	Turn	Medium	11.45352, 77.85698	30 KM/Hr
7	Turn	Medium	11.45847, 77.85140	30 KM/Hr
8	Turn	Medium	11.46048, 77.85036	30 KM/Hr
9	Turn	Medium	11.46303, 77.84945	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
10	Turn	Medium	11.46314, 77.84928	30 KM/Hr
11	Turn	Medium	11.45509, 77.81383	30 KM/Hr
12	Turn	High	11.43001, 77.67575	15 KM/Hr
13	Turn	Medium	11.43003, 77.67551	30 KM/Hr
14	Turn	High	11.43026, 77.67525	15 KM/Hr
15	Turn	Medium	11.43769, 77.67810	30 KM/Hr
16	Turn	Medium	11.43791, 77.67834	30 KM/Hr
17	Turn	High	11.43863, 77.68223	15 KM/Hr
18	Turn	Medium	11.43871, 77.68228	30 KM/Hr
19	Turn	Medium	11.43965, 77.68224	30 KM/Hr
20	Turn	Medium	11.43997, 77.68198	30 KM/Hr
21	Turn	High	11.44105, 77.68187	15 KM/Hr
22	Turn	High	11.44119, 77.68217	15 KM/Hr
23	Turn	Medium	11.44295, 77.68261	30 KM/Hr
24	Turn	High	11.44300, 77.68275	15 KM/Hr
25	Turn	High	11.44853, 77.68331	15 KM/Hr
26	Turn	High	11.45649, 77.67621	15 KM/Hr
27	Blind Spot	Blind Spot	11.58056, 77.63456	10 KM/Hr
28	Turn	Medium	11.58400, 77.63375	30 KM/Hr
29	Turn	Medium	11.58422, 77.63356	30 KM/Hr
30	Turn	Medium	11.58763, 77.63226	30 KM/Hr
31	Turn	Medium	11.60252, 77.63066	30 KM/Hr
32	Turn	Medium	11.60601, 77.63089	30 KM/Hr
33	Turn	Medium	11.61747, 77.63059	30 KM/Hr
34	Blind Spot	Blind Spot	11.61907, 77.63317	10 KM/Hr
35	Turn	Medium	11.62064, 77.62814	30 KM/Hr
36	Turn	Medium	11.62112, 77.62767	30 KM/Hr
37	Turn	High	11.62118, 77.62741	15 KM/Hr
38	Turn	High	11.61984, 77.62663	15 KM/Hr
39	Turn	Medium	11.61903, 77.62042	30 KM/Hr
40	Turn	Medium	11.62020, 77.61955	30 KM/Hr
41	Turn	Medium	11.62077, 77.61948	30 KM/Hr
42	Turn	Medium	11.62153, 77.61880	30 KM/Hr
43	Turn	Medium	11.62230, 77.61740	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
44	Turn	High	11.62730, 77.61521	15 KM/Hr
45	Turn	Medium	11.62714, 77.61493	30 KM/Hr
46	Turn	Medium	11.62615, 77.61410	30 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Government Hospital	11.4525596, 77.7749426	30 km/h	Medium
4	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
5	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
6	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
8	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
9	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
10	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
11	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
12	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
13	hospital	Maha Hospital	11.4372003, 77.6781345	30 km/h	Medium
14	hospital	Jothikumar Hospital	11.43687, 77.678407	30 km/h	Medium
15	hospital	Sutha Hospital	11.4365526, 77.6796472	30 km/h	Medium
16	clinic	Velavan Homoeo Clinic	11.4367087, 77.6761472	30 km/h	Medium
17	hospital	SKMH Hospital	11.4379787, 77.6780268	30 km/h	Medium
18	clinic	Sri Dharshan Diabetes Care	11.437649, 77.6778126	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
19	hospital	Kavin Hospital	11.4399114, 77.6838194	30 km/h	Medium
20	clinic	Thangam Acupuncture	11.4418816, 77.6832318	30 km/h	Medium
21	hospital	Sumangali Hospital	11.4427668, 77.6827131	30 km/h	Medium
22	hospital	Annusiya Hospital	11.4432777, 77.6813562	30 km/h	Medium
23	hospital	Kandasamy Hospital	11.4450062, 77.6832304	30 km/h	Medium
24	hospital	Ashok Krishna Hospital	11.4483344, 77.6856579	30 km/h	Medium
25	hospital	Senthil Hospital	11.4475854, 77.6844482	30 km/h	Medium
26	hospital	S.N.A. Siddha Hospital	11.44704, 77.682877	30 km/h	Medium
27	hospital	Shri Mani Hospital	11.44771, 77.6838471	30 km/h	Medium
28	clinic	Sri Hari Clinic	11.4483503, 77.6850963	30 km/h	Medium
29	hospital	Sri Saravana Hospital	11.4506202, 77.6829676	30 km/h	Medium
30	hospital	Government Hospital	11.45112, 77.682149	30 km/h	Medium
31	hospital	Vijay Hospital	11.45091, 77.682019	30 km/h	Medium
32	hospital	Anbe Sivam Hospital	11.4508139, 77.6854947	30 km/h	Medium
33	hospital	Immiaditya Hospital	11.4501276, 77.6836088	30 km/h	Medium
34	clinic	Kalyani Nursing Home	11.452097, 77.6808974	30 km/h	Medium
35	hospital	Government Hospital	11.4519113, 77.6819742	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
0	school	KRP Matric. Hr. Sec School	11.4546193, 77.8142445	30 km/h	Medium
1	college	Vivekanandha Engineering College	11.4589312, 77.7899284	30 km/h	Medium
2	marketplace	Monday market	11.452863, 77.775989	30 km/h	Medium
7	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.56355, 77.59597



Risk Type: Turn
Risk Level: High

Speed Limit: 15 KM/Hr
Coordinates: 11.44029, 77.87544



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44898, 77.87410



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45357, 77.85789



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45352, 77.85698



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.45847, 77.85140



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46048, 77.85036



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46303, 77.84945



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.46314, 77.84928



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.45509, 77.81383



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.43001, 77.67575



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43003, 77.67551



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.43026, 77.67525



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43769, 77.67810



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43791, 77.67834



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.43863, 77.68223



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43871, 77.68228



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43965, 77.68224



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.43997, 77.68198



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44105, 77.68187



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44119, 77.68217



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.44295, 77.68261



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.44300, 77.68275



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.44853, 77.68331



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.45649, 77.67621



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.58056, 77.63456



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.58400, 77.63375



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.58422, 77.63356



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.58763, 77.63226



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.60252, 77.63066



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.60601, 77.63089



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.61747, 77.63059



Risk Type: Blind Spot

Risk Level: Blind Spot

Speed Limit: 10 KM/Hr

Coordinates: 11.61907, 77.63317



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.62064, 77.62814



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.62112, 77.62767



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.62118, 77.62741



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.61984, 77.62663



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.61903, 77.62042



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.62020, 77.61955



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.62077, 77.61948



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.62153, 77.61880



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.62230, 77.61740



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.62730, 77.61521



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.62714, 77.61493



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.62615, 77.61410