



# IndianOil

## JOURNEY RISK MANAGEMENT (JRM) STUDY

### Salem Terminal to BANNARIAMMAN 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.

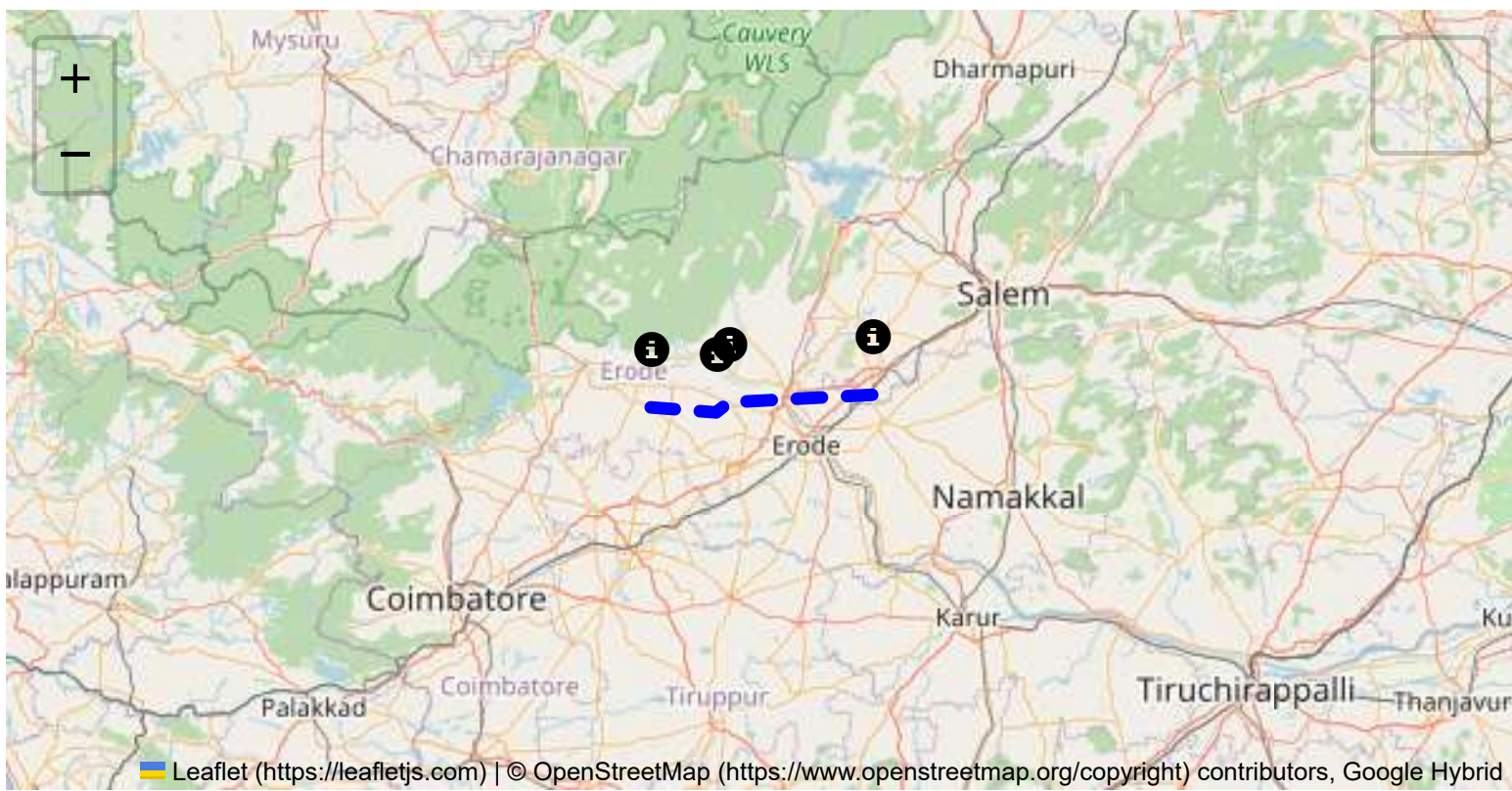
## **Journey Risk Mitigation**

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.

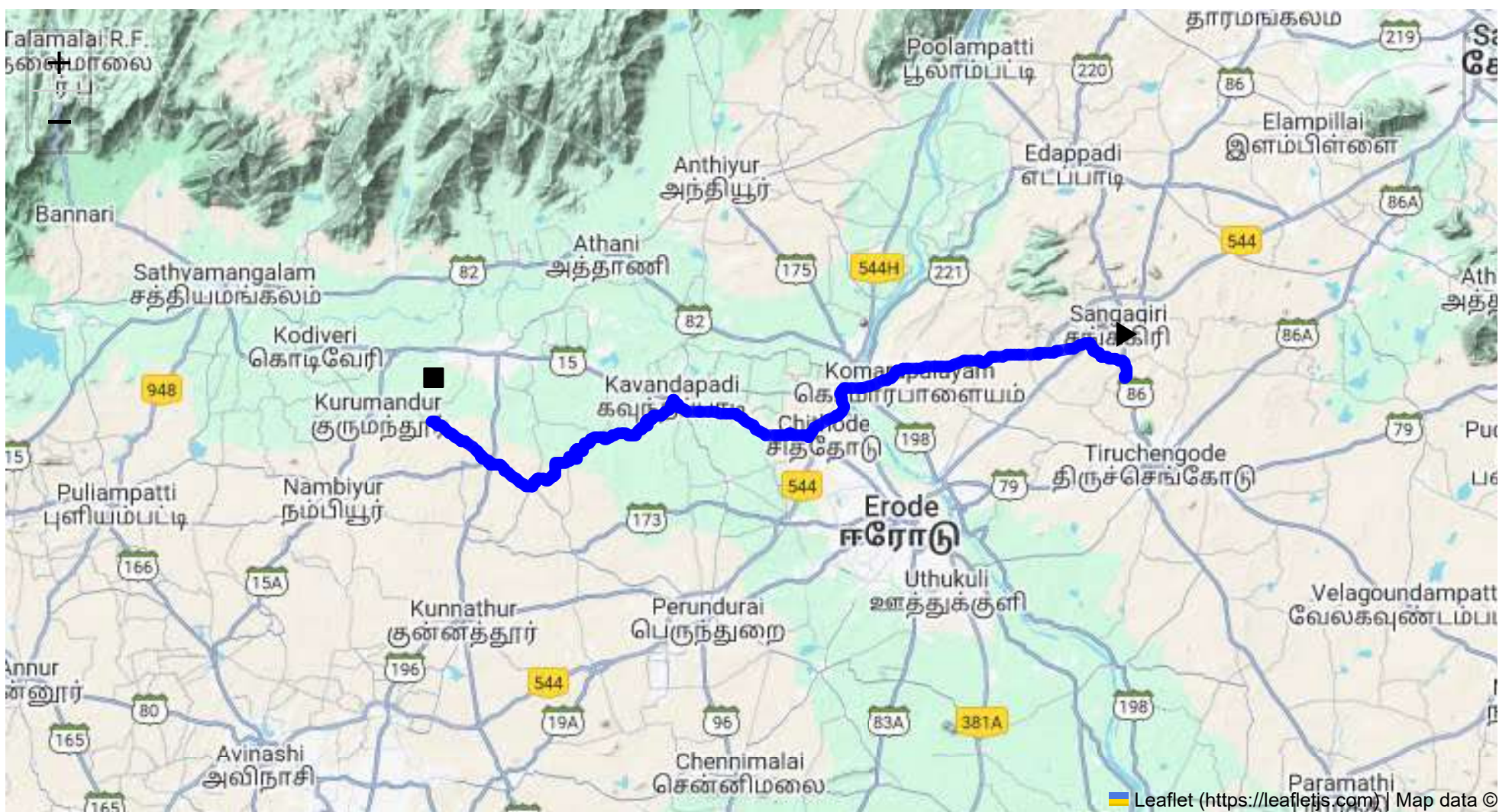
## **Compliance with Government Directives**

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: 66.21 km**  
**Estimated Duration: 1.4 hours**  
**Adjusted Duration (Heavy Vehicle): 1.7 hours**  
**Start: (11.4381, 77.8734)**  
**End: (11.40935, 77.38947)**



## Welcome to the Journey Risk Management Study

- 1. Overview of the Route Map:** The route from CVQF+23W, Sangagiri to C95Q+PQ5, Ayalur passes through CHF5+33H, Kavandapadi, and 9GXH+QP3, K Velampalayam, covering approximately 66.21 kilometers. The route involves district roads and state highways, passing through rural and semi-urban areas.
- 2. Typical Weather Conditions and Potential Weather-Related Hazards:** The region experiences a tropical climate with hot summers, mild winters, and monsoon rains. Potential weather-related hazards include:



- Heavy rains during the monsoon (June to September), causing waterlogging and decreased visibility.
- Occasional thunderstorms and high winds, which can affect driving conditions.

### 3. Analysis of Traffic Patterns:

- Peak hours typically occur in the morning (8:00-10:00 AM) and evening (5:00-7:00 PM).
- Congestion-prone areas include market regions in Kavandapadi and Velampalayam, especially during peak hours.

### 4. Assessment of Road Quality and Infrastructure:

- Roads vary from well-maintained highways to narrow rural roads.
- Occasional potholes and uneven surfaces can be expected, especially on less trafficked routes.
- Infrastructure such as signage and lighting is adequate on highways but sparse on village roads.

### 5. Suggestions for Alternative Routes for Emergencies: In emergencies, consider:

- Diversion to NH-544 as a major highway alternative, if detouring westward.
- Local roads linking back to the main route via nearby towns for shorter diversions.

### 6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Ensure compliance with Tamil Nadu Pollution Control Board regulations for hazardous material.
- Restrictions on transporting hazardous materials through certain densely populated areas may be in place.

### 7. Overview of Historical Incidents:

- No significant recurring incidents specific to this route. However, isolated reports of vehicular accidents involving overloaded vehicles exist.

### 8. Environmental Considerations and Sensitive Areas:

- The area includes agricultural lands, necessitating caution to prevent contamination.
- Residential zones in Kavandapadi and Velampalayam require heightened alertness for pedestrian traffic.

### 9. Analysis of Communication Coverage:

- Overall, good mobile network coverage is expected.
- Possible dead zones in deeply rural areas or during adverse weather conditions.

### 10. Estimated Emergency Response Times:

- Urban segments: 20-30 minutes.
- Rural segments: 30-45 minutes, potentially longer in adverse weather or during high traffic.

**12. Overall Summary of Risk Assessment:** This route is considered moderately risky due to potential congestion in market areas, variable road conditions, and weather influences. The main risk factors are the navigation of semi-urban areas and adherence to regulations regarding hazardous materials. Preparation involves planning for peak traffic, verifying weather forecasts, and keeping updated on local

regulations. Regular maintenance checks on vehicles and emergency contacts should be prearranged to ensure prompt response if an incident occurs.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Turn	High	11.43968, 77.87345	15 KM/Hr
1	Turn	High	11.44024, 77.87528	15 KM/Hr
2	Turn	High	11.44898, 77.87410	15 KM/Hr
3	Turn	Medium	11.45357, 77.85789	30 KM/Hr
4	Turn	High	11.45352, 77.85698	15 KM/Hr
5	Turn	Medium	11.45847, 77.85140	30 KM/Hr
6	Turn	Medium	11.45898, 77.85135	30 KM/Hr
7	Turn	High	11.46303, 77.84945	15 KM/Hr
8	Turn	Medium	11.45509, 77.81383	30 KM/Hr
9	Turn	Medium	11.45085, 77.77020	30 KM/Hr
10	Turn	Medium	11.43165, 77.67734	30 KM/Hr
11	Turn	High	11.39829, 77.65233	15 KM/Hr
12	Turn	High	11.42322, 77.55816	15 KM/Hr
13	Turn	Medium	11.42307, 77.55791	30 KM/Hr
14	Turn	Medium	11.41293, 77.54983	30 KM/Hr
15	Turn	High	11.41221, 77.54372	15 KM/Hr
16	Turn	High	11.41069, 77.54328	15 KM/Hr
17	Turn	Medium	11.41046, 77.54037	30 KM/Hr
18	Turn	Medium	11.41005, 77.53977	30 KM/Hr
19	Turn	Medium	11.40650, 77.53959	30 KM/Hr
20	Turn	High	11.40426, 77.53802	15 KM/Hr
21	Turn	High	11.40474, 77.53650	15 KM/Hr
22	Turn	Medium	11.40379, 77.53577	30 KM/Hr
23	Turn	Medium	11.39990, 77.53242	30 KM/Hr
24	Turn	Medium	11.39908, 77.53118	30 KM/Hr
25	Turn	Medium	11.39922, 77.52736	30 KM/Hr
26	Turn	Medium	11.40101, 77.52243	30 KM/Hr
27	Turn	High	11.39708, 77.51038	15 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
28	Turn	Medium	11.39729, 77.51016	30 KM/Hr
29	Turn	Medium	11.39692, 77.50049	30 KM/Hr
30	Turn	Medium	11.39611, 77.49996	30 KM/Hr
31	Turn	Medium	11.39517, 77.49987	30 KM/Hr
32	Turn	Medium	11.39442, 77.49935	30 KM/Hr
33	Turn	Medium	11.39310, 77.49622	30 KM/Hr
34	Turn	High	11.39064, 77.49444	15 KM/Hr
35	Turn	High	11.38875, 77.49438	15 KM/Hr
36	Turn	High	11.38927, 77.49025	15 KM/Hr
37	Blind Spot	Blind Spot	11.38374, 77.49112	10 KM/Hr
38	Turn	Medium	11.38398, 77.48575	30 KM/Hr
39	Turn	High	11.38302, 77.48464	15 KM/Hr
40	Turn	Medium	11.38193, 77.48495	30 KM/Hr
41	Turn	Medium	11.38146, 77.48483	30 KM/Hr
42	Turn	Medium	11.38122, 77.48454	30 KM/Hr
43	Turn	Medium	11.38103, 77.48290	30 KM/Hr
44	Turn	High	11.38037, 77.48217	15 KM/Hr
45	Turn	High	11.38096, 77.47921	15 KM/Hr
46	Turn	Medium	11.38030, 77.47844	30 KM/Hr
47	Turn	Medium	11.37984, 77.47602	30 KM/Hr
48	Turn	Medium	11.37953, 77.47573	30 KM/Hr
49	Turn	Medium	11.37724, 77.47495	30 KM/Hr
50	Blind Spot	Blind Spot	11.37228, 77.47580	10 KM/Hr
51	Turn	High	11.37211, 77.47456	15 KM/Hr
52	Turn	Medium	11.37146, 77.47433	30 KM/Hr
53	Turn	High	11.36994, 77.47109	15 KM/Hr
54	Turn	High	11.36895, 77.47077	15 KM/Hr
55	Turn	Medium	11.36903, 77.46430	30 KM/Hr
56	Turn	Medium	11.36947, 77.46357	30 KM/Hr
57	Turn	High	11.36953, 77.46290	15 KM/Hr
58	Turn	High	11.36708, 77.46178	15 KM/Hr
59	Turn	High	11.36702, 77.46007	15 KM/Hr
60	Turn	High	11.36405, 77.45950	15 KM/Hr
61	Turn	Medium	11.36403, 77.45935	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
62	Turn	Medium	11.36432, 77.45878	30 KM/Hr
63	Turn	Medium	11.37859, 77.43661	30 KM/Hr
64	Turn	High	11.37945, 77.42994	15 KM/Hr
65	Turn	Medium	11.38018, 77.42979	30 KM/Hr
66	Turn	Medium	11.38075, 77.42938	30 KM/Hr
67	Turn	Medium	11.40203, 77.39962	30 KM/Hr
68	Turn	Medium	11.40740, 77.39180	30 KM/Hr
69	Turn	Medium	11.40873, 77.39105	30 KM/Hr

## Emergency Locations

	type	name	coordinates	speed_limit	risk_level
3	hospital	Dhanvantri Multi Speciality Hospital	11.451362, 77.766602	30 km/h	Medium
4	hospital	Dhanvanthri Hospital	11.4496712, 77.7593772	30 km/h	Medium
5	hospital	J.K.K. Trust Hospital	11.4445841, 77.7307962	30 km/h	Medium
7	hospital	Shri Sathyanarayana Hospital	11.4291297, 77.6913408	30 km/h	Medium
8	hospital	Thanish Siddha Hospital	11.430003, 77.674964	30 km/h	Medium
9	clinic	Harshitha Clinic	11.4313207, 77.674718	30 km/h	Medium
10	hospital	Sri Kaalangi Siddhar Mooligai Vaithiya Nilayam	11.432369, 77.674894	30 km/h	Medium
11	clinic	G.K Clinic	11.4297244, 77.6749715	30 km/h	Medium
12	hospital	Naarayani Hospital	11.4157401, 77.5773087	30 km/h	Medium
13	hospital	P K Hospital	11.4175923, 77.5640962	30 km/h	Medium
14	hospital	Dharun Hospital	11.4223638, 77.5597735	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
6	school	SSM Matriculation Higher Secondary School	11.4321653, 77.6880046	30 km/h	Medium

## Route Photos of Risky Spots



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.44024, 77.87528





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 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:** High  
**Speed Limit:** 15 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:** 11.45898, 77.85135





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.46303, 77.84945



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.45509, 77.81383



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.45085, 77.77020





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.43165, 77.67734



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.39829, 77.65233





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.42322, 77.55816



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.42307, 77.55791



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.41293, 77.54983





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.41221, 77.54372



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.41069, 77.54328





**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.41046, 77.54037**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.41005, 77.53977**



**Risk Type: Turn**

**Risk Level: Medium**

**Speed Limit: 30 KM/Hr**

**Coordinates: 11.40650, 77.53959**





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.40426, 77.53802



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.40474, 77.53650





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.40379, 77.53577



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.39990, 77.53242



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.39908, 77.53118





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.39708, 77.51038



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.39729, 77.51016





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.39692, 77.50049



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.39611, 77.49996



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.39517, 77.49987





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.39442, 77.49935



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.39310, 77.49622





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.39064, 77.49444



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.38875, 77.49438



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.38927, 77.49025





**Risk Type:** Blind Spot  
**Risk Level:** Blind Spot  
**Speed Limit:** 10 KM/Hr  
**Coordinates:** 11.38374, 77.49112



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.38398, 77.48575





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.38302, 77.48464



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.38193, 77.48495



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.38146, 77.48483





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.38122, 77.48454



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.38103, 77.48290





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.38037, 77.48217



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.38096, 77.47921



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.38030, 77.47844





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.37984, 77.47602



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.37953, 77.47573





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.37724, 77.47495



**Risk Type:** Blind Spot  
**Risk Level:** Blind Spot  
**Speed Limit:** 10 KM/Hr  
**Coordinates:** 11.37228, 77.47580



**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.36953, 77.46290





**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.36708, 77.46178



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.36702, 77.46007





**Risk Type:** Turn  
**Risk Level:** High  
**Speed Limit:** 15 KM/Hr  
**Coordinates:** 11.36405, 77.45950



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.36403, 77.45935



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.36432, 77.45878





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.37859, 77.43661



**Risk Type:** Turn

**Risk Level:** High

**Speed Limit:** 15 KM/Hr

**Coordinates:** 11.37945, 77.42994





**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.38018, 77.42979



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.38075, 77.42938



**Risk Type:** Turn  
**Risk Level:** Medium  
**Speed Limit:** 30 KM/Hr  
**Coordinates:** 11.40203, 77.39962





**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.40740, 77.39180



**Risk Type:** Turn

**Risk Level:** Medium

**Speed Limit:** 30 KM/Hr

**Coordinates:** 11.40873, 77.39105

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