



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO G A S STAATION

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

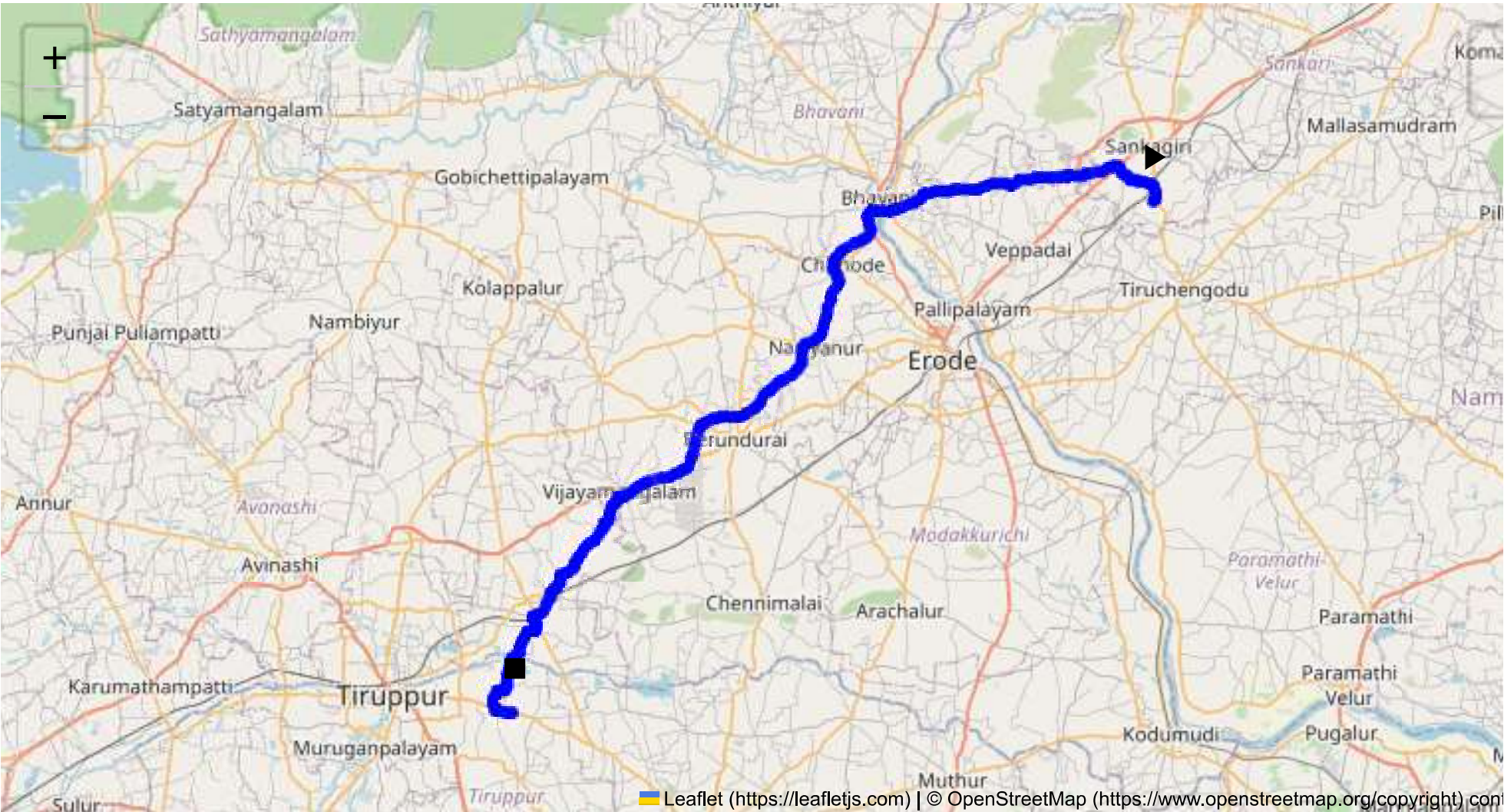
The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety 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: 79.75 km
Estimated Duration: 1.7 hours
Adjusted Duration (Heavy Vehicle): 2.1 hours
Start: (11.4381, 77.8734)
End: (11.08909279, 77.42874791)



Welcome to the Journey Risk Management Study

To provide a comprehensive analysis of the route from Sangagiri to Tiruppur in Tamil Nadu for truck drivers transporting hazardous material, the following points have been evaluated:

1. Overview of the Route Map:

- The route primarily follows State Highway 20 (SH20) and National Highway 47 (NH47), offering a direct connection between Sangagiri and Tiruppur. The highway consists primarily of single and

multi-lane sections, with stretches winding through urban, suburban, and rural areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards:

- The climate in this region is typically tropical, with hot summers, a monsoon season from June to September, and mild winters. During monsoon, heavy rains can lead to flooding, slippery roads, and reduced visibility. Drivers should remain cautious during these months.

3. Analysis of Traffic Patterns:

- Traffic congestion is common during morning (8 AM to 10 AM) and evening (5 PM to 8 PM) peak hours, especially in urban areas near Tiruppur. The industrial zones around Tiruppur and Erode could contribute to higher volumes of heavy vehicle traffic.
- Weekends might see increased traffic due to local tourism and shopping.

4. Assessment of Road Quality and Infrastructure:

- The road quality varies, with NH47 generally in good condition. However, SH20 may have uneven surfaces and potholes, especially after the rainy season. Ongoing construction and maintenance can also affect road conditions.

5. Suggestions for Alternative Routes for Emergencies:

- An emergency route could be via Thoppur-Mettur Dam State Highway, which reconnects to NH47 later. This route, while slightly longer, might offer a bypass in the event of blockages on SH20 or NH47.

6. Summary of Local Regulations Affecting Hazardous Material Transport:

- Tamil Nadu enforces strict regulations on the transport of hazardous goods, requiring permits and adherence to designated travel times. Restrictions might apply in residential and heavily populated zones, necessitating adherence to specific alternate routes or times.

7. Overview of Historical Incidents:

- Instances of road accidents involving heavy vehicles have occurred, particularly near junctions like Salem and around industrial areas in Tiruppur. These incidents often involved inadequate turning space, brake failures, and driver fatigue.

8. Environmental Considerations and Sensitive Areas:

- The route skirts several agricultural zones and water bodies, where spills or accidents involving hazardous materials could significantly impact local ecosystems. Special caution is necessary to prevent environmental damage.

9. Analysis of Communication Coverage:

- Cellular network coverage is generally reliable along NH47 and in urban areas. However, certain rural sections on SH20 may experience brief dead zones, necessitating alternative communication methods for emergencies.

10. Estimated Emergency Response Times:

- Urban areas like Tiruppur can expect emergency response within 15-25 minutes. Rural stretches might see response times exceeding 30-40 minutes due to distance from emergency services or difficult terrain.

11. Overall Summary of Risk Assessment:

- The route poses moderate risks due to weather conditions, traffic congestion, and road quality variations. While infrastructure supports heavy vehicle travel, adherence to local regulations and prioritization of environmental safety are critical. Communication and emergency plans should be reinforced due to the potential for isolated incidents and variable network coverage.

Overall, the route from Sangagiri to Tiruppur is navigable for hazardous material transport with proper precautions. Drivers are advised to remain vigilant, especially during adverse weather conditions and peak traffic hours, and to ensure compliance with local transport regulations.

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	Medium	11.23724, 77.50686	30 KM/Hr
12	Turn	High	11.23704, 77.50676	15 KM/Hr
13	Blind Spot	Blind Spot	11.23686, 77.50216	10 KM/Hr
14	Turn	Medium	11.23649, 77.50219	30 KM/Hr
15	Turn	High	11.23396, 77.50105	15 KM/Hr
16	Turn	Medium	11.23329, 77.49966	30 KM/Hr
17	Turn	Medium	11.17851, 77.46169	30 KM/Hr
18	Turn	Medium	11.17368, 77.45730	30 KM/Hr
19	Turn	High	11.17096, 77.45516	15 KM/Hr
20	Turn	Medium	11.17048, 77.45544	30 KM/Hr
21	Turn	Medium	11.16706, 77.45494	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
22	Turn	High	11.15693, 77.44742	15 KM/Hr
23	Turn	High	11.15727, 77.44546	15 KM/Hr
24	Turn	Medium	11.15581, 77.44486	30 KM/Hr
25	Turn	High	11.15553, 77.44454	15 KM/Hr
26	Blind Spot	Blind Spot	11.15600, 77.44208	10 KM/Hr
27	Turn	Medium	11.15034, 77.44341	30 KM/Hr
28	Turn	Medium	11.15010, 77.44365	30 KM/Hr
29	Turn	Medium	11.14996, 77.44489	30 KM/Hr
30	Turn	High	11.14957, 77.44526	15 KM/Hr
31	Turn	High	11.14479, 77.44350	15 KM/Hr
32	Turn	High	11.14514, 77.44111	15 KM/Hr
33	Turn	High	11.14492, 77.44057	15 KM/Hr
34	Turn	High	11.14525, 77.43906	15 KM/Hr
35	Turn	Medium	11.13230, 77.43321	30 KM/Hr
36	Turn	High	11.13163, 77.43254	15 KM/Hr
37	Blind Spot	Blind Spot	11.13022, 77.43358	10 KM/Hr
38	Turn	Medium	11.12977, 77.43230	30 KM/Hr
39	Turn	High	11.12744, 77.43053	15 KM/Hr
40	Turn	High	11.12731, 77.42945	15 KM/Hr
41	Turn	High	11.12638, 77.42910	15 KM/Hr
42	Blind Spot	Blind Spot	11.12638, 77.42801	10 KM/Hr
43	Turn	Medium	11.11413, 77.42446	30 KM/Hr
44	Turn	Medium	11.10417, 77.42302	30 KM/Hr
45	Turn	Medium	11.10404, 77.42280	30 KM/Hr
46	Turn	Medium	11.10419, 77.42108	30 KM/Hr
47	Turn	Medium	11.10398, 77.42073	30 KM/Hr
48	Turn	Medium	11.10331, 77.41739	30 KM/Hr
49	Turn	High	11.09148, 77.41646	15 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	clinic	Erode Cancer Centre	11.3732, 77.649152	30 km/h	Medium
14	hospital	Irt Hospital	11.2803603, 77.5644118	30 km/h	Medium
16	hospital	Gen Siddha Hospital	11.2375033, 77.5059797	30 km/h	Medium
17	hospital	Vijayamangalm Government Hospital	11.2382827, 77.501687	30 km/h	Medium
19	hospital	Aravind Eye Care Hospital	11.1729469, 77.4574467	30 km/h	Medium
20	clinic	Sri Maha Annai Clinic	11.1707162, 77.4536498	30 km/h	Medium
21	hospital	Ram Doctor Hospital	11.1709391, 77.4532808	30 km/h	Medium
22	clinic	Vasumathi Health Care	11.1576405, 77.4436732	30 km/h	Medium
23	clinic	Jeeva Health Care	11.155934, 77.444441	30 km/h	Medium
24	clinic	Sri Kumaran Clinic	11.155488, 77.443657	30 km/h	Medium
25	clinic	Shobana Clinic	11.1523012, 77.4439668	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
13	college	Government polytechnic college	11.2907053, 77.5698726	30 km/h	Medium
15	school	Bharathi Matriculation School	11.2494613, 77.5307028	30 km/h	Medium
18	college	Sasurie Engineering College	11.2171482, 77.4898552	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: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23724, 77.50686



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.23704, 77.50676



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.23686, 77.50216



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23649, 77.50219



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.23396, 77.50105



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23329, 77.49966



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17851, 77.46169



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17368, 77.45730



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.17096, 77.45516



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.17048, 77.45544



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.16706, 77.45494



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15693, 77.44742



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15727, 77.44546



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.15581, 77.44486



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15553, 77.44454



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.15600, 77.44208



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.15034, 77.44341



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.15010, 77.44365



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.14996, 77.44489



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.14957, 77.44526



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.14479, 77.44350



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.14525, 77.43906



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.13230, 77.43321



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.13163, 77.43254



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.13022, 77.43358



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.12977, 77.43230



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.12744, 77.43053



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.12731, 77.42945



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.12638, 77.42910



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.12638, 77.42801



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10417, 77.42302



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10404, 77.42280



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10419, 77.42108



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10398, 77.42073



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.10331, 77.41739



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.09148, 77.41646

