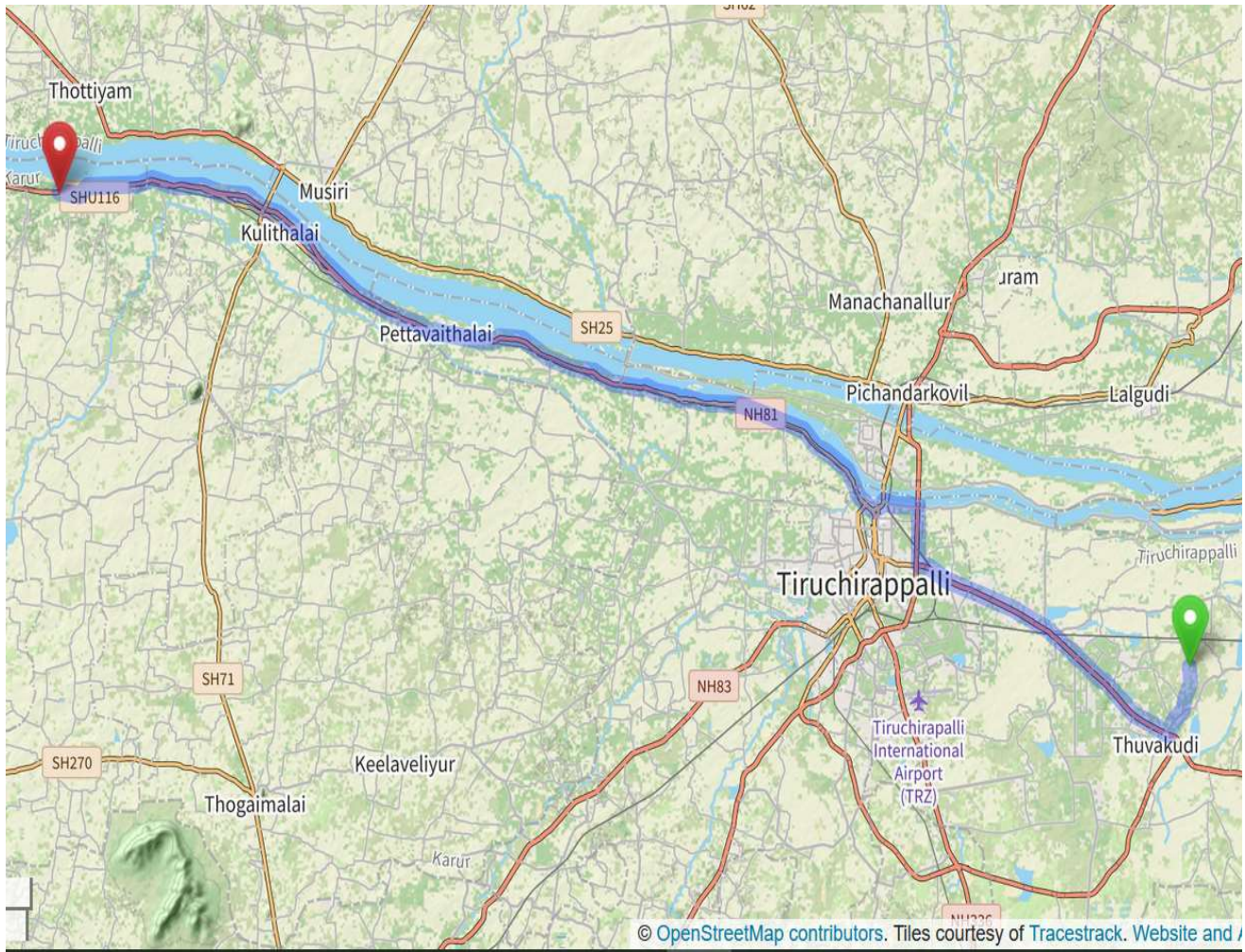




IndianOil

WELCOME TO JOURNEY
RISK MANAGEMENT (JRM)
STUDY USING ARTIFICIAL
INTELLIGENCE (AI)
FOR IOCL TRICHY
TERMINAL

**IOCL TIRUCHY TERMINAL (10.7753, 78.8368) TO KRAGENCIES
(10.950759 , 78.320975), TOTAL DISTANCE -68 KM**



**Welcome to the Journey Risk Management Study for
KRAGENCIES**

Total distance: 68 km; Start with: (10.7753, 78.8368), End with: (10.792907 , 78.76424)

❖ Route Safety Analysis Report

Overview of the Route Map

The route from Trichy Terminal (T.N) To KRAGENCIES, Valavandan Kottai Rd/VOC Nagar - VV Kottai Rd, Jeevanantham St, NH 83, Total distance from

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Trichy Terminal To KRAGENCIES is 68 km for heavy vehicles carrying hazardous materials.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy Terminal (T.N) To KRAGENCIES experiences a tropical climate with heavy monsoon rains from June to September, high humidity, and moderate temperatures throughout the year, The summers are short and sweltering; the winters are short, cool, and dry; and it is mostly clear year-round. Over the course of the year, the temperature typically varies from 56.8°F to 108°F and is rarely below 56.8°F to 108°F.

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	33.0 (91.4)	38.0 (100.4)	41.0 (105.8)	43.0 (109.4)	43.0 (109.4)	42.0 (107.6)	40.0 (104.0)	39.0 (102.2)	38.0 (100.4)	37.0 (98.6)	34.0 (93.2)	33.0 (91.4)	43.0 (109.4)
Average high °C (°F)	30.27 (86.49)	32.88 (91.18)	36.0 (96.8)	38.27 (100.89)	38.79 (101.82)	36.78 (98.2)	36.17 (97.11)	35.4 (95.72)	35.03 (95.05)	32.9 (91.22)	30.38 (86.68)	29.34 (84.81)	34.35 (93.83)
Daily mean °C (°F)	26.57 (79.83)	28.67 (83.61)	31.87 (89.37)	34.46 (94.03)	35.18 (95.32)	33.45 (92.21)	32.92 (91.26)	32.18 (89.92)	31.78 (89.2)	29.86 (85.75)	27.44 (81.39)	26.32 (79.38)	30.89 (87.6)
Average low °C (°F)	19.88 (67.78)	20.93 (69.67)	24.04 (75.27)	27.62 (81.72)	28.89 (84.0)	27.59 (81.66)	27.04 (80.67)	26.45 (79.61)	25.95 (78.71)	24.64 (76.35)	22.43 (72.37)	20.93 (69.67)	24.7 (76.46)
Record low °C (°F)	16.0 (60.8)	17.0 (62.6)	19.0 (66.2)	22.0 (71.6)	25.0 (77.0)	25.0 (77.0)	24.0 (75.2)	23.0 (73.4)	22.0 (71.6)	21.0 (69.8)	18.0 (64.4)	17.0 (62.6)	16.0 (60.8)
Average precipitation mm (inches)	12.32 (0.49)	20.82 (0.82)	26.34 (1.04)	57.63 (2.27)	102.32 (4.03)	61.68 (2.43)	63.88 (2.51)	124.75 (4.91)	141.74 (5.58)	231.04 (9.1)	159.62 (6.28)	71.08 (2.8)	89.44 (3.52)
Average precipitation days (≥ 1.0 mm)	3.09	3.27	5.36	7.36	16.73	12.36	13.55	18.91	19.64	22.73	17.55	9.73	12.52
Average relative humidity (%)	72.01	65.19	58.27	53.97	51.56	50.59	51.14	56.11	60.33	70.18	77.39	76.61	61.95
Mean monthly sunshine hours	11.19	11.34	11.34	11.63	12.65	12.68	11.83	11.24	11.05	9.11	7.68	8.29	10.84

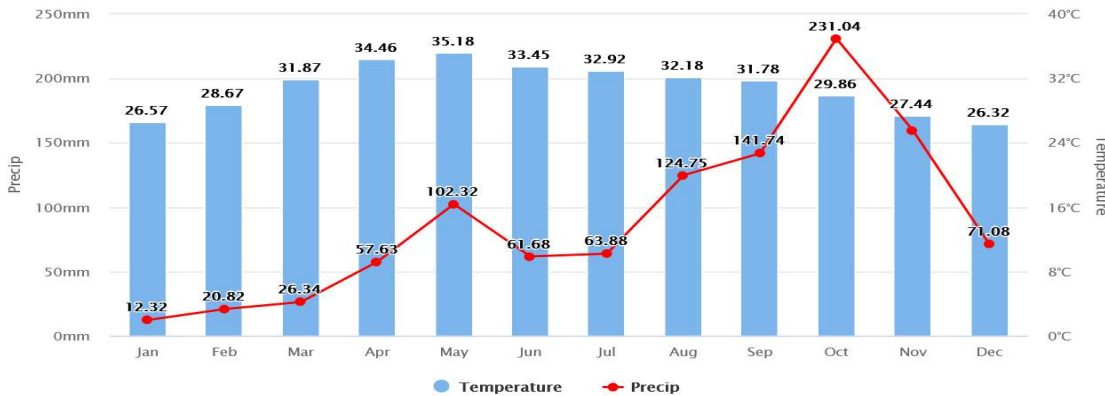
Weather-Related Hazards: Trichy Terminal (T.N) To KRAGENCIES providing a local hourly weather forecast of rain, sun, wind, humidity and temperature.

The Long-range 12 day forecast also includes detail for weather today. Live weather reports from Trichy Terminal (T.N) To KRAGENCIES weather stations and weather warnings that include risk of thunder, high UV index and forecast gales.

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Climate Graph

The chart below shows the mean monthly temperature and precipitation of Tiruchirappalli in recent years.



Analysis of Traffic Patterns

Peak Hours:

Typically, Trichy Terminal (T.N) To KRAGENCIES peak traffic hours are from 8:00 AM to 12:00 AM and 5:30 PM to 9:30 PM on weekdays.

Congestion-Prone Areas:

- Womens SIDCO Industrial Park
- Old Burma Colony
- State Institute Of Hotel Management and Catering Technology
- SMK Briyani
- Aishwarya Medical Centre
- KINGS TARBAR
- Old Palpannai Bus Stop
- RUSI FAST FOOD & PANI PURI
- Vijay hotel
- Sasi Lubes

❖ Assessment of Road Quality and Infrastructure

Road Quality: Generally, the roads are well-maintained but can suffer from potholes and waterlogging on State Highway during the monsoon season.

Infrastructure: Adequate signage, street lighting, and traffic signals are present, but some areas may lack proper drainage systems, leading to waterlogging.

❖ **Suggestions for Alternative Routes for Emergencies**

Alternative Route 1:- NH 83

❖ **Summary of Local Regulations Affecting Hazardous Material Transport**

Regulations: Transport of hazardous materials is regulated by the Petroleum and Explosives Safety Organization (PESO) and the Motor Vehicles Act. Specific routes and timings may be restricted for hazardous material transport.

Permits: Ensure all necessary permits and documentation are in place.

❖ **Overview of Historical Incidents**

Historical Incidents: There have been occasional incidents involving heavy vehicles, particularly during the monsoon season due to waterlogging and poor visibility. No major incidents involving hazardous materials have been reported recently.

❖ **Environmental Considerations and Sensitive Areas**

- **Sensitive Areas:** M. J. Agencies, Jude Digital Studios,
 - gas station, Sanjeevi Nagar Bus Stop, KS BIRYANI HOUSE
 - **Educational institutions:** - Many colleges, universities and school in between Trichy Terminal (T.N) I.E Trichy High School, Girls Senior Secondary School
 - **Hospital:** - Government Hospital Alangudi, Noble Hospital, MGM
 - Healthcare, Cauvery nagar hospital quarters, Ozone Hospitals,
 - **Gas Station:** - A.V.R Petrol Bunk, R.M Traders, M/S R.K Agencies,
- Environmental Impact:** Minimize noise and air pollution, especially in residential and sensitive areas.

Air pollution: Volatile chemicals evaporate during the filling and discharge process, or from leaks.

- **Loss of habitats:** Oil and gas operations can degrade animal habitats and disrupt migratory pathways.
- **Oil spills:** Oil spills can be devastating for animals and humans.
- **Greenhouse gas emissions:** Oil and gas operations can emit greenhouse gases like methane.

❖ Analysis of Communication Coverage

Communication Coverage: Generally good throughout the route, but potential dead zones may exist densely built-up areas or underpasses.

Dead Zones: Monitor for any communication blackouts, especially in underpasses or near large buildings.

❖ Estimated Emergency Response Times

- M. J. Agencies, Jude Digital Studios, Aishwarya Medical Centre, KINGS TARBAR, st (15-20 minutes).
- Congested areas may experience delays (up to 30-40 minutes).

❖ Overall Summary of Risk Assessment

- **Risk Level:** Moderate to High, especially during monsoon season.
- **Key Risks:** Waterlogging, traffic congestion, and potential communication dead zones and State Highway.
- **Mitigation Measures:** Plan travel during non-peak hours, ensure proper vehicle maintenance, and have alternative routes and emergency contacts ready and control on the speed limit of the vehicle.

❖ Road Signage for TT/PT Driver













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Road Traffic Signs in India

















Mandatory/Regulatory Signs

 Stop	 Give way	 No entry	 Straight prohibited
 One way	 One way	 Vehicles prohibited in both directions	 Horn prohibited
 Pedestrians prohibited	 Cycles prohibited	 Right turn prohibited	 Left turn prohibited
 U-turn prohibited	 Overtaking prohibited	 Trucks prohibited	 Tonga prohibited

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 <p>All motor vehicles prohibited</p>	 <p>Hand cart prohibited</p>	 <p>Bullock cart prohibited</p>	 <p>Bullock and hand carts prohibited</p>
 <p>No parking</p>	 <p>No parking or stopping</p>	 <p>Speed limit</p>	 <p>Axle load limit</p>
 <p>Width limit</p>	 <p>Weight limit</p>	 <p>Length limit</p>	 <p>Load limit</p>
 <p>Restriction and</p>			

Cautionary signs

			
Right hand curve	Left hand curve	Right hand pin bend	Left hand pin bend
			
Right reverse bend	Narrow bridge	Gap in median	Cycle crossing
			
Pedestrian crossing	School	Men at work	Roundabout
			
Narrow road	Road widens	Side road left	Side road right

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Information signs

Advance direction	Map type advance direction	Rotary intersection	Reassurance
Direction	Direction	Place identification	Truck lay bay
Toll booth ahead	Parking this side	Parking both sides	Cycle stand
Scooter and motor cycle stand	Taxi stand	Auto-rickshaw stand	Cycle-rickshaw stand
Public telephone	Filling station	Hospital	First aid post

Conclusion

The route for Trichy Terminal (T.N) to KRAGENCIES is generally manageable but poses several risks, particularly during the monsoon season. Proper planning, adherence to regulations, and awareness of potential hazards can significantly mitigate these risks.

❖ **Risk Assessment - Sharp Turns**

Risk Type	Risk Level	Coordination	Distance From Start	Recommendation Speed
Sharp turn	Medium	10.78530573578263, 78.84274998770455	680 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.785376742790655, 78.84680611757054	350 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.788097675047789, 78.84443594062502	650 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.787600835681, 78.8464110054646	900 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.801204873470303, 78.8467482645589	2.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.80191465754078, 78.8487232668122	2.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.798507703847024, 78.85842966766451	3.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.802671580964178, 78.866844187034	4.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.802387738857622, 78.87271234760618	5.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.803546989878658, 78.87350720753253	5.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.805155889287969, 78.88106997575416	6.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.823656238244451, 78.88687794266891	8.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.815636174282911, 78.89084873150682	10.1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.819752709666693, 78.89443744652704	10.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.812985502656064, 78.71120247484724	18.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.83474769630336, 78.7123688366523	20.7 KM	20km/hr TO 30 Km/Hr

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Sharp turn	Medium	10.837244048816004, 78.69781399544664	22.1KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.83293654304342, 78.69250613192153	23.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.87907916251682, 78.58771669569393	36.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.897181042553802, 78.52122336633745	43.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.956168804489332, 78.36283845857237	63.1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.953559345360782, 78.33400796605626	66.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.95024031352879, 78.32847837128823	67.3 KM	20km/hr TO 30 Km/Hr

❖ **Risk Assessment – Key Location:**

Sr No	Location	Lat, lon.
1	Old Burma Colony	10.757720710809737, 78.83326776626323
2	Irrigation Management Training Institute	10.75253431805829, 78.83237168279383
3	Jailani weighbridge	10.804570736879112, 78.87682683294831
4	Valavanthankottai Toll Plaza	10.744643291681098, 78.83681280088159
5	NEO Tech Structural Engineering Consultancy	10.814570736879112, 78.83682683294831
6	Bus Stand	10.737619717156392, 78.84469108474981

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7	School/College	10.743654738281231, 78.85235497712233
8	Shri Rakku Sakti IOCL retail outlet	10.736854782210685, 78.85825905782572
9	School/College	10.736328228804307, 78.86222089649122
10	Moogambigai Agencies IOC RO	10.720992946251965, 78.94066066619781
11	G Parthasarathi Fuel Agencies IOCL RO	10.731949135570895, 79.01839981851398
12	Auto Parts Mall	10.73479825344728, 78.86383650381019
13	Trichy-Thanjavur Border check post	10.734414736299165, 78.8687554646539
14	Hotel	10.73449559472593, 78.87053727134324
15	Pkd railway station starting point	10.733035467327722, 78.87760665657318
16	Nayara Petrol Pump	10.733201787527669, 78.88075610377959
17	IOCL RO	10.7370281264634, 79.13691139189406
18	Smv Puncture Shop	10.733071879186443, 78.88788151537216
19	Hotel	10.732766784125532, 78.89204005296241
20	IOCL retail outlet	10.732484981220054, 78.89788773851032
21	Bank	10.730614988892885, 78.90808861916952

SHARP TURN IMAGE

Total distance: 68 km; Start with: (10.7753, 78.8368), End with: (10.950759 , 78.320975)

JOURNEY RISK MANAGEMENT STUDY



SHARP TURN IMAGE START FROM TRICY TERMINAL



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI.

JOURNEY RISK MANAGEMENT STUDY



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI.



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI.

JOURNEY RISK MANAGEMENT STUDY

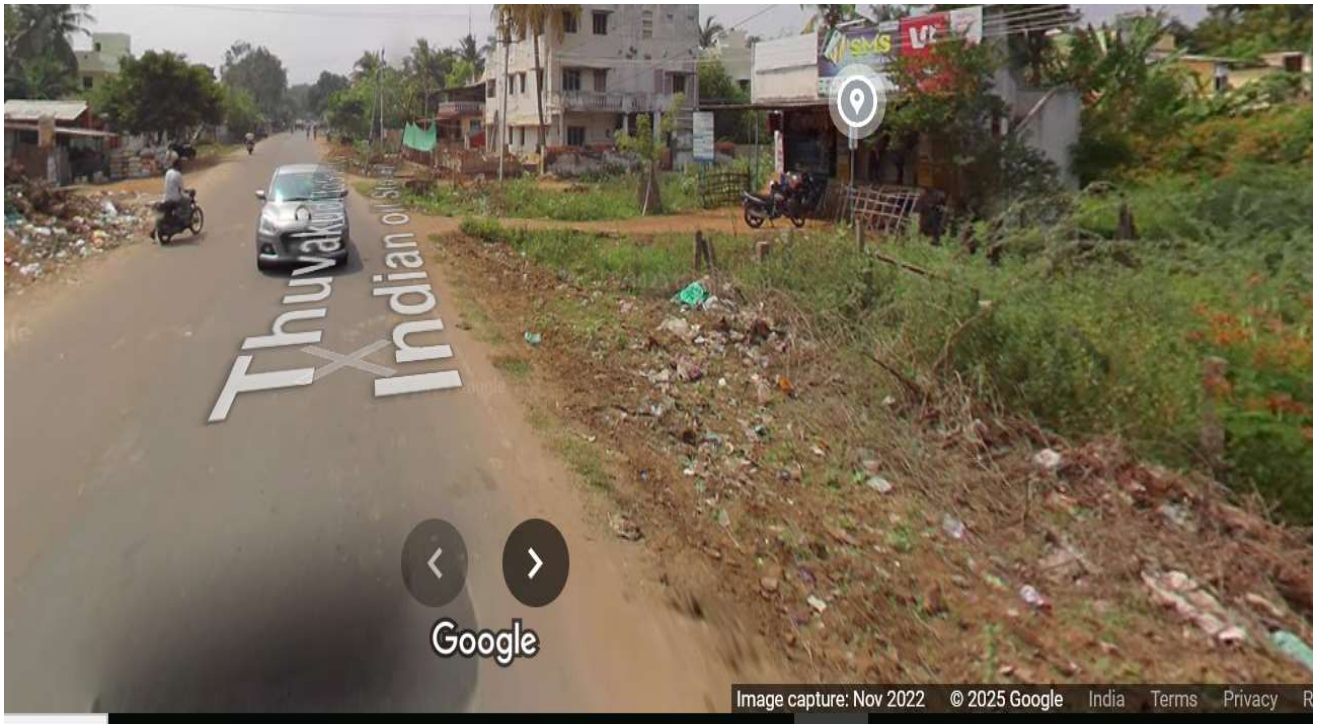


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI.



IMAGE :- SHARP TURN, RISK LEVEL :- MEDIUM, COORDI.

JOURNEY RISK MANAGEMENT STUDY



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI.



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JOURNEY RISK MANAGEMENT STUDY



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IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI

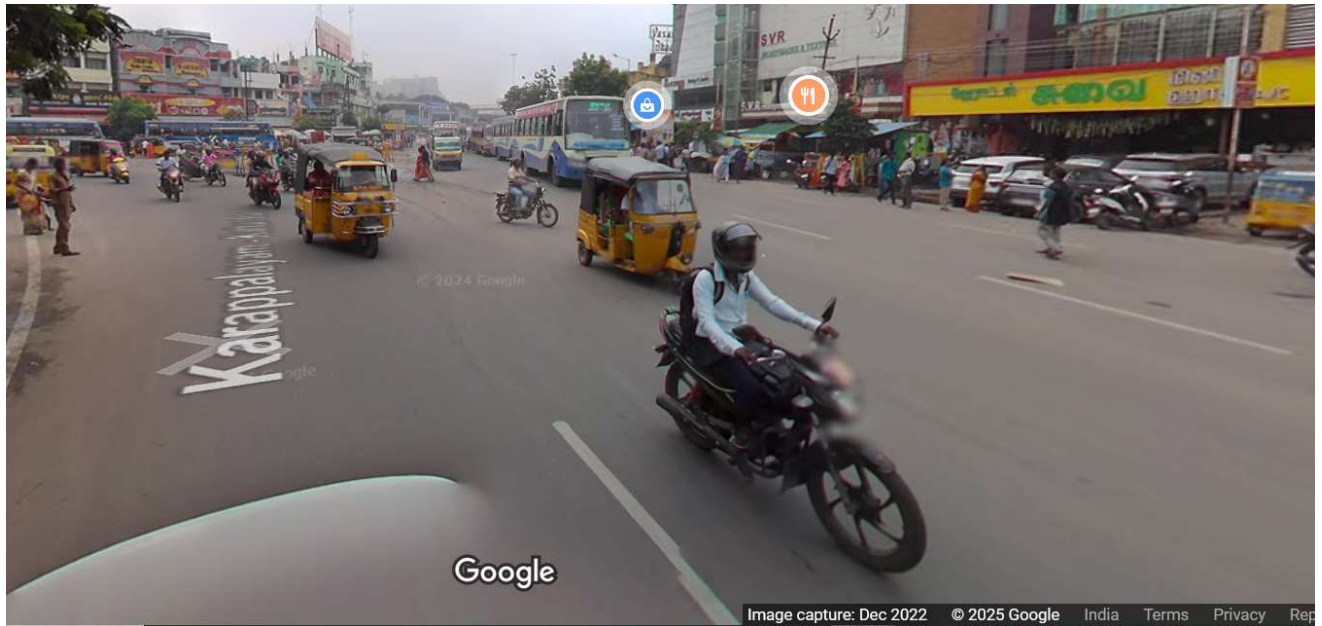


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI

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