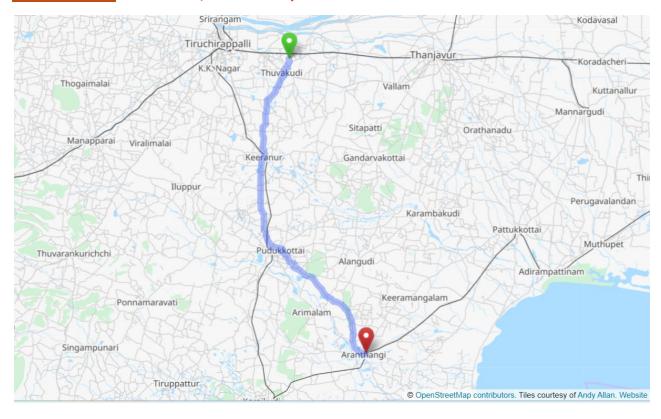
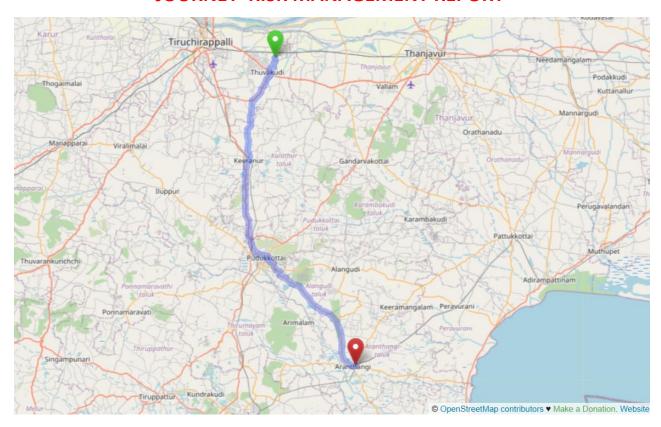


WELCOME TO JOURNEY RISK MANAGEMENT (JRM) STUDY USING ARTIFICIAL INTELLIGENCE (AI) FOR IOCL TRICHY TERMINAL

<u>IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO ILAHI</u> AGENCIES(10.170456, 78.997284) TOTAL DISTANCE – 84.3 KM





Welcome to the Journey Risk Management Study for ILAHI AGENCIES

Total distance: 84.3 KM; Start with: (10.7753, 78.8368), End with: (10.170456, 78.997284)

• Route Safety Analysis Report

1. Overview of the Route Map

The route from Trichy Terminal (T.N) TO ILAHI AGENCIES. The Route passes Through Several key Point including Take ISTake SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow Outer Ring Rd/Trichy

Bypass to Kanthalur Rd in Sooriyur, Continue on Kanthalur Rd to Pallathuppatti, Follow NH336, Vadakkadu - Alangudi Rd and Pudukkottai - Aranthangi Rd to Pattukkottai - Aranthangi Rd/Thanjavur - Kalayarkoil - Sayalkudi Rd in Aranthangi. and Total distance from Trichy Terminal To ILAHI AGENCIESIS 84.3 KM.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy Terminal (T.N) To ILAHI AGENCIES 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 60.8°F to 110°F and is rarely below 60.8°F to 110°F.

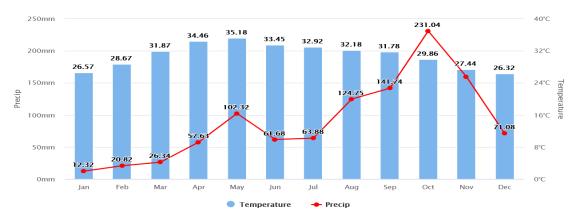
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	33.0	38.0	41.0	43.0	43.0	42.0	40.0	39.0	38.0	37.0	34.0	33.0	43.0
	(91.4)	(100.4)	(105.8)	(109.4)	(109.4)	(107.6)	(104.0)	(102.2)	(100.4)	(98.6)	(93.2)	(91.4)	(109.4)
Average high °C (°F)	30.27	32.88	36.0	38.27	38.79	36.78	36.17	35.4	35.03	32.9	30.38	29.34	34.35
	(86.49)	(91.18)	(96.8)	(100.89)	(101.82)	(98.2)	(97.11)	(95.72)	(95.05)	(91.22)	(86.68)	(84.81)	(93.83)
Daily mean °C (°F)	26.57	28.67	31.87	34.46	35.18	33.45	32.92	32.18	31.78	29.86	27.44	26.32	30.89
	(79.83)	(83.61)	(89.37)	(94.03)	(95.32)	(92.21)	(91.26)	(89.92)	(89.2)	(85.75)	(81.39)	(79.38)	(87.6)
Average low °C (°F)	19.88	20.93	24.04	27.62	28.89	27.59	27.04	26.45	25.95	24.64	22.43	20.93	24.7
	(67.78)	(69.67)	(75.27)	(81.72)	(84.0)	(81.66)	(80.67)	(79.61)	(78.71)	(76.35)	(72.37)	(69.67)	(76.46)
Record low °C (°F)	16.0	17.0	19.0	22.0	25.0	25.0	24.0	23.0	22.0	21.0	18.0	17.0	16.0
	(60.8)	(62.6)	(66.2)	(71.6)	(77.0)	(77.0)	(75.2)	(73.4)	(71.6)	(69.8)	(64.4)	(62.6)	(60.8)
Average precipitation mm (inches)	12.32	20.82	26.34	57.63	102.32	61.68	63.88	124.75	141.74	231.04	159.62	71.08	89.44
	(0.49)	(0.82)	(1.04)	(2.27)	(4.03)	(2.43)	(2.51)	(4.91)	(5.58)	(9.1)	(6.28)	(2.8)	(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

<u>Weather-Related Hazards:</u> Trichy Terminal (T.N) To ILAHI AGENCIES 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 ILAHI AGENCIES weather stations and weather warnings that include risk of thunder, high UV index and forecast gales.

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 ILAHI AGENCIES peak traffic hours are from 8:00 AM to 11:00 AM and 4:00 PM to 8:00 PM on weekdays.

Congestion-Prone Areas:

- Old Burma Colony
- TIRUCHY PUBLIC SCHOOL
- Wonder World Theme Park
- Goverment TB Hospital
- Km food product
- BHARAT PETROLEUM CORPORATION LIMITED BOTTLING PLANT,
- Government Higher Secondary School

Assessment of Road Quality and Infrastructure

Road Quality: Generally, the roads are well-maintained but can suffer from potholes and water logging 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 water logging.

• Suggestions for Alternative Routes for Emergencies

Alternative Route 1-). Take ISTake SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow Outer Ring Rd/Trichy Bypass to Kanthalur Rd in Sooriyur, Continue on Kanthalur Rd to Pallathuppatti, Follow NH336, Vadakkadu - Alangudi Rd and Pudukkottai - Aranthangi Rd to Pattukkottai - Aranthangi Rd/Thanjavur - Kalayarkoil - Sayalkudi Rd in Aranthangi.

Alternative Route 2 -). Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow Outer Ring Rd/Trichy Bypass and NH336 to Manapparai-Pudukottai Rd/Vadakkadu - Alangudi Rd in Kavinad West, Follow Vadakkadu - Alangudi Rd and Pudukkottai - Aranthangi Rd to Pattukkottai - Aranthangi Rd/Thanjavur - Kalayarkoil - Sayalkudi Rd in Aranthangi.

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: Old Burma Colony, TIRUCHY PUBLIC SCHOOL, Wonder World Theme Park, Government TB Hospital, Km food product, BHARAT PETROLEUM CORPORATION LIMITED BOTTLING PLANT.
- **Educational institutions:** State Institute Of Hotel Management and Catering Technology, Arasu Education Jcb Institute in Trichy, Gnanam School of Business.
- Hospital: Dr Kamali's Home Clinic, Aruna Hospital,

- Gas Station: IndianOil, Nayara Petrol Pump Nayara Petrol Pump, IndianOil, HP Petrol Pump, IndianOil, Bharat Petroleum, Petrol Pump -Raj Agency, IndianOil.
- **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:- Old Burma Colony, TIRUCHY PUBLIC SCHOOL, Wonder World Theme Park, Government TB Hospital, Km food product, BHARAT PETROLEUM CORPORATION LIMITED BOTTLING PLANT..areas like have quicker response times (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**: Water logging, traffic congestion, and potential communication dead zones.
- **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

Road Traffic Signs in India

Mandatory/Regulatory Signs





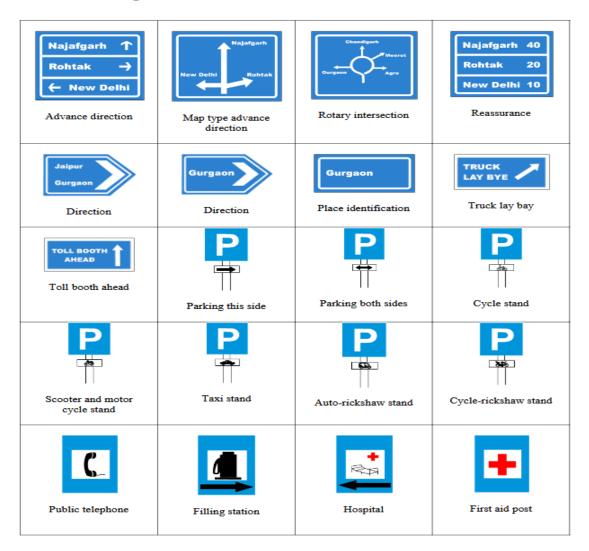


Restriction ands

Cautionary signs



Information signs



Conclusion

The route for Trichy Terminal (T.N) To ILAHI AGENCIES 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	10.769517372474736,	650 M	20km/hr TO 30
		78.83735063199906		Km/Hr
Sharp turn	Medium	10.76584461192607,	1.1 KM	20km/hr TO 30
		78.8361700257199		Km/Hr
Sharp turn	Medium	10.764182189802032,	1.3 KM	20km/hr TO 30
		78.83459588401435		Km/Hr
Sharp turn	Medium	10.75826698538096,	2 KM	20km/hr TO 30
•		78.83349398474651		Km/Hr
Sharp turn	Medium	10.756372549032195,	2.4 KM	20km/hr TO 30
-		78.83034570133539		Km/Hr
Sharp turn	High	10.751346435623256,	3.2 KM	10km/hr TO 15
•		78.8252297405902		Km/Hr
Sharp turn	High	10.749451955814655,	3.8 KM	10km/hr TO 15
_		78.83046376176118		Km/Hr
Sharp turn	Medium	10.739322086318483,	5.2 KM	20km/hr TO 30
•		78.83809834927386		Km/Hr
Sharp turn	Medium	10.73638358720799,	7.4 KM	20km/hr TO 30
		78.85765706064745		Km/Hr
Sharp turn	Medium	10.733122814995076,	9.4 KM	20km/hr TO 30
_		78.87540261560731		Km/Hr
Sharp turn	Medium	10.730613315581481,	12.9 KM	20km/hr TO 30
_		78.9075879625983		Km/Hr
Sharp turn	Medium	10.723935824957472,	15.4 KM	20km/hr TO 30
-		78.92931083702165		Km/Hr
Sharp turn	Medium	10.720496466902269,	16.6 KM	20km/hr TO 30
_		78.93941529718165		Km/Hr
Sharp turn	Medium	10.718227178328238,	17 KM	20km/hr TO 30
-		78.94244663522967		Km/Hr
Sharp turn	Medium	10.716915238110442,	17.7 KM	20km/hr TO 30
•		78.94868974811423		Km/Hr
Sharp turn	Medium	10.717034532262224,	18 KM	20km/hr TO 30
_		78.95121165756625		Km/Hr

Chama tuma	High	10.717266440544762	10.2 I/M	10lm /bm TO 15
Sharp turn	High	10.717266449544763,	18.3 KM	10km/hr T0 15
		78.95436593524407	101777	Km/Hr
Sharp turn	Medium	10.720766270598597,	19.4 KM	20km/hr TO 30
		78.96376439526372		Km/Hr
Sharp turn	High	10.71945911325298,	19.9 KM	10km/hr TO 15
		78.96003076046141		Km/Hr
Sharp turn	High	10.718657949508776,	20.1 KM	10km/hr TO 15
		78.95859309648579		Km/Hr
Sharp turn	Medium	10.717241891210914,	20.5 KM	20km/hr TO 30
_		78.95508572420601		Km/Hr
Sharp turn	High	10.716950198660903,	20.6 KM	10km/hr TO 15
•		78.95453759661429		Km/Hr
Sharp turn	Medium	10.71088808615262,	21.3 KM	20km/hr TO 30
1		78.9558416688753		Km/Hr
Sharp turn	High	10.710656163985194,	21.5 KM	10km/hr TO 15
r	8	78.95781577463286		Km/Hr
Sharp turn	High	10.708611024458909,	21.7 KM	10km/hr TO 15
r	8	78.95824492805842		Km/Hr
Sharp turn	High	10.672882868891097,	27 KM	10km/hr TO 15
•		78.98920221330918		Km/Hr
Sharp turn	Medium	10.668686633204702,	27.5 KM	20km/hr TO 30
1		78.98958845139218		Km/Hr
Sharp turn	Medium	10.66839141846377,	27.6 KM	20km/hr TO 30
1		78.98960990906346		Km/Hr
Sharp turn	Medium	10.643015219065195,	30.4 KM	20km/hr TO 30
1		78.99498654103147		Km/Hr
Sharp turn	Medium	10.625206404186365,	32.4 KM	20km/hr TO 30
F		78.99565428827928		Km/Hr
Sharp turn	Medium	10.62478460858532,	32.5 KM	20km/hr TO 30
Ziiwip voiii		78.9957401189644		Km/Hr
Sharp turn	High	10.574357794339809,	38.5 KM	10km/hr TO 15
		79.01368001472272		Km/Hr
Sharp turn	Medium	10.573825676264207,	38.9 KM	20km/hr TO 30
	1,10010111	79.01064867667473		Km/Hr
Sharp turn	Medium	10.555280810368673,	41.4 KM	20km/hr TO 30
Sharp turn	Micululli	78.99235389940597	-11.T IXIVI	Km/Hr
		10.77233307770371		13111/111

Sharp turn	High	10.55375530802717,	42.2 KM	10km/hr TO 15
		78.98932256135797		Km/Hr
Sharp turn	High	10.546659848677978,	43.2 KM	10km/hr TO 15
		78.98491990351165		Km/Hr
Sharp turn	Medium	10.536473949790345,	45.1 KM	20km/hr TO 30
		78.97096810505661		Km/Hr
Sharp turn	Medium	10.409614962437285,	52.9 KM	20km/hr TO 30
		78.78985132734904		Km/Hr
Sharp turn	High	10.386330421901782,	55.8 KM	10km/hr TO 15
		78.78725303755365		Km/Hr
Sharp turn	High	10.384100162773784,	56.6 KM	10km/hr TO 15
		78.79441881640815		Km/Hr
Sharp turn	Medium	10.384451558044496,	56.9 KM	20km/hr TO 30
		78.79707264844588		Km/Hr
Sharp turn	Medium	10.382041982543715,	58.3 KM	20km/hr TO 30
		78.80901489261562		Km/Hr
Sharp turn	Medium	10.379381387855107,	58.6 KM	20km/hr TO 30
		78.80824936431345		Km/Hr
Sharp turn	Medium	10.376620369487922,	60.5 KM	20km/hr TO 30
		78.8257034137291		Km/Hr
Sharp turn	Medium	10.372503897062995,	61.4 KM	20km/hr TO 30
		78.83192971197144		Km/Hr
Sharp turn	Medium	10.360620178708384,	62.8 KM	20km/hr TO 30
		78.83631726656795		Km/Hr
Sharp turn	Medium	10.35410069374421,	64.3 KM	20km/hr TO 30
		78.84704625757743		Km/Hr
Sharp turn	Medium	10.347724700345049,	65 KM	20km/hr TO 30
		78.84607658817902		Km/Hr
Sharp turn	Medium	10.341248164752928,	66.6 KM	20km/hr TO 30
		78.85888643161378		Km/Hr
Sharp turn	Medium	10.326357392736586,	70 KM	20km/hr TO 30
		78.88593285179661		Km/Hr
Sharp turn	Medium	10.303704826932549,	73.3 KM	20km/hr TO 30
		78.90443720906552		Km/Hr
Sharp turn	Medium	10.285422444502666,	75.8 KM	20km/hr TO 30
		78.91806662679856		Km/Hr

Sharp turn	Medium	10.278040735452452,	77.4 KM	20km/hr TO 30
		78.92929437772737		Km/Hr
Sharp turn	Medium	10.271349691890425,	79.5 KM	20km/hr TO 30
		78.94735001708993		Km/Hr
Sharp turn	Medium	10.17153969666359,	83 KM	20km/hr TO 30
		78.98807128417691		Km/Hr
Sharp turn	Medium	10.16862616160779,	83.7 KM	20km/hr TO 30
		78.9929706664004		Km/Hr
Sharp turn	Medium	10.169530364986514,	84.2 K	20km/hr TO 30
		78.99735969630892		Km/Hr

• Risk Assessment - Elevation Changes

Risk Type	Specific Risk	Risk Level	Coordination	Elevation Change	Gradient	Recommen dation Speed
Elevation Change	Descent	Low	10.7753, 78.8368	-3.02m	-2.96 %	40 km/hr to 50 km/hr
Elevation Change	Descent	Low	10.993921 , 78.326323	-9.28m	-6.28%	40 km/hr to 50 km/hr

<u>IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO ILAHI</u> <u>AGENCIES(</u>10.170456 , 78.997284) TOTAL DISTANCE – 84.3 KM



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.769073692604486, 78.83720120889187



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.764113439530249, 78.83446118711721



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.758209570013967, 78.83344387884853



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.751314343624747, 78.82530656733346



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.75126610223314, 78.82518044583597



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.698506111448765, 78.80118208354065



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.390488201637853, 78.79857642016243



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.388986592776542, 78.80126445063182



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.383462518706539, 78.80406034679702

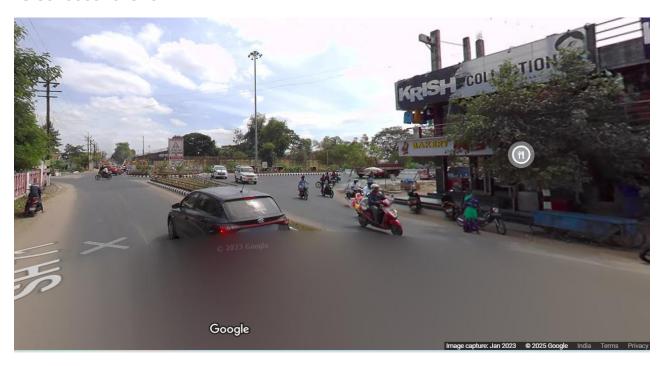


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.382023576060027, 78.80878173229893

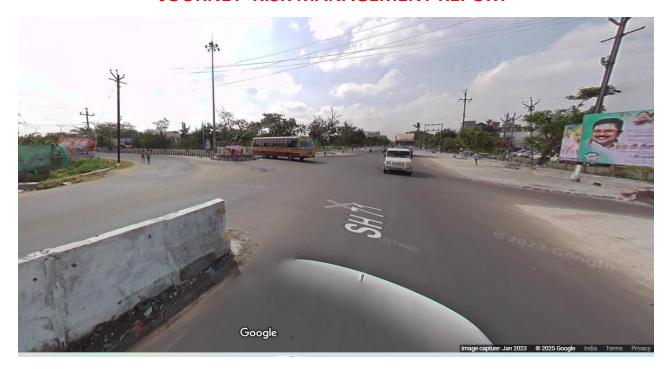


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.379558424310508, 78.80825326018945



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.377575120468821, 78.81977092784409

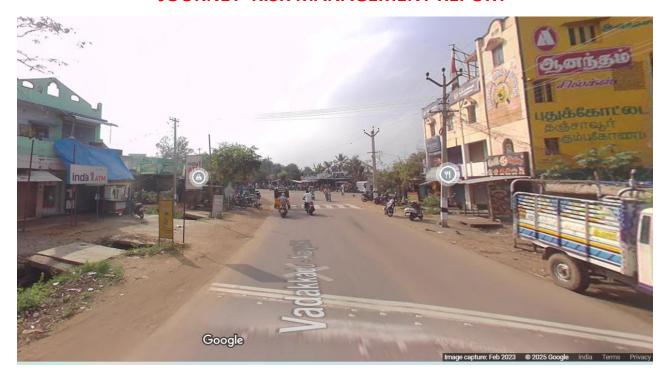


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.36091970773348, 78.83625745394279



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.355566803700066, 78.84660939329025



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.3481881417144, 78.84603211654185



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.32673068959652, 78.88496873348517

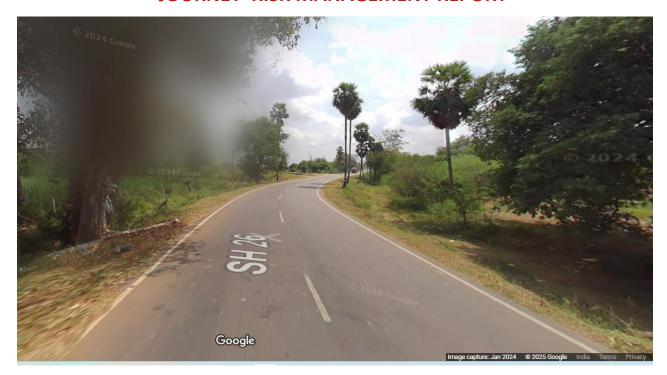


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.303784185186025, 78.90398543342418



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.278204191663452, 78.92913157819376



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.17210172126005, 78.98779462222525



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.171109067244927, 78.99178579134032



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.168921193641838, 78.99288777054507



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.168375681239345, 78.99481971216521



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.169759168971488, 78.99701518607289

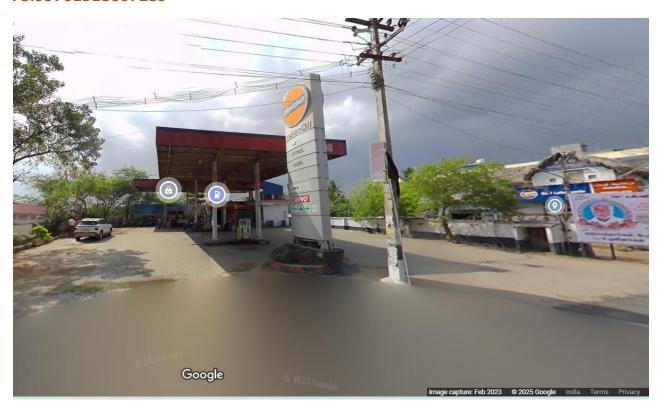


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.17053140687531, 78.99727335637306