

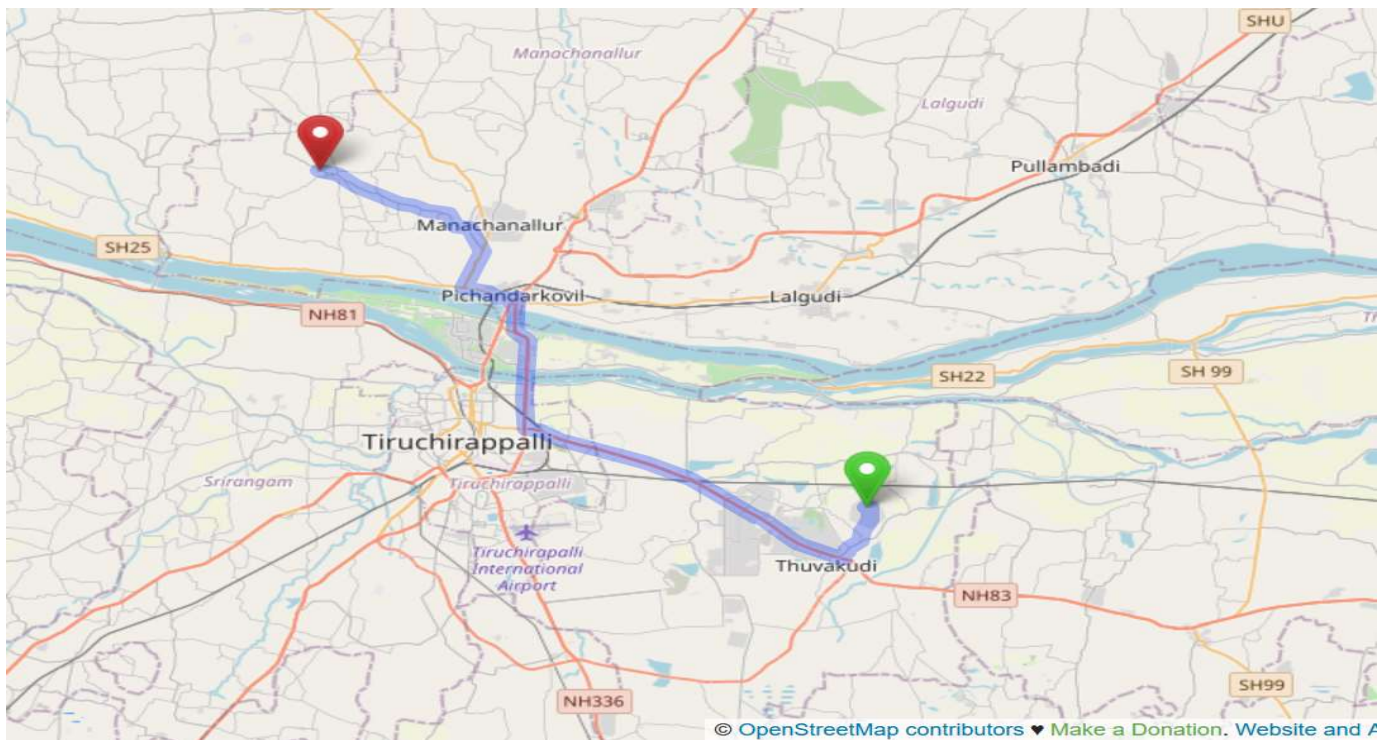
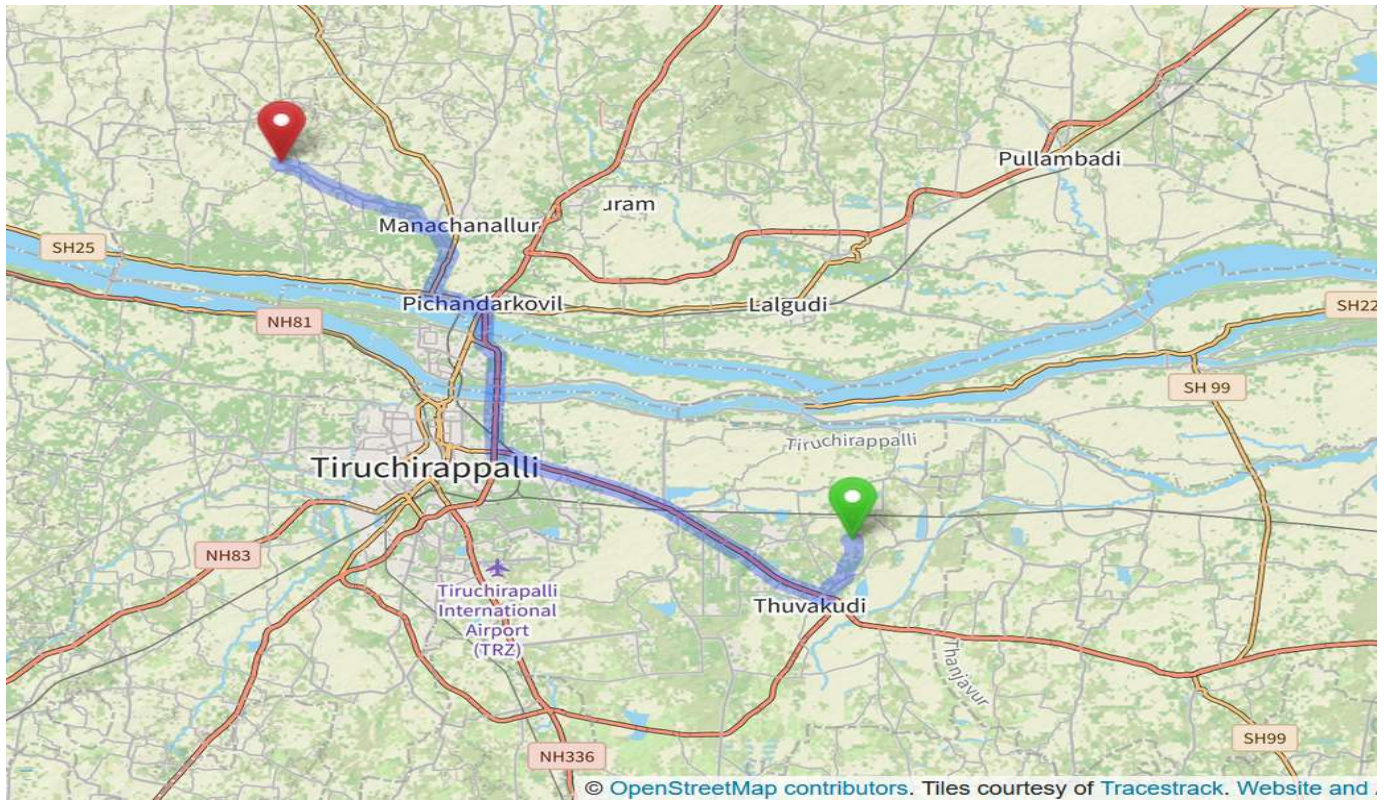


IndianOil

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

JOURNEY RISK MANAGEMENT STUDY

IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO JP OILS,(10.937602 , 78.637909), TOTAL DISTANCE -39 KM



ALARP SERVICES/JRM/TNSO/ JP OILS

Welcome to the Journey Risk Management Study for JP OILS,

Total distance: 39 km; Start with: (10.7753, 78.8368), End with: (10.937602 , 78.637909)

❖ Route Safety Analysis Report

Overview of the Route Map

The route from Trichy Terminal (T.N) To JP Oils SIDCO to Indian oil Storage, M. J. Agencies, Thuvakudi to SIDCO& Indian oil Storage, NH 83, NH 83, NH38/NH67, iruchengode - Namakkal - Trichy Rd/Trichy Chennai Trunk Rd/Vadakkadu - Alangudi Rd, iruchengode - Namakkal - Trichy Rd/Tiruchirapalli - Salem Main Rd/Trichy Main Rd/Vadakkadu - Alangudi Rd, Manachanallur Main Rd/Thuraiyur Main Rd/Thuraiyur - Tiruchirappalli Main Rd/Vadakkadu - Alangudi Rd, Mella Chetti St/Palayanallur Rd/MDR823, Total distance from Trichy Terminal To P OILS,, is 39 km for heavy vehicles carrying hazardous materials.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy Terminal (T.N) To J P OILS,, 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.

JOURNEY RISK MANAGEMENT STUDY

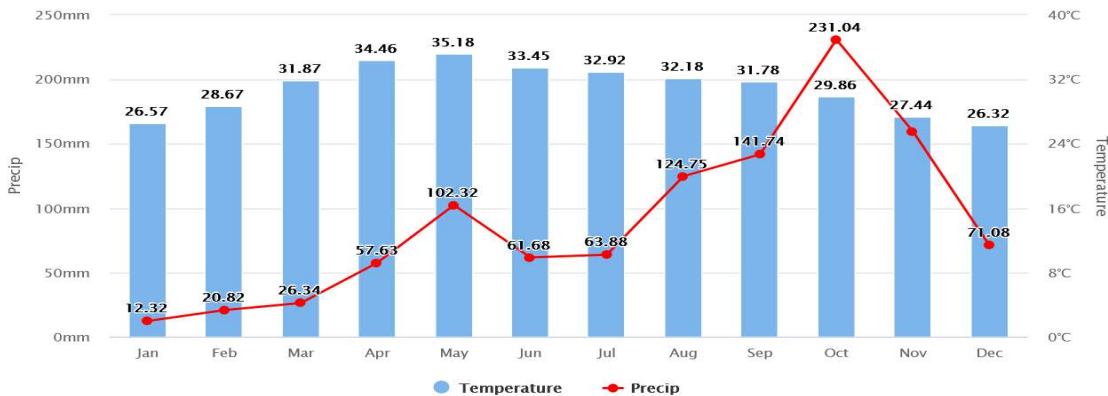
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	33.0 (91.4)	38.0 (100.4)	41.0 (105.8)	43.0 (109.4)	43.0 (109.4)	42.0 (107.6)	40.0 (104.0)	39.0 (102.2)	38.0 (100.4)	37.0 (98.6)	34.0 (93.2)	33.0 (91.4)	43.0 (109.4)
Average high °C (°F)	30.27 (86.49)	32.88 (91.18)	36.0 (96.8)	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 J P OILS, 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 JP OILS,, 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 J P OILS,, 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:

- Ganesh Wine
- Bridgestone Select - Shakthi Tyres
- Diamond Diesel Pump Service
- Government hospital kottucherr
- Servite Higher secondary School
- Kottucherry Police Station,
- Navakiraha Orphanage Care Home - Nocomer Trust,
- Mary Help Of Christians Church
- Mary St,
- Kumarpillai station

❖ **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: Thirupathur Rd/Manamelkudi - Tirupattur Rd/Soorakudi - Palavangudi - Tirupattur Rd/Thiruppathur - Karaikudi Rd/Thirupattur-Karaikudi Rd, Edaiyur - Tirupattur Rd/Manamelkudi - Tirupattur Rd/Soorakudi - Palavangudi - Tirupattur Rd, NH536, Edaiyur - Tirupattur Rd/Manamelkudi - Tirupattur Rd, Alangudi-Aranthangi Rd/Edaiyur - Tirupattur Rd/Manamelkudi - Tirupattur Rd/Pudukkottai - Aranthangi Rd, Pattukkottai - Aranthangi Rd/Thanjavur - Kalayarkoil - Sayalkudi Rd

,

❖ **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:** Bridgestone Select - Shakthi Tyres, Ganesh Wines, Government hospital, kottucherry, Servite Higher secondary School, Kottucherry Police Station,,Navakiraha Orphanage Care Home - Nocomer Trust, Mary Help Of Christians Church, Marryy St, Kumarpillai st
- **Educational institutions:** - Many colleges, universities and school in between Trichy Terminal (T.N) To Sorna Agencies I.E Trichy High School, Girls Senior Secondary School
- **Hospital:** - Government Hospital Alangudi, Noble Hospital, MGM
- Healthcare, Cauvery nagar hospital quarters, Ozone Hospitals, Chirag Hospital and Institute Of Proctology
- **Gas Station:** - A.V.R Petrol Bunk, R.M Traders, M/S R.K Agencies, Ranjith Petrol Pump, GTN Indian Oil , Nayara Petrol Pump, Amuthusurabhi Agencies Indian oil petrol pump, Sai Banu Agency Indian Oil, STD FUEL HP Petrol & Diesel Bunk.
- **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**

- Bridgestone Select - Shakthi Tyres, Ganesh Wines, Government hospital, kottucherry, Servite Higher secondary School, Kottucherry Police Station,,Navakiraha Orphanage Care Home - Nocom Trust, Mary Help Of Christians Church, Marryy St, Kumarpillai 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**













JOURNEY RISK MANAGEMENT STUDY

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

JOURNEY RISK MANAGEMENT STUDY

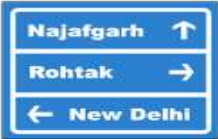

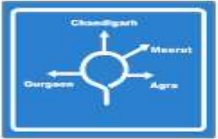
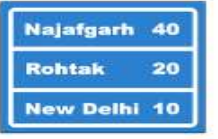
















 <p>All motor vehicles prohibited</p>	 <p>Hand cart prohibited</p>	 <p>Bullock cart prohibited</p>	 <p>Bullock and hand carts prohibited</p>
 <p>No parking</p>	 <p>No parking or stopping</p>	 <p>Speed limit</p>	 <p>Axle load limit</p>
 <p>Width limit</p>	 <p>Weight limit</p>	 <p>Length limit</p>	 <p>Load 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 JP OILS,, 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	10.785196699172273, 78.84276503740674	200 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.785392832539783, 78.84402850175056	300 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.783868820559418, 78.84411798930299	500 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.780879676302877, 78.8471871109474	1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.779657168265215, 78.85001055535648	1.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.7773173288068, 78.85075135215376	1.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.77307140504634, 78.8516923986823	2.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.769403262953078, 78.84345830328166	3.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.759956949864517, 78.83555380443852	4.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.751236749737187, 78.825193144759	6.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.750230709334545, 78.82809780022183	6.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.786583556309754, 78.77543334603979	13.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.813149928969207, 78.71203220920673	21.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.876203255082816, 78.70967283421486	28.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.874400833842753, 78.70769482736593	28.9 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.881172536119157, 78.6905333383557	31.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.899220529013496, 78.6971869753613	33.9 KM	20km/hr TO 30 Km/Hr

JOURNEY RISK MANAGEMENT STUDY

Sharp turn	Medium	10.910980178638503, 78.69249942397524	34.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.922207742647272, 78.66647449668376	38.8 KM	20km/hr TO 30 Km/Hr

❖ **Risk Assessment – Key Location:**

Sr No	Location	Lat, lon.
1	Anbagam Children Home	10.77478109585776, 78.85148703163568
2	Sri Mangalambikai Sametha Thirunedungalanathar Nityasundereswarar Temple	10.77106356123564, 78.85242229282187
3	Truwdes Senior Citizen Home	10.763306640135625, 78.84174611967562
4	Café	10.754494468782475, 78.81804028992838
5	School	10.757797716283262, 78.833286303688
6	Irrigation Management Training Institute	10.751388835186683, 78.82915035347204
7	State Institute Of Hotel Management and Catering Technology	10.75194300004217, 78.82487160534818
8	Government Hospital	10.753533197924469, 78.82197609864878
9	Government Branch Press, Tiruchirappalli	10.753651218032523, 78.81873568484019
10	AGN InfoSystems & AGN INFOTECH	10.759038273631143, 78.8084879211226

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11	Equitas Gurukul Matriculation School	10.801007346291952, 78.73378803779292
12	SESHASAYEE INSTITUTE OF TECHNOLOGY	10.808202136048955, 78.72712563200618
13	JB Residency	10.858265262862638, 78.712839931013

SHARP TURN IMAGE

Total distance: 39 km; Start with: (10.7753, 78.8368), End with: (10.937602 , 78.637909)



SHARP TURN IMAGE START FROM TRICY TERMINAL

JOURNEY RISK MANAGEMENT STUDY



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI. 10.739011461069182, 78.83858885050212



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI. 10.720753025938777, 78.96377618938521

JOURNEY RISK MANAGEMENT STUDY



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



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JOURNEY RISK MANAGEMENT STUDY

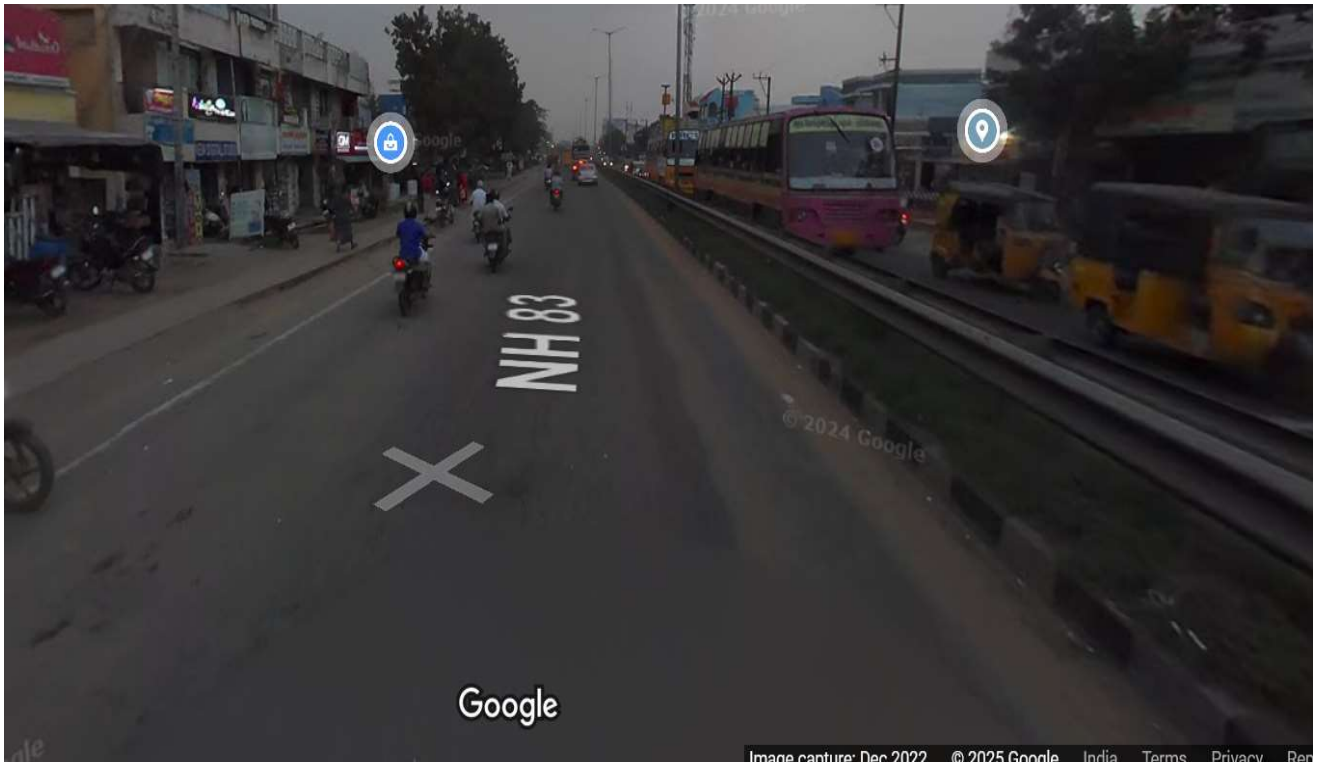


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI.



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ALARP SERVICES/JRM/TNSO/ JP OILS

JOURNEY RISK MANAGEMENT STUDY



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



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