

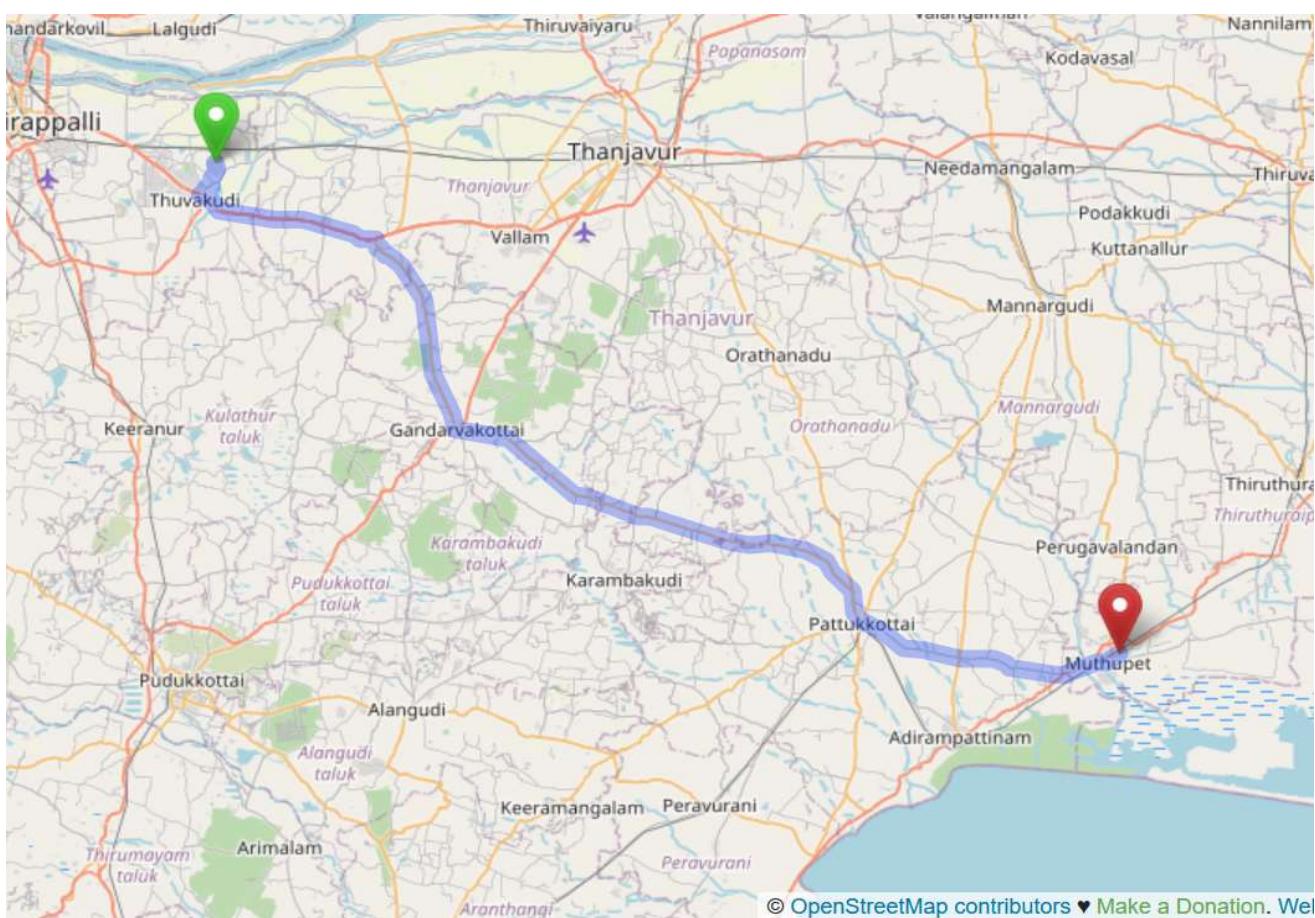
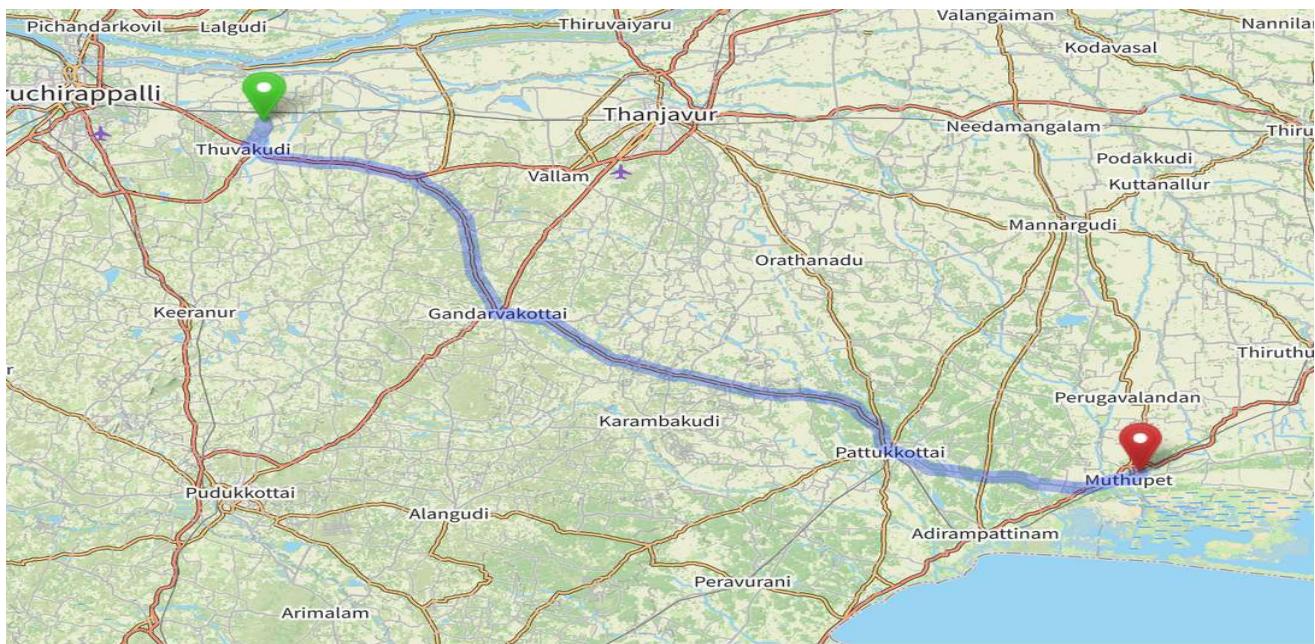


IndianOil

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

JOURNEY RISK MANAGEMENT STUDY REPORT

IOCL TIRCHY TERMINAL (10.7753, 78.9868) TO RAJAPPA C, (10.402063 , 79.502371), TOTAL DISTANCE -98 KM



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Welcome to the Journey Risk Management Study for RAJAPPA C,

Total distance: 98 km; Start with: (10.7753, 78.9868), End with: (10.402063 , 79.502371)

❖ Route Safety Analysis Report **Overview of the Route Map**

The route from Trichy Terminal (T.N) to RSR ENTERPRISES. The route passes through several key points including SIDCO Industrial Estate Valavanthankottai, Logesh Fancy & Stationery Stores, Thuvakudi to SIDCO& Indian oil Storage, Markandan Agency onto NH 98 Toll road, U-turn at TNSTC TRICHY RE CONDITIONING UNIT(RC), Trichy-Tanjore Rd, Thanjavur Ring Rd, Vennar bypass Bridge, Thanjavur Kumbakonam Main Rd, ValVnthNKOTTI Toll Plaza Rd, Coimbatore-Nagapattinam Hwy, Maravapattu-villur-Kallikkudi Rd, SH 66, Rd for heavy vehicles carrying hazardous materials.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy Terminal (T.N) to RAJAPPA C, 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.

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| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | 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 RAJAPPA C, 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 RAJAPPA C, 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 RAJAPPA C, peak traffic hours are from 8:00 AM to 11:00 AM and 4:00 PM to 9:00 PM on weekdays.

Congestion-Prone Areas:

- Ganesh Wine
- Bridgestone Select - Shakthi Tyres
- Diamond Diesel Pump Service
- Government hospital kottucherry
- Aishwarya Medical Centre
- SS Engineering works
- Aavin Milk & Hotel,
- MKS FRUITS & FRESH JUICE
- Yazh Veera Tea Coffee Snacks Bar
- Pakkiya Welding
- L & T Financial Services
-

❖ 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 Route1: Thuvakudi to SIDCO& Indian oil Storage, Trichy-Tanjore Rd, Tanjore to Nagapattinam two way bye pass Rd, NH98, Kottucherry Rd, Vedamattam Main Rd.

Alternative Route 2: NH-99A, Kulithalai -Manapparai Rd, Vadakkada – Alangudi Rd, Rannathpuram Rd, NH98/service Road, Trichy – Tanjore Road, East Cost Rg, Nedungadura,

Summary of Local Regulations Affecting Hazardous Material Transport

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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 - Nocome Trust, Mary Help Of Christians Church, Marryy St, Kumarpillai st
- **Educational institutions:** - Irrigation Management Training Institute, State Institute of Hotel Management and Catering Technology, V.O.C Govt Higher Secondary School, ENPEE International School, Don Bosco Higher Secondary
- **Hospital:** - ESI Dispensary, Trustee Medical Center Velangudi, Govt.Hospital Thenkarai Mathur
- **Gas Station:** - In there are several of fuel/Gas station some of them are G Parthasarathi Fuel Agencies , S N Ravi Kumar Agencies, Siva Fuels , Bhavani 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**

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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 |
|--|--|---------------------------------|-------|
| | Government hospital kottucherry, Aishwarya Medical Centre, SS Engineering workS, Aavin Milk & Hotel, MKS FRUITS & FRESH JUICE, Yazh Veera Tea Coffee Snacks Bar, Pakkiya Welding, L & T Financial Services | 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:** Waterlogging, 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

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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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| | | | |
|---|---|--|---|
|  |  |  |  |
| All motor vehicles prohibited | Hand cart prohibited | Bullock cart prohibited | Bullock and hand carts prohibited |
|  |  |  |  |
| No parking | No parking or stopping | Speed limit | Axle load limit |
|  |  |  |  |
| Width limit | Weight limit | Length limit | Load limit |
|  | Restriction ends | | |

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 RAJAPPA C, Nallathur Road, Nedungadu Commune, Kurumbagaram, Thiruvarur State-TN is generally manageable but poses several risks, particularly during the monsoon season and Winter (Fog Weather). Proper planning, adherence to regulations, and awareness of potential hazards can significantly mitigate these risks.

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❖ Risk Assessment – Key Location:

| Sr No | Location | Lat, lon. |
|--------------|--|---------------------------------------|
| 1 | Hall/Hotel | 10.757627679523425, 78.98287045929539 |
| 2 | OLD Burma Colony | 10.75810448259808, 78.98342945889828 |
| 3 | School/College | 10.751940259658717, 78.824855152166 |
| 4 | School/College | 10.751244043943656, 78.82964545444308 |
| 5 | Bank | 10.749935829138195, 78.8268757098185 |
| 6 | Toll Plaza | 10.739223590189045, 78.82491390378034 |
| 7 | Jagdish Filling station IOCL RO | 10.730096699158965, 78.8638598739828 |
| 8 | Bus Stand | 10.737619717156392, 78.84469108474981 |
| 9 | School/College | 10.743654738281231, 78.85235497712233 |
| 10 | Shri Rakku Sakti IOCL retail outlet | 10.736854782210685, 78.85825905782572 |
| 11 | School/College | 10.736328228804307, 78.86222089649122 |
| 12 | Moogambigai Agencies IOC RO | 10.720992946251965, 78.94066066619781 |
| 13 | G Parthasarathi Fuel Agencies IOCL RO | 10.731949135570895, 79.01989981851398 |
| 14 | Auto Parts Mall | 10.73479825344728, 78.86398650381019 |
| 15 | Trichy-Thanjavur Border check post | 10.734414736299165, 78.8687554646539 |
| 16 | Hotel | 10.73449559472593, 78.87053727134324 |
| 17 | Pkd railway station starting point | 10.733035467327722, 78.87760665657318 |
| 18 | Nayara Petrol Pump | 10.733201787527669, 78.88075610377959 |
| 19 | IOCL RO | 10.737028984634, 79.13691139189406 |
| 20 | Smv Puncture Shop | 10.733071879186443, 78.88788151537216 |
| 21 | Hotel | 10.732766784125532, 78.89204005296241 |
| 22 | IOCL retail outlet | 10.732484981220054, 78.89788773851032 |
| 23 | Bank | 10.73069888892885, 78.90808861916952 |

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| | | |
|----|---|---------------------------------------|
| 24 | Bus Stop | 10.72762381663031, 78.91707309156152 |
| 25 | Tool Fab Industry | 10.724738429698235, 78.92771569309396 |
| 26 | Hotel | 10.719730509674973, 78.96118243846999 |
| 27 | Vikas Global City | 10.724186034036219, 78.97449603272008 |
| 28 | Gnanam Business School | 10.727431325357013, 78.9798943535095 |
| 29 | BPCL RO | 10.725825464578664, 78.9807445894157 |
| 30 | Peekay Mediequip Limited | 10.729355844598135, 78.99185652717746 |
| 31 | Thanjavur District Collector Office | 10.734119148806737, 79.09384524937086 |
| 32 | Tamil University | 10.73627973338858, 79.09819851652815 |
| 33 | Brilliant Matriculation Higher Secondary School | 10.396093387967124, 79.48734224553309 |
| 34 | Rahmath Girls Matriculation Hr. Sec. School | 10.395763034919842, 79.48682614662178 |
| 35 | Indian Oil | 10.394802176276613, 79.48281001972278 |

JOURNEY RISK MANAGEMENT STUDY REPORT

IOCL TIRCHY TERMINAL (10.7753, 78.9868) TO RAJAPPA C, (10.759699, 79.849371), TOTAL DISTANCE -98 KM



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.726561431768498, 79.06521400420263



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.72308854798758, 79.0699837039081

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.73705102370136, 79.10766164424598



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.74328897463726, 79.14225760188724

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.780404751602815, 79.16734250741605



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.954296172087506, 79.34774637212439

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.955808147992787, 79.36573625410698



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.960551970688885, 79.38611597224178

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.999822729754582, 79.53231697386092



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.97664252932043, 79.46227340774438

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 11.000530877432295, 79.54660314053001



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.994194075371174, 79.56081163873246

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.992066778173717, 79.56820237764057



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.99122294842798, 79.57203662086194

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.987740544991665, 79.58142784769393



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.987540562736278, 79.5871215963912

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.98257682421649, 79.603774136502



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.997468072824544, 79.52261457790277

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.978642804669425, 79.61216319719159



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.980311502737374, 79.6269924536789

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.981093919987123, 79.63238714523666



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.981093919987123, 79.63238714523666

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.980289845806885, 79.64038449669609



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.980974794669736, 79.65339382615088

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.981434236664478, 79.65609416186935



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.98205716524272, 79.66772881733506

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.998622084540597, 79.67921211595166



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.998611079081712, 79.6794698558881

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.998623141682171, 79.6984547111762



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.981989652855994, 79.690124444987

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.97900065737536, 79.69900788046597



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.97614303989356, 79.70712467304794

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.977932476045517, 79.71594218031824



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.977607564144272, 79.7244128789247

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.976343782644864, 79.74606516666324



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.976143547065968, 79.75277076450987

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.97406285566265, 79.77076007615538



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.966870491363219, 79.79981994069612

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.960160926774313, 79.81119260218072



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI 10.960160926774313, 79.81119260218072

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI

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IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



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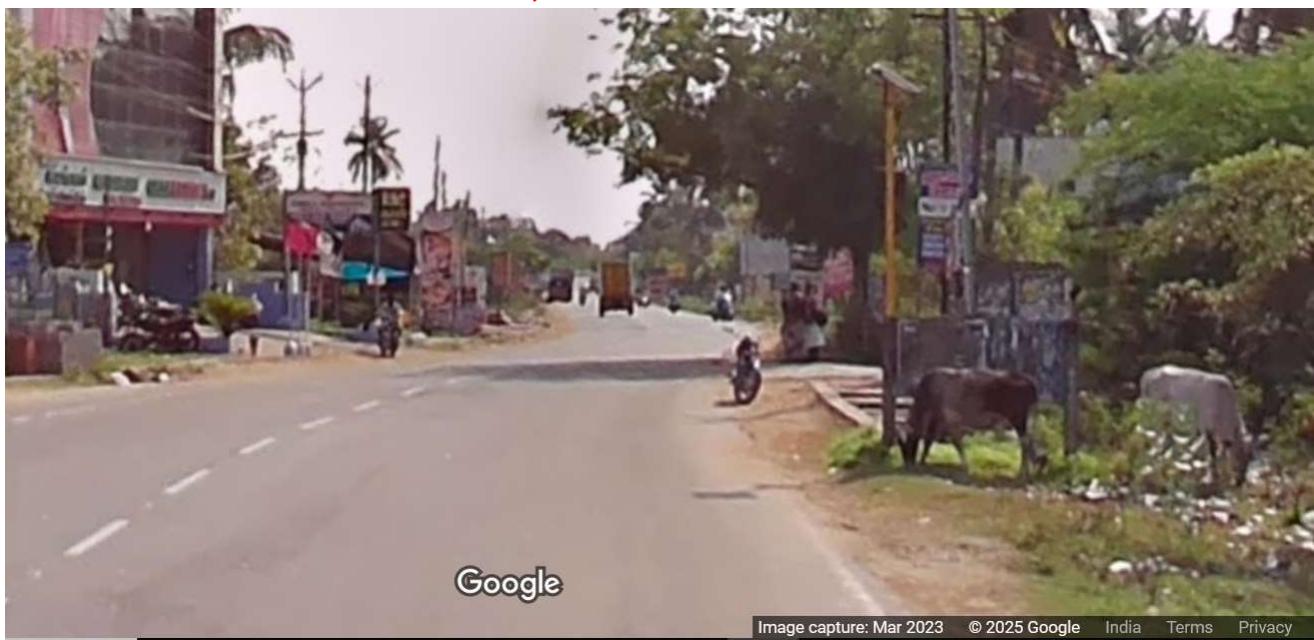
IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



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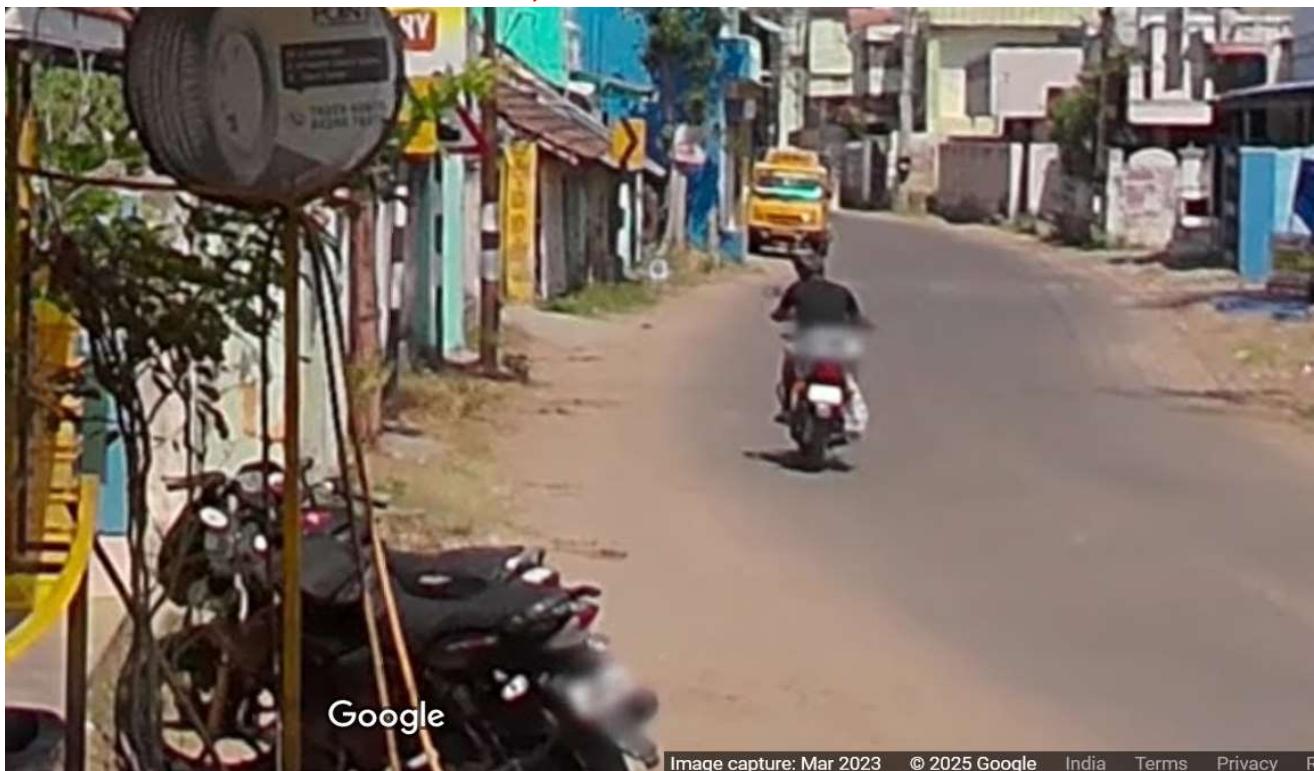
IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



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IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



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IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI

JOURNEY RISK MANAGEMENT STUDY REPORT



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI



IMAGE: SHARP TURN RISK LEVEL: - MEDIUM, COORDI