

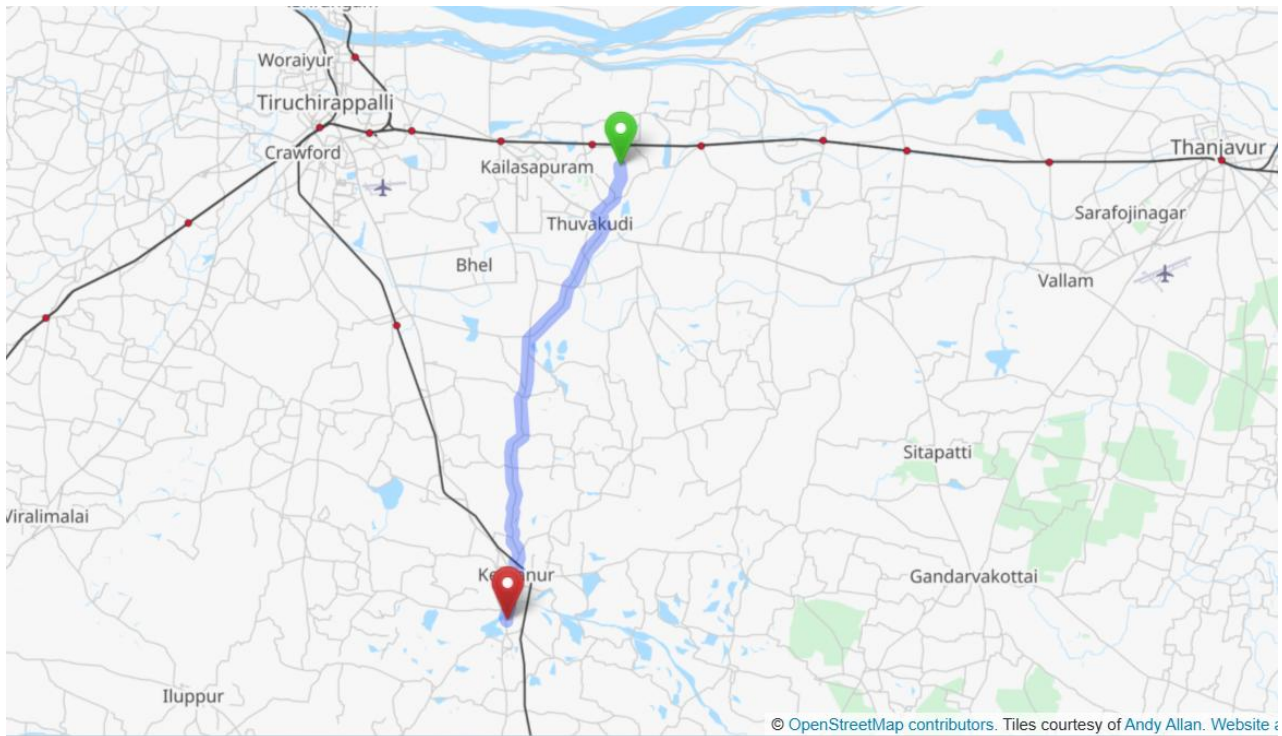
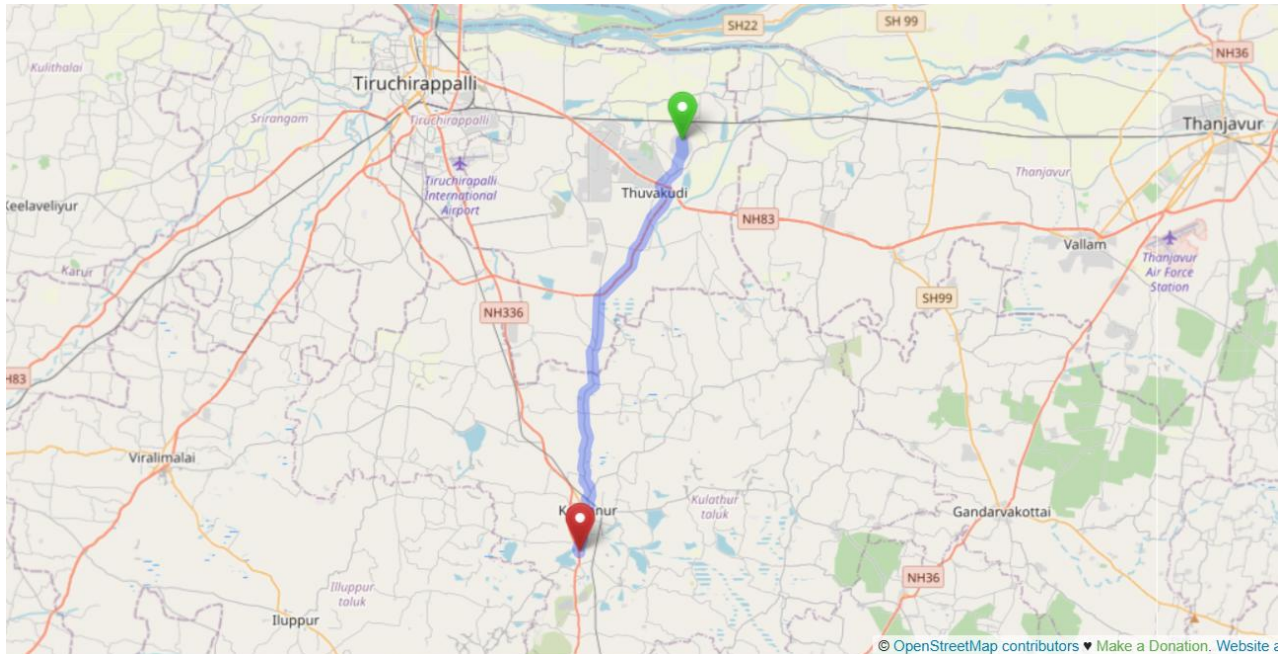


IndianOil

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

JOURNEY RISK MANAGEMENT REPORT

IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO LAKSHMI AGENCY(10.550713 , 78.779549) TOTAL DISTANCE – 36.9 KM



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JOURNEY RISK MANAGEMENT REPORT

Welcome to the Journey Risk Management Study for LAKSHMI AGENCY

Total distance: 36.9 KM; Start with: (10.7753 , 78.8368), End with: (10.550713 , 78.779549)

- **Route Safety Analysis Report**

1. **Overview of the Route Map**

The route from Trichy Terminal (T.N) TO LAKSHMI AGENCY. The route passes through several key point Including Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, At Jude Digital Studios, continue onto Thuvakudi toSIDCO& Indian oil Storage, Follow Outer Ring Rd/Trichy Bypass and NH336 to Manapparai-Pudukottai Rd/Vadakkadu - Alangudi Rd in Kavinad West, Drive to Vadakkadu - Alangudi Rd and Total distance from Trichy Terminal To LAKSHMI AGENCYIS 36.9 KM.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy Terminal (T.N) To LAKSHMI AGENCY 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.

JOURNEY RISK MANAGEMENT REPORT

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

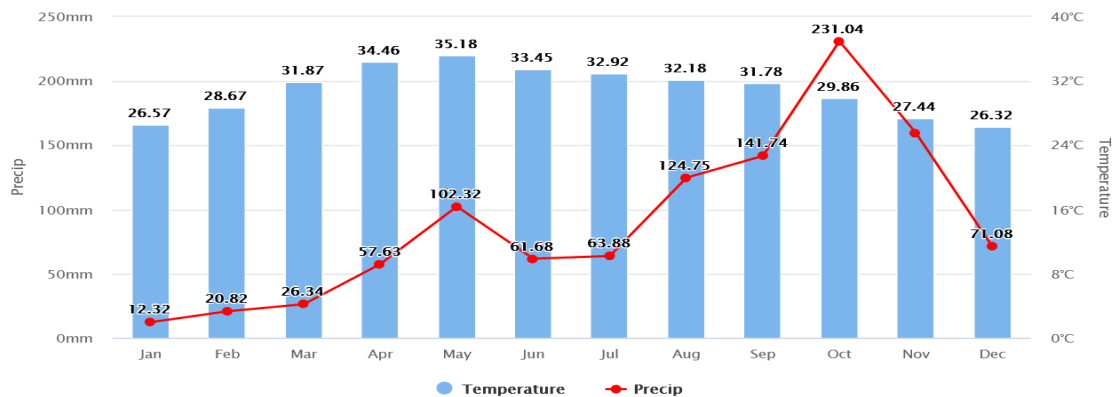
Weather-Related Hazards: Trichy Terminal (T.N) To LAKSHMI AGENCY

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 LAKSHMI AGENCY 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:

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Typically, Trichy Terminal (T.N) To LAKSHMI AGENCY 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
- RECT Nagar
- BMR Garden
- Bharathidasan University
- Siddhar Vanam Siddha Hospital
- VGP University Town
- Anna University RO Tiruchirappalli
- Electric Bord, Nallur Branch
- Mookambigai College of Engineering
- Royal Polytechnic College
- Narthamalai Muthumariamman Temple Entrance ,Narthamalai
- IIPHS SAFETY COLLEGE

- **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 SIDCO to Indian oil Storage to NH 83 in Thuvakudi, At Jude Digital Studios, continue onto Thuvakudi toSIDCO& Indian oil Storage, Follow Outer Ring Rd/Trichy Bypass and NH336 to Manapparai-Pudukottai Rd/Vadakkadu - Alangudi Rd in Kavina West, Drive to Vadakkadu - Alangudi Rd.

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Alternative Route 2 :-) Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Head south on SIDCO to Indian oil Storage, At Jude Digital Studios, continue onto Thuvakudi to SIDCO & Indian oil Storage, Follow Outer Ring Rd/Trichy Bypass to Kanthalur Rd in Sooriyur, Continue on Kanthalur Rd to Pallathuppatti, Turn left at Arumugam Tea and Food shop onto Kanthalur Rd, Turn right toward NH336, Sharp left onto NH336, Continue on Ramanathapuram Rd. Drive to Vadakkadu - Alangudi 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:** Old Burma Colony, RECT Nagar, BMR Garden, Bharathidasan University, Siddhar Vanam Siddha Hospital, VGP University Town, Anna University RO Tiruchirappalli, Electric Bord, Nallur Branch, Mookambigai College of Engineering, Royal Polytechnic College, Narthamalai Muthumariamman Temple Entrance, Narthamalai, IIPHS SAFETY COLLEGE.
- **Educational institutions:** Himalayan Access Pvt.Ltd, Arasu Education - Jcb Institute in Trichy, Gnanam School of Business, Adaikala Matha College.
- **Hospital:** - Dr Kamali's Home Clinic, Viveganandha Hospital, AYUSH MULTISPECIALITY HOSPITAL.

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- **Gas Station:** ESSAR petrol pump, SP Petroleum (HPCL), HP PETROL PUMP - M/S. A.V.R. PETROL BUNK, IndianOil, 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, RECT, Nagar, BMR Garden, Bharathidasan University, Siddhar Vanam Siddha Hospital, VGP University Town, Anna University RO Tiruchirappalli, Electric Bord, Nallur Branch, Mookambigai College of Engineering, Royal Polytechnic College, Narthamalai Muthumariamman Temple Entrance, Narthamalai, IIPHS SAFETY COLLEGE. areas like, have quicker response times (15- 20 minutes). Congested areas may experience delays (up to 30-40 minutes).

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- **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

 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 REPORT

 <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 ands</p>			




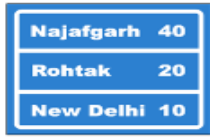
















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Cautionary signs

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

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Information signs

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

Conclusion

The route for Trichy Terminal (T.N) To LAKSHMI AGENCY 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.

JOURNEY RISK MANAGEMENT REPORT

- **Risk Assessment - Sharp Turns**

Risk Type	Risk Level	Coordination	Distance From Start	Recommendation Speed
Sharp turn	Medium	10.769517372474736, 78.83735063199906	650 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.76584461192607, 78.8361700257199	1.1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.764182189802032, 78.83459588401435	1.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.75826698538096, 78.83349398474651	2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.756372549032195, 78.83034570133539	2.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.751346435623256, 78.8252297405902	3.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.749451955814655, 78.83046376176118	3.8 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.741610640579689, 78.82718594844422	4.8 km	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.734287918634735, 78.82046183804047	5.9 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.713512709090521, 78.80911996491783	8.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.706666925588681, 78.80782375086409	9.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.699582172344776, 78.80004646577926	10.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.691462364523247, 78.79064891388968	11.9 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.6638374704095, 78.78862357927507	14.9 KM	20km/hr TO 30 Km/Hr

JOURNEY RISK MANAGEMENT REPORT

Sharp turn	Medium	10.660732498370965, 78.78635520468103	15.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.64842417274851, 78.78704271204515	16.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.642648477065759, 78.78790978721874	17.4 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.639334503912071, 78.7842488031525	18 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.638103590426153, 78.78270733617721	18.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.63038659627268, 78.78135855241705	19.1 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.624941974019475, 78.78241831096254	19.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.619736436728504, 78.78185104657456	20.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.613392037576439, 78.78421141788797	21 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.604822155245836, 78.78266995091272	22 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.597762474060362, 78.78165149877057	22.8 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.590328563954534, 78.7826630864731	23.6 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.588623947680798, 78.78150698624165	23.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.58674533173466, 78.77729220760148	24.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.58637702814883, 78.77604894716654	24.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.585791089639176, 78.7750441199752	24.6 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.584033267538665, 78.77536770828819	24.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.55207259980482, 78.77880669261698	28.5 KM	20km/hr TO 30 Km/Hr

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Sharp turn	Medium	10.54546223984727, 78.77944431801846	29.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.541561023304784, 78.77784340726133	29.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.52477999016818, 78.77752490228748	31.6 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.521431084738632, 78.77745677842805	32 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.514728592539958, 78.77906070610587	32.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.507838008323152, 78.77943735896314	33.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.50052020126909, 78.7790797087057	34.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.496250005036513, 78.77734255028975	34.9 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.559934672090641, 78.77504522244	35.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.550658345113831, 78.77908292514535	36.8 KM	20km/hr TO 30 Km/Hr

• Risk Assessment - Elevation Changes

Risk Type	Specific Risk	Risk Level	Coordination	Elevation Change	Gradient	Recommendation 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

JOURNEY RISK MANAGEMENT REPORT

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IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO LAKSHMI AGENCY(10.550713 , 78.779549) TOTAL DISTANCE – 36.9 KM



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

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



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

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



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

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JOURNEY RISK MANAGEMENT REPORT



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.75028318292191,
78.82795244340517



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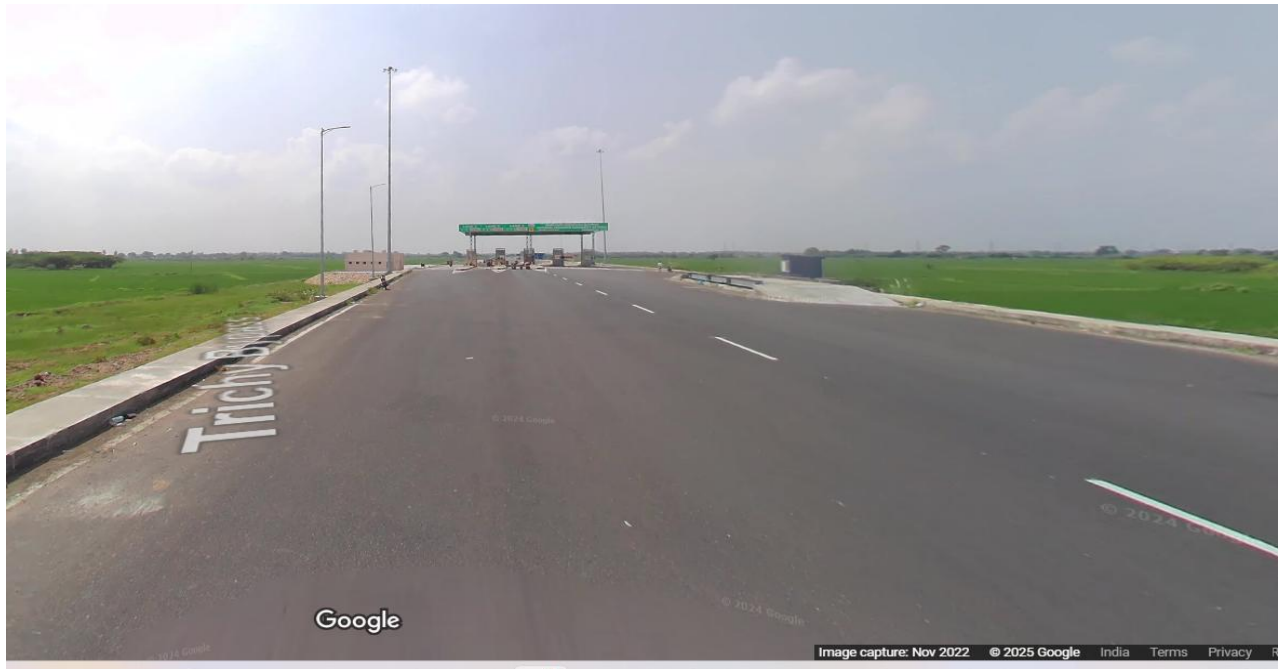
IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.749185832475025,
78.8304590222586



IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.741921874045772,
78.82722276361802

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JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.739952905239392,
78.82561093459273**



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.698680622415512,
78.73209912865197**

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JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.634756927904567,
78.74673074964294**

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JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.625396906302761,
78.74682789213158**

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**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.615082428850213,
78.75648053324169**

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JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.589707367846913,
78.77265438829214**

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JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.584720509031419,
78.77476075619464**

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JOURNEY RISK MANAGEMENT REPORT



10.55072469332898, 78.77954219607936

THANK YOU

YOUR DESTINATION IS HERE!

ALARP/JRM/TNSO/LAKSHMI AGENCY