

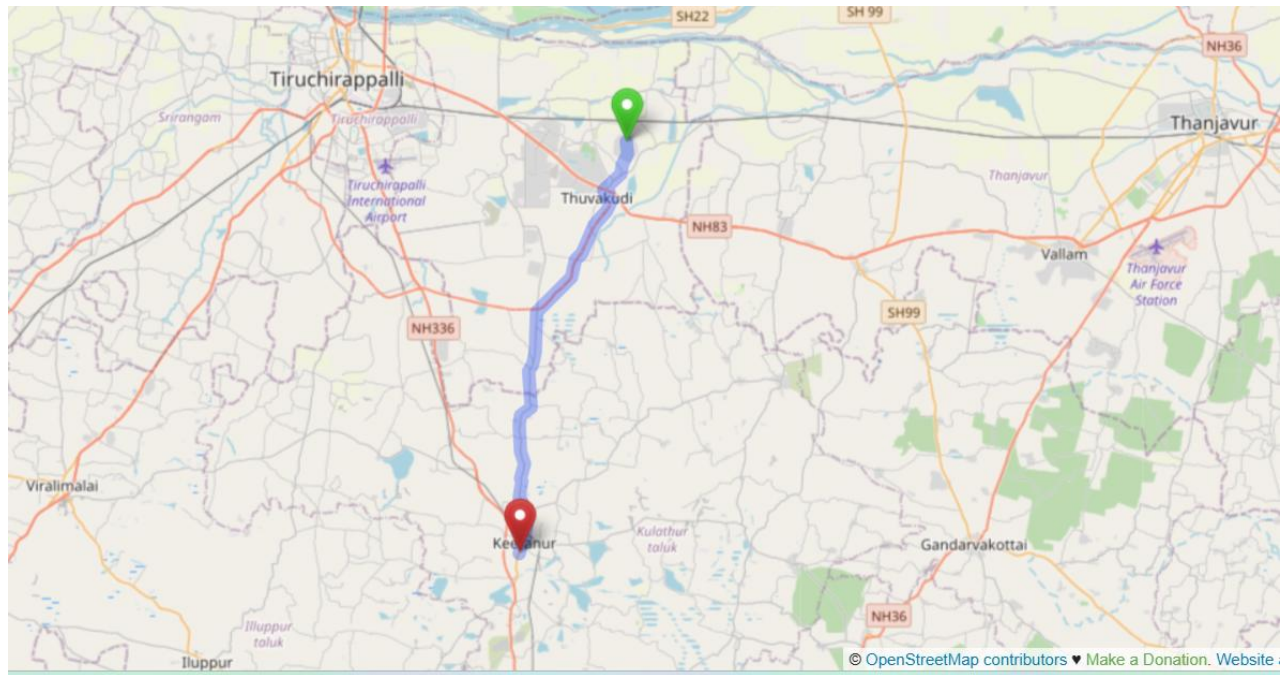
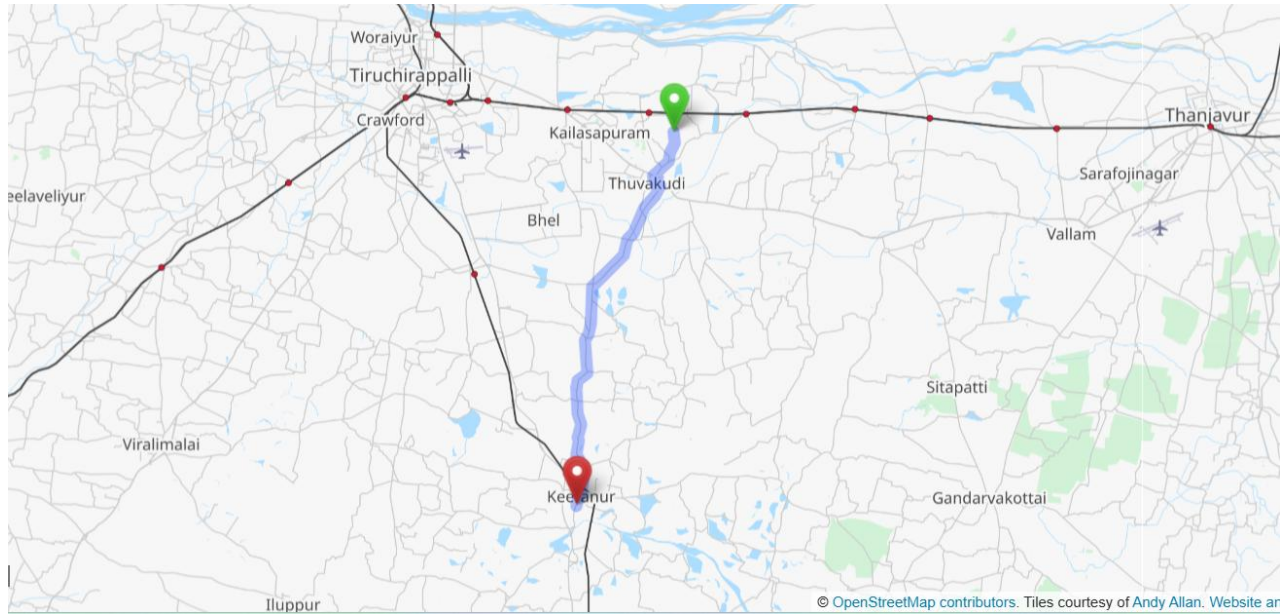


IndianOil

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 RASHEED ALI - SONS(10.568504 , 78.781374) TOTAL DISTANCE – 26.6 KM



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Welcome to the Journey Risk Management Study for RASHEED ALI-SONS

Total distance: 26.6 KM; Start with: (10.7753 , 78.8368), End with: (10.568504 , 78.781374)

- **Route Safety Analysis Report**

- 1. Overview of the Route Map**

The route from trichy terminal (t.n) to rasheed ali-sons.the route passes through several key point including take sidco to indian oil storage to nh 83 in thuvakudi, take outer ring rd/trichy bypass and kanthalur rd to keeranur rd in keeranur. And total distance from trichy terminal to rasheed ali - sonsis 26.6 km.

Typical Weather Conditions and Potential Weather-Related Hazards

Weather Conditions: Trichy terminal (t.n) to rasheed ali – sons 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

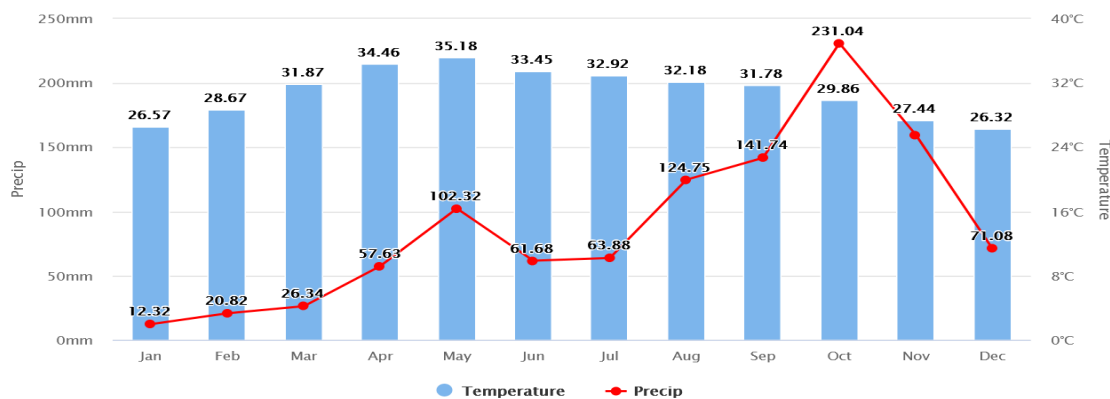
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	33.0 (91.4)	38.0 (100.4)	41.0 (105.8)	43.0 (109.4)	43.0 (109.4)	42.0 (107.6)	40.0 (104.0)	39.0 (102.2)	38.0 (100.4)	37.0 (98.6)	34.0 (93.2)	33.0 (91.4)	43.0 (109.4)
Average high °C (°F)	30.27 (86.49)	32.88 (91.18)	36.0 (96.8)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

- **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, Take Outer Ring Rd/Trichy Bypass and Kanthalur Rd to Keeranur Rd in Keeranur.

Alternative Route 2)- Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Drive along Outer Ring Rd/Trichy Bypass and Kanthalur Rd, Turn right at Balaji Jewelry to stay on Keeranur Rd.

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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.
- **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.
- **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.

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- **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 Boro, Nallur Branch, Mookambigai College of Engineering, Royal Polytechnic College. Areas like these 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:** 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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 <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

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 RASHEED ALI – SONS 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.

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- **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
Sharp turn	Medium	10.660732498370965, 78.78635520468103	15.4 KM	20km/hr TO 30 Km/Hr

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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	10.573286055353211, 78.78325579304087	26.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.570368807708435, 78.78290859379356	26.6 KM	20km/hr TO 30 Km/Hr

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JOURNEY RISK MANAGEMENT REPORT

- **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

IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO RASHEED ALI - SONS(10.568504 , 78.781374) TOTAL DISTANCE – 26.6 KM

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



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



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

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



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



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

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



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



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

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



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

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



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



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

ALARP/JRM/TNSO/RASHEED ALI - SONS

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**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.732984887447019,
78.82010630464889**

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.60804508489214,
78.78298738443446**



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.595237306894926,
78.78242156436997**

ALARP/JRM/TNSO/RASHEED ALI - SONS

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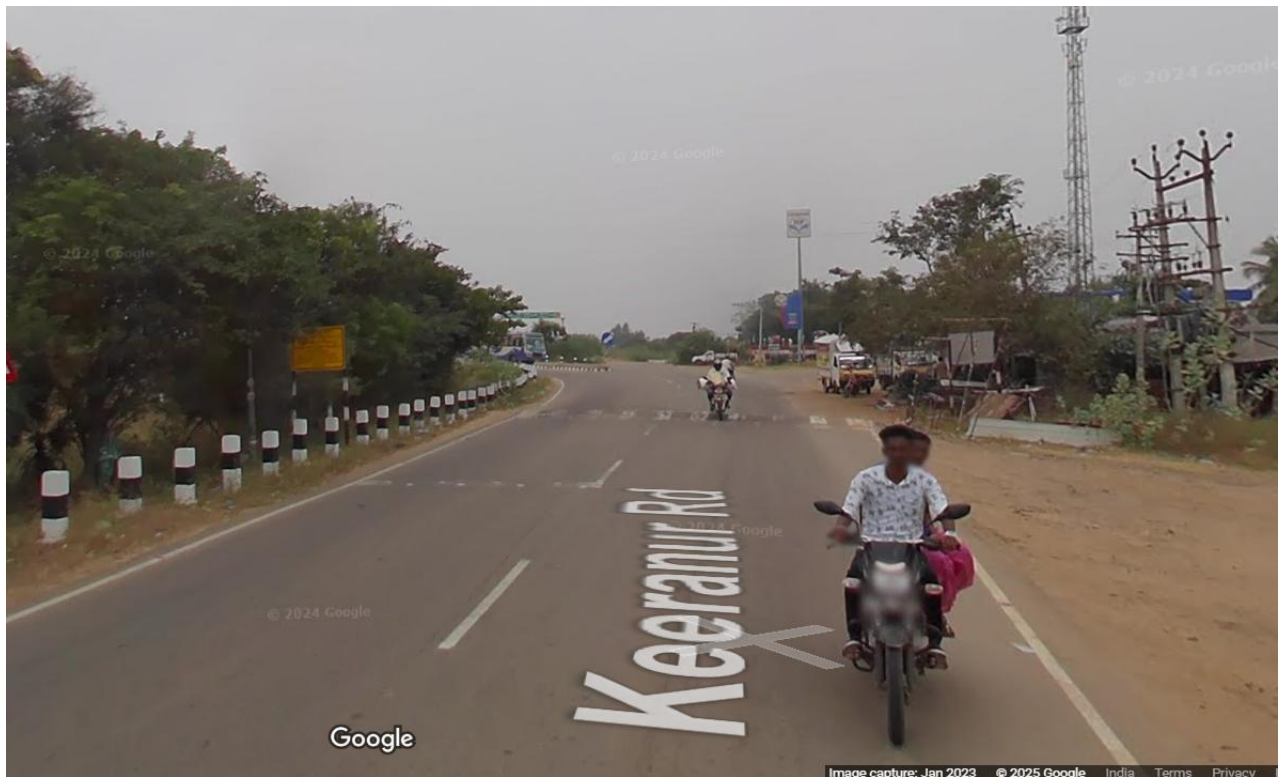


IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.584278234086595,
78.7760850880088

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.573978331515992,
78.78155606032955**

ALARP/JRM/TNSO/RASHEED ALI - SONS

JOURNEY RISK MANAGEMENT REPORT



**IMAGE :- SHARP TURN RISK LEVEL :- MEDIUM COORDI: 10.568545247211313,
78.781410017815**

ALARP/JRM/TNSO/RASHEED ALI - SONS