



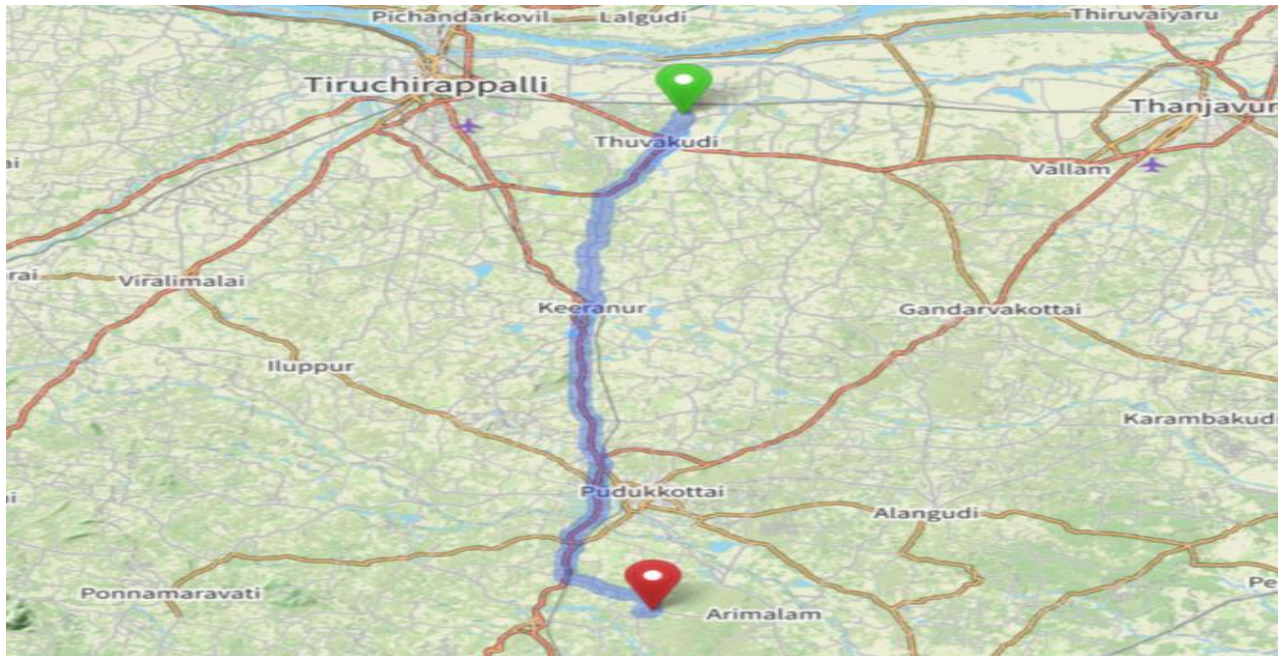
**IndianOil**

**WELCOME TO JOURNEY**  
**RISK MANAGEMENT**  
**(JRM) STUDY USING**  
**ARTIFICIAL**  
**INTELLIGENCE (AI)**

**JOURNEY RISK MANAGEMENT REPORT**

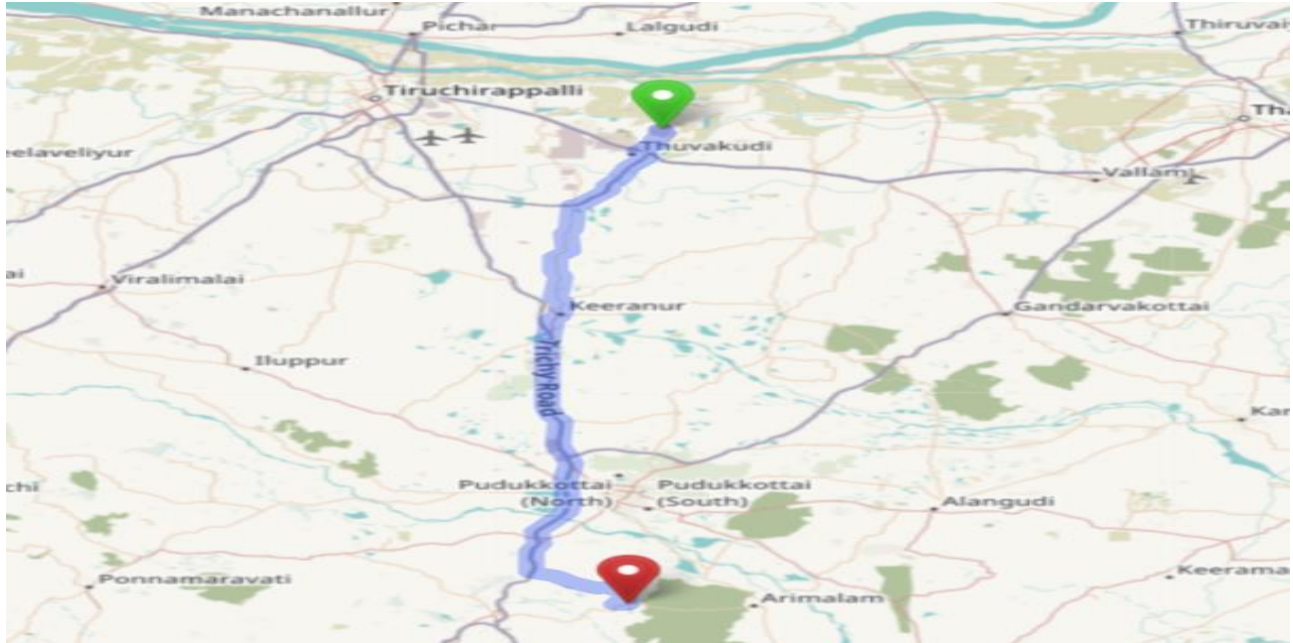
# **FOR IOCL TRICHY** **TERMINAL**

**IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO MUTHU**  
**AGENCIES(10.256517 , 78.818962) TOTAL DISTANCE – 67KM**



**ALARP/JRM/TNSO/MUTHU AGENCIES**

# JOURNEY RISK MANAGEMENT REPORT



## **Welcome to the Journey Risk Management Study for MUTHU AGENCIES**

**Total distance: 67km; start with: (10.7753, 78.8368), End with: (10.256517 , 78.818962)**

- **Route Safety Analysis Report**

### **1. Overview of the Route Map**

The route from IOCL Tirchy Terminal (10.7753, 78.8368) to Muthu Agencies (10.256517, 78.818962) covers a total distance of 67 km. Starting from IOCL Tirchy Terminal, head south and take NH38, continue straight towards the town of Trichy, then take the road leading to the city outskirts. Follow the signs to reach the Muthu Agencies location, passing by several local landmarks and roads along the way. and Total distance from Trichy Terminal To MUTHU AGENCIES 67 km.

## JOURNEY RISK MANAGEMENT REPORT

### Typical Weather Conditions and Potential Weather-Related Hazards

#### Weather Conditions:

Trichy Terminal (T.N) To MUTHU 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 (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:

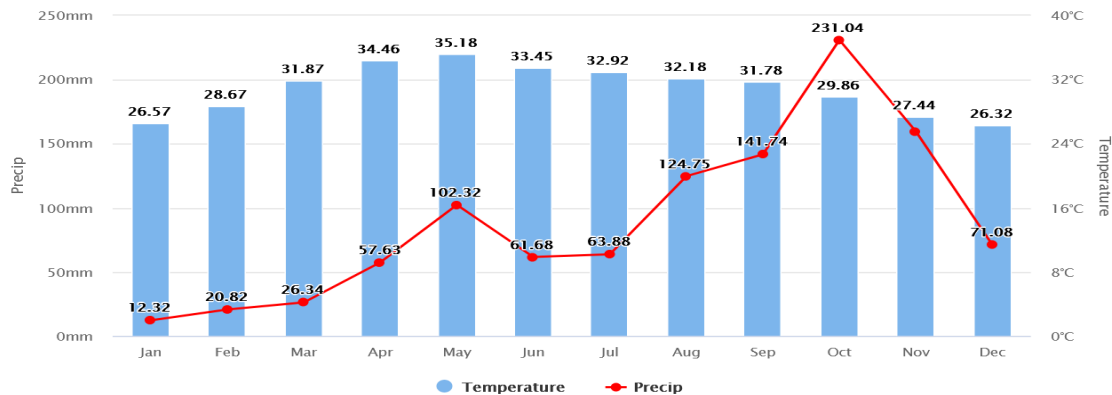
Trichy Terminal (T.N) To MUTHU AGENCIES Providing a local hourly weather forecast of rain, sun, wind, humidity and temperature.

The Long-range 12 day forecast also includes detail for weather today. Live weather reports from Trichy Terminal (T.N) To MACAM AGENCY AGENCIES weather stations and weather warnings that include risk of thunder, high UV index and forecast gales.

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## 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 MUTHU AGENCIESpeak traffic hours are from 8:00 AM to 11:00 AM and 4:00 PM to 8:00 PM on weekdays.

### Congestion-Prone Areas:

- **Trichy City Center:** The main area of Trichy can experience heavy traffic, especially during peak hours. The roads near the railway station, bus terminals, and commercial areas are often congested.
- **Near Junctions and Crossroads:** Intersections along NH38 and other connecting roads near towns or markets can be prone to traffic slowdowns.
- **Trichy Bypass (if used):** While the bypass can offer a quicker route, there can be occasional congestion near entry/exit points due to trucks, local traffic, and construction zones.
- **Muthur Area:** Closer to Muthu Agencies, local roads can also become congested, especially near busy markets or residential areas.



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- **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-).**Start from IOCL Tirchy Terminal and head south towards NH83.
- Continue on **NH83**, passing through several smaller towns, until you reach **Trichy City**.
- From there, take **NH38** heading towards **Muthur** and continue on this road until you reach **Muthu Agencies**.
- This route passes through the city outskirts, reducing congestion compared to city center routes.,and Total distance from Trichy Terminal To MUTHU AGENCIES67KM.

## **Alternate Route 2 (Via Trichy Bypass and NH83)**

- Start at IOCL Tirchy Terminal and head towards Trichy Bypass Road (NH38), following signs to Muthur.
- Travel along the bypass to avoid the city center, which is typically congested.
- Continue on NH83, passing through smaller towns, and head directly towards Muthur.
- This route can be quicker during peak hours since it avoids heavy traffic in the city center.

## **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**

- **The sensitive areas:-** between IOCL Tirchy Terminal and Muthu Agencies include Trichy City Center, Industrial Zones near IOCL, Muthur Town, Road Construction Zones on NH83, and Local Protests or Events..
- **Educational institutions** The educational institutions between **IOCL Tirchy Terminal** and **Muthu Agencies** include **Anna University Trichy Campus**, **National Institute of Technology (NIT) Trichy**, and **Bharathidasan University**.
- **Hospital:** - The hospitals between **IOCL Tirchy Terminal** and **Muthu Agencies** include **Kavery Medical Centre**, **Ramachandra Hospital**, and **Government Hospital Trichy**.
- **Gas Station:-** The gas stations between IOCL Tirchy Terminal and Muthu Agencies include Indian Oil Corporation (IOCL) Station, Bharat Petroleum (BPCL) Station, and Hindustan Petroleum (HPCL) Station along NH38 and nearby areas
- **.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:** : Jude Digital Studios, Sri Kaliyamman Temple, Nedungulam bus stop, New Bharath Nursery, Primary School, Kadambankudi Government ITI, VSD Farm House, Mariyamman Temple.
- 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:** 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 and</p>			





















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### 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 MUTHU 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.

## JOURNEY RISK MANAGEMENT REPORT

### • Risk Assessment - Sharp Turns

<b>Risk Type</b>	<b>Risk Level</b>	<b>Coordination</b>	<b>Distance From Start</b>	<b>Recommendation Speed</b>
Sharp turn	Medium	10.769517372474736, 78.83735063199906	650 M	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.763610744361884, 78.83372935432533	1.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.752952720490134, 78.82744473143615	2.9 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.74755693656052, 78.82218332119521	4.1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.733681620811586, 78.8178449653825	5.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.731096932483586, 78.81839879756892	6.1 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.691190175158967, 78.7908456223957	11.7 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.660973436120448, 78.78649034399344	15.2 KM	15km/hr TO 20 Km/Hr
Sharp turn	Medium	10.642848315210541, 78.78791858381122	17.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.613186703154705, 78.78413064317049	20.9 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.590358729345327, 78.78226772159378	23.5 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.585719681796114, 78.77525071707998	24.5 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.544026146261697, 78.77910075458477	29.3 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.48944364629695, 78.778293488681	35.4 KM	20km/hr TO 30 Km/Hr

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Sharp turn	High	10.407674007916185, 78.79009199231578	44.9 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.366017592063706, 78.78829116818501	49.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.332664032483635, 78.7716490684461	53.9 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.324844370203003, 78.77320150298536	54.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.307493800781323, 78.76842000422477	56.7 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.302728336293438, 78.76991034146664	57.4 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.298818157770706, 78.76264494741253	58.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.298573769735736, 78.7640110898209	58.5 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.287515025105408, 78.7833854739652	61.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.275233865348005, 78.80313244291916	63.7 KM	20 km/hr TO 25 Km/Hr
Sharp turn	Medium	10.265946303241256, 78.823500386542	66.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.257269518858466, 78.82461813947339	67.3 KM	10km/hr TO 15 Km/Hr



## **JOURNEY RISK MANAGEMENT REPORT**

**IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO MUTHU AGENCIES(10.911639 , 79.059669) TOTAL DISTANCE – 67 KM**



**10.769241601027453, 78.83713050365775**

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10.76381036919662, 78.83442819876939



10.758167609079424, 78.83339921865813

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10.75269064659741, 78.82777488211885



10.75199258036054, 78.82834002136833

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## JOURNEY RISK MANAGEMENT REPORT



10.750182035139455, 78.82807632385148



ALARP/JRM/TNSO/MUTHU AGENCIES

## JOURNEY RISK MANAGEMENT REPORT

10.747527593045358, 78.82231686125945



10.743733139015502, 78.8219680595722



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## **JOURNEY RISK MANAGEMENT REPORT**

**10.733514348909669, 78.81753557116782**



**10.690702797583395, 78.79030485348828**



**10.2986048843289, 78.76261781297254**

**ALARP/JRM/TNSO/MUTHU AGENCIES**



## **JOURNEY RISK MANAGEMENT REPORT**



**10.266555670397507, 78.8232578569333**

**ALARP/JRM/TNSO/MUTHU AGENCIES**