

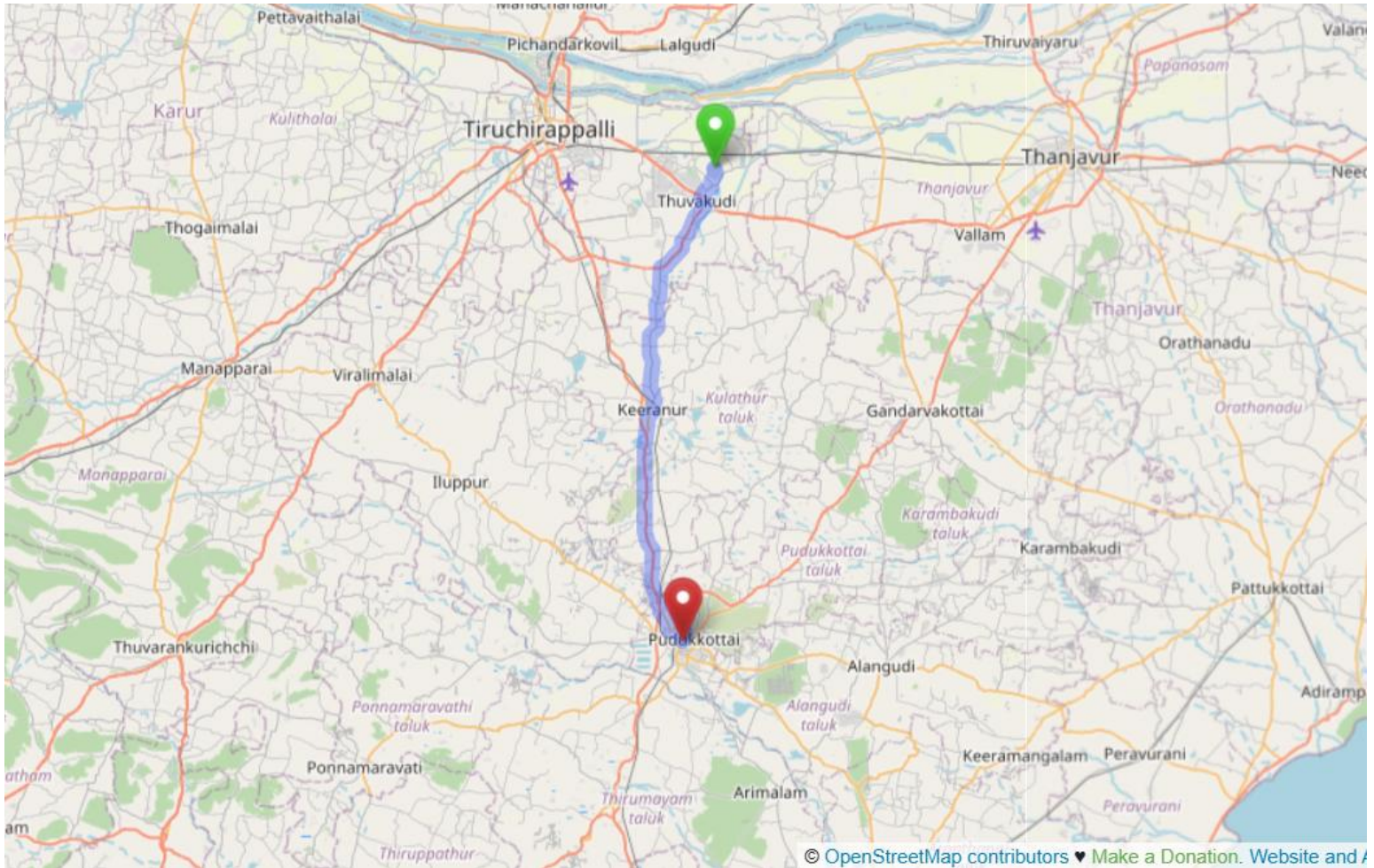


**IndianOil**

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

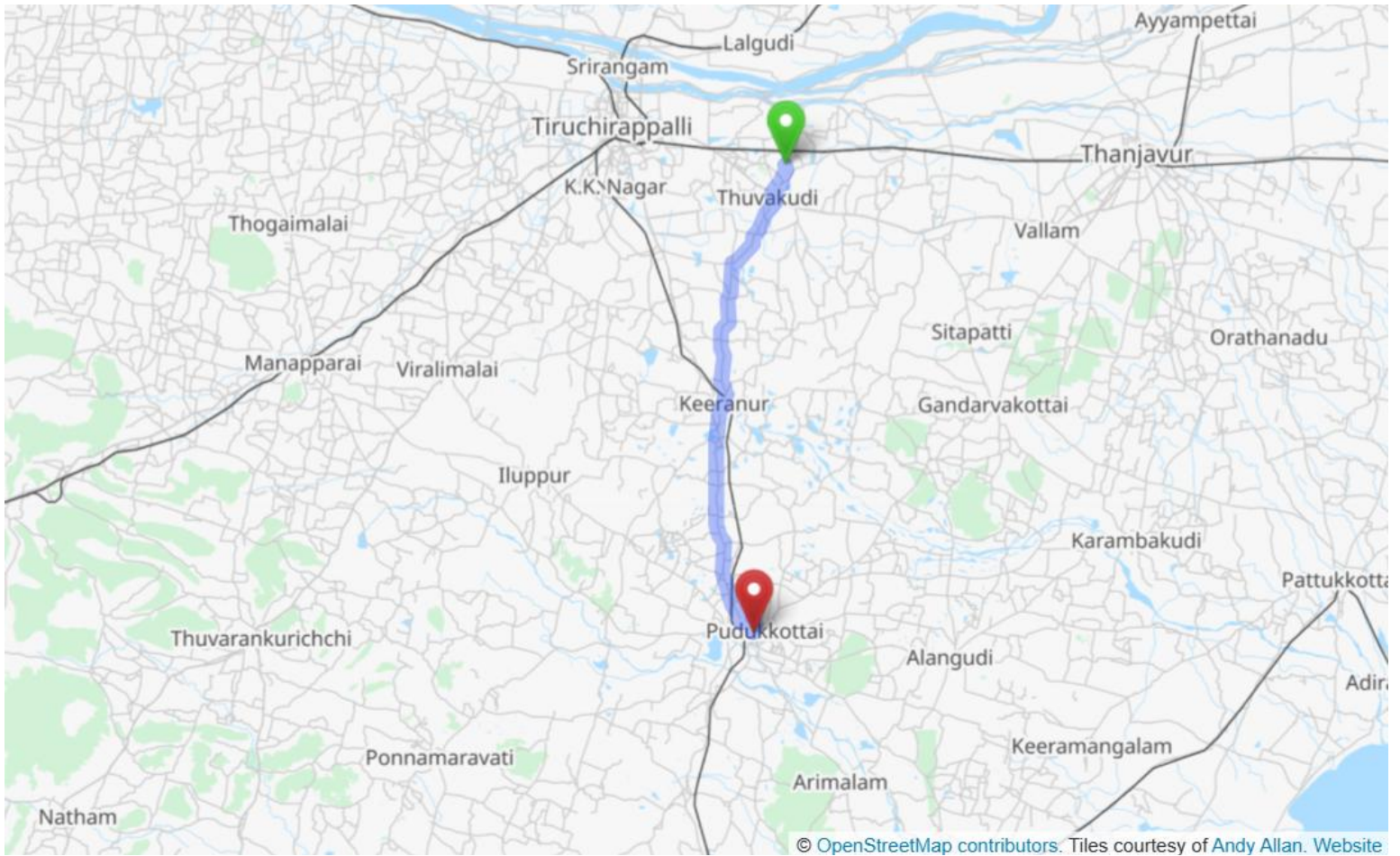
## JOURNEY RISK MANAGEMENT REPORT

IOCL TIRUCHY TERMINAL (10.7753, 78.8368) TO FREEDOM FILLING  
STATION (10.380414 , 78.808955) TOTAL DISTANCE – 51.3 MT



ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



ALARP/JRM/TNSO/FREEDOMF



# JOURNEY RISK MANAGEMENT REPORT

## Welcome to the Journey Risk Management Study for FREEDOM FILLING STATION

Total distance: 51.3 MT; Start with: (10.7753 , 78.8368), End with: (10.380414 , 78.808955)

### ❖ Route Safety Analysis Report

#### 1. Overview of the Route Map

The route from Trichy Terminal (T.N) TO FREEDOM FILLING STATION IS Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow Outer Ring Rd/Trichy Bypass to Kanthalur Rd in Sooriyur, Continue on Kanthalur Rd to Pallathuppatti, Sharp left onto NH336, Continue onto NH 36, and Total distance from Trichy Terminal To FREEDOM FILLING STATION IS 51.3 MT.

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

**Weather Conditions:** Trichy Terminal (T.N) To FREEDOM FILLING STATION 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

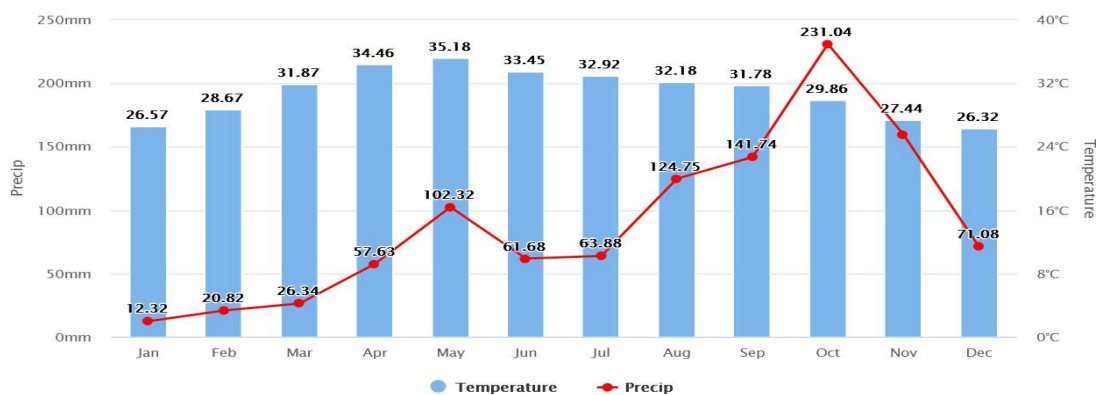
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Nov	Oct	Dec	Year
Record high °C (°F)	33.0 (91.4)	38.0 (100.4)	41.0 (105.8)	43.0 (109.4)	43.0 (109.4)	42.0 (107.6)	40.0 (104.0)	39.0 (102.2)	38.0 (100.4)	37.0 (98.6)	34.0 (93.2)	33.0 (91.4)	43.0 (109.4)
Average high °C (°F)	30.27 (86.49)	32.88 (91.18)	36.0 (96.8)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

**ALARP/JRM/TNSO/FREEDOMF**

## **JOURNEY RISK MANAGEMENT REPORT**

Typically, Trichy Terminal (T.N) To FREEDOM FILLING STATION 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:**

- State Institute Of Hotel Management and Catering Technology
- Valavanthankottai Toll Plaza
- SPOT ON 42969 Royal Residency
- Anand Engineering Products Ptv. Ltd. (Unit 2)
- The Urban Coffee House | coffee shop | Cafe | restaurant
- GNR Marriage Hall
- Tool Fab Engineering Industries Ltd. (Unit 2)
- Anandam Law college
- Psk Matriculation Hr Sec School
- IIPHS SAFETY COLLEGE
- PJ WATER SERVICE STATION
- Pudukkottai Medical College Monument

### **❖ 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-** ). Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, Follow Outer Ring Rd/Trichy Bypass to Kanthalur Rd in Sooriyur, Continue on Kanthalur Rd to Pallathuppatti, Sharp left onto NH336, Continue onto NH 36 Farm onto NH 136B, Continue on Aduthurai - Porayar Rd. Drive to Main Rd in Nallathur.

## **JOURNEY RISK MANAGEMENT REPORT**

**Alternative Route 2 -)** Take SIDCO to Indian oil Storage to NH 83 in Thuvakudi, take Outer Ring Rd/Trichy Bypass, Kanthalur Rd and NH336 to NH 36 in Mullur,

### **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:** State Institute Of Hotel Management and Catering Technology, Valavanthankottai Toll Plaza, SPOT ON 42969 Royal Residency, Anand Engineering Products Pvt. Ltd. (Unit 2), The Urban Coffee House | coffee shop | Cafe | restaurant, GNR Marriage Hall, Tool Fab Engineering Industries Ltd. (Unit 2), Anandam Law college, School of Law, SASTRA University, Masjidul Aqsa vallam, Maruti Suzuki ARENA (PLA Motors, Thanjavur, Nangikkottai Road), Hotel Anitha Parthiban, Bon Secours College of Education, Best Matriculation Higher Secondary School, Vembukudi Toll Plaza, Sri Saravana Balaji Marriage Mahal.
- **Educational institutions:** Chanakya share market training Institute, Indian Institute of Catering Technology and Hotel Management, Samiyappa Institute Of Co Operative Management, Premier Institute, S.K Institute of Arts & Education, Dr S R J Group of Educational Institutions, DEEPA INSTITUTE FOR VEDIC MATHS.
- **Hospital:** - Dr Kamali's Home Clinic, Meenakshi Hospital, Rohini Hospital, Government Raja Mirasudar Hospital, Anbu 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.

## JOURNEY RISK MANAGEMENT REPORT

- **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:** State Institute Of Hotel Management and Catering Technology, Valavanthankottai Toll Plaza, SPOT ON 42969 Royal Residency, Anand Engineering Products Pvt. Ltd. (Unit 2), The Urban Coffee House | coffee shop | Cafe | restaurant, GNR Marriage Hall, Tool Fab Engineering Industries Ltd. (Unit 2), Anandam Law college, School of Law, SASTRA University, Masjidul Aqsa vallam, Maruti Suzuki ARENA (PLA Motors, Thanjavur, Nangikkottai Road), Hotel Anitha Parthiban, Bon Secours College of Education, Best Matriculation Higher Secondary School, Vembukudi Toll Plaza, Sri Saravana Balaji Marriage Mahal, areas 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.



## JOURNEY RISK MANAGEMENT REPORT







- 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>			



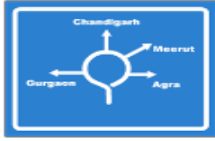
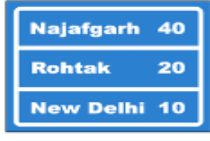
















## JOURNEY RISK MANAGEMENT REPORT

### 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>

# JOURNEY RISK MANAGEMENT REPORT

## 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 FREEDOM FILLING STATION 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	10.739326461561383, 78.83800479151158	5.3 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.73642740628165, 78.85764863813984	7.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.733604466438722, 78.87281181707364	9.1 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.73080526998016, 78.90617767628218	12.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.730477923035412, 78.90801389404626	13 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.724463035027611, 78.92577296721807	15 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.723788382097183, 78.92890578732897	15.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.721500875854746, 78.93682366832411	16.3 KM	20km/hr TO 30 Km/Hr

## JOURNEY RISK MANAGEMENT REPORT

Sharp turn	Medium	10.720994881360893, 78.93834716298483	16.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.71915010256302, 78.9411152027286	16.8 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.71843327121256, 78.94211298444303	17 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.717263145760954, 78.94670492633878	17.5 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.716985075928461, 78.95102478766644	18 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.71809195248243, 78.95607806951443	18.5 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.725197170776585, 78.97692607372574	21 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.586245270039095, 78.77577999109394	24.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.56308507045, 78.7724142290844	27.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.54461080227603, 78.77914575310348	29.4 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.525859664927024, 78.77746287209871	31.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.496076103838332, 78.77718239193125	34.9 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.474563969680514, 78.77774335226619	37.4 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.454803957686499, 78.78446318876087	39.7 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.43604737721131, 78.78221934742116	41.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.416186235757952, 78.78895087144025	44.1 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.424737715842344, 78.79848719713395	45.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.425841115527431, 78.81110880466973	47.0 KM	20km/hr TO 30 Km/Hr

## JOURNEY RISK MANAGEMENT REPORT

Sharp turn	High	10.423082608984595, 78.82176705103326	48.2 KM	10km/hr TO 15 Km/Hr
Sharp turn	High	10.421703346551386, 78.83158385689444	49.3 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.420324078011344, 78.83663249990875	49.8 KM	20km/hr TO 30 Km/Hr
Sharp turn	High	10.419078663072911, 78.83817887136384	50 KM	10km/hr TO 15 Km/Hr
Sharp turn	Medium	10.411373727895647, 78.84849200164066	51.6 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.411628830138296, 78.85484743015594	52.2 KM	20km/hr TO 30 Km/Hr
Sharp turn	Medium	10.415381078567352, 78.86141996453782	51.3 MT	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**

**IOCL TIRCHY TERMINAL (10.7753, 78.8368) TO FREEDOM FILLING  
STATION (10.380414 , 78.808955) TOTAL DISTANCE – 51.3 MT**



**10.769073692604486, 78.83720120889187**



**ALARP/JRM/TNSO/FREEDOMF**



# JOURNEY RISK MANAGEMENT REPORT

10.764113439530249, 78.83446118711721



10.758209570013967, 78.83344387884853



10.751314343624747, 78.82530656733346

ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



10.75126610223314, 78.82518044583597



10.749591316479634, 78.83018387464983

ALARP/JRM/TNSO/FREEDOMF



## JOURNEY RISK MANAGEMENT REPORT



10.739318685033433, 78.8379420178455



10.735064036857814, 78.86553394452655

ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



10.731428224715632, 78.90834087863155



10.7204752733678, 78.94043095175968

ALARP/JRM/TNSO/FREEDOMF



## JOURNEY RISK MANAGEMENT REPORT



10.730470193011778, 79.02491837645792



10.73562703051417, 79.10914681274313

ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



10.74239869421108, 79.13924228433945



10.762835880662, 79.15885726520942

ALARP/JRM/TNSO/FREEDOMF



## JOURNEY RISK MANAGEMENT REPORT



**10.86508872374555, 79.19199892851083**



**10.983050192850786, 79.38667088419274**

**ALARP/JRM/TNSO/FREEDOMF**

## JOURNEY RISK MANAGEMENT REPORT



10.982396440646552, 79.39381342050322

ALARP/JRM/TNSO/FREEDOMF



## JOURNEY RISK MANAGEMENT REPORT



10.407230550810448, 78.78945410814994

ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



10.385707002307516, 78.78700397729212

ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



10.384979830401463, 78.79052372765035

ALARP/JRM/TNSO/FREEDOMF



## JOURNEY RISK MANAGEMENT REPORT



10.384265453095775, 78.79683191394852



10.384360161116549, 78.79733277271158

ALARP/JRM/TNSO/FREEDOMF



## JOURNEY RISK MANAGEMENT REPORT



10.38201630415779, 78.80889030049454

ALARP/JRM/TNSO/FREEDOMF

## JOURNEY RISK MANAGEMENT REPORT



10.380545193085212, 78.80861117034732

ALARP/JRM/TNSO/FREEDOMF