



IndianOil

JOURNEY RISK MANAGEMENT (JRM) STUDY

Salem Terminal TO MANITHAM PETROLEUM

Objective of the JRM Report

This JRM report is designed to ensure compliance with the Central Motor Vehicle Rules, 1989 (CMVR), AIS 140 standards, and the Road Transport Safety Policy (RTSP). It provides a comprehensive risk assessment for the transportation of hazardous materials along specified routes. By integrating these legal frameworks, the report offers a broad strategy for identifying and mitigating route-specific risks.

Regulatory Compliance

The report complies with the Central Motor Vehicles (Eleventh Amendment) Rules, 2022, mandating safe transportation practices for N2 and N3 category vehicles carrying hazardous materials. These rules require detailed route assessments, especially regarding road conditions, speed limits, and risk areas, to ensure safety compliance.

Risk Management Strategy

This report categorizes transportation routes into high-risk and medium-risk areas, with a focus on factors such as sharp turns, accident-prone regions, and elevation changes. The goal is to provide actionable

recommendations to minimize these risks, including speed regulations, driver warnings for hazardous zones, and the option of alternate routes.

Compliance with the Road Transport Safety Policy (RTSP)

The report integrates RTSP provisions, including mandatory driving hours, rest periods, and nighttime driving restrictions. It ensures that drivers follow official guidelines, such as taking prescribed rest breaks and avoiding dangerous road conditions like poor visibility, heavy crowds, or high-traffic areas during peak hours.

Emergency Preparedness and Response

The report highlights the significance of predetermined emergency stops for refueling, rest, and overnight stays. It includes protocols for safe responses to road hazards, alternative routes, and rerouting processes if roads are closed or severe weather arises. This aligns with the RTSP emphasis on driver safety and rapid emergency response.

Environmental Considerations

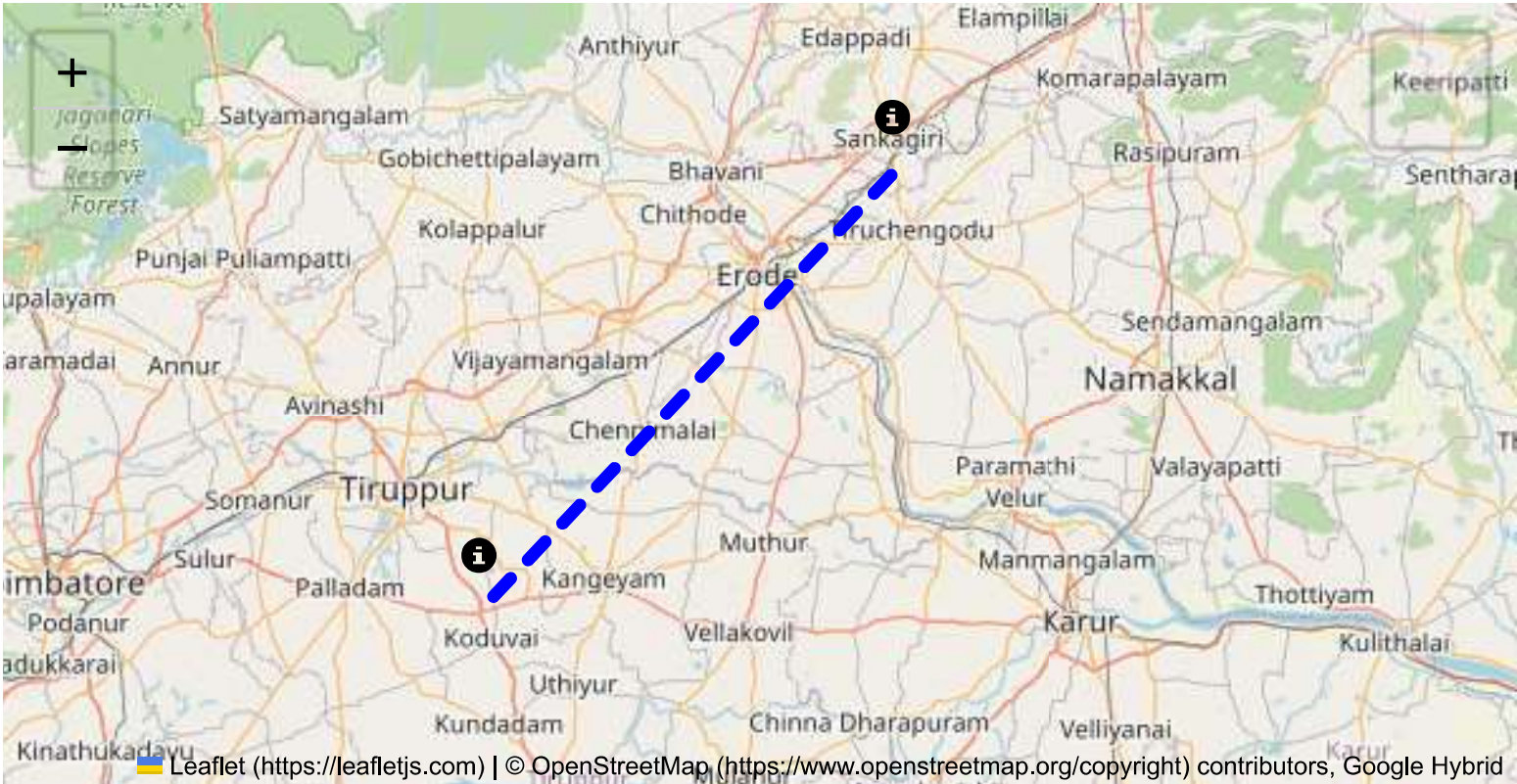
The JRM report addresses environmental risks along the route, ensuring compliance with environmental protection laws in ecologically sensitive zones. It suggests strategies such as identifying areas near water bodies, forests, or populated regions and implementing safety measures to minimize environmental impacts during transport.

Journey Risk Mitigation

The report includes route-specific risk assessments, detailed journey charts, and defensive driving guidelines for each transport route. Integration with vehicle tracking systems guarantees real-time warnings on hazardous areas, speed limits, and mandatory stops, consistent with RTSP and CMVR safety norms.

Compliance with Government Directives

This report fully adheres to governmental directives regarding hazardous material transportation, implementing mandatory speed limits, nighttime driving restrictions, and comprehensive driver briefings and real-time alerts about route-related risks.



Route Summary:
Total Distance: 86.48 km
Estimated Duration: 2.0 hours
Adjusted Duration (Heavy Vehicle): 2.5 hours
Start: (11.4381, 77.8734)
End: (10.9677342, 77.4228554)



Welcome to the Journey Risk Management Study

Route Safety Analysis for CVQF+23W, Sangagiri to XC9F+34, Kavundanpudur, Tamil Nadu

1. Overview of the Route Map

The route spans approximately 86.48 kilometers, predominantly along state highways and local roads that connect Sangagiri and Kavundanpudur. The drive typically takes about 1.99 hours for heavy vehicles, primarily traversing rural and semi-urban areas.

2. Typical Weather Conditions and Potential Weather-Related Hazards

- **Weather Conditions:** The region experiences a tropical climate with hot summers, mild winters, and significant rainfall during the monsoon season (June to September).
- **Hazards:** Monsoon rains can lead to slippery roads and occasional flooding, especially in low-lying areas. Visibility may be reduced during heavy rainfall and early morning fog during winter months.

3. Analysis of Traffic Patterns

- **Peak Hours:** Morning (8:00 AM - 10:00 AM) and evening (5:00 PM - 7:00 PM) are the typical peak hours when traffic can be congested.
- **Congestion-Prone Areas:** Near market areas and village centers, traffic can be particularly slow. Sangagiri and urban outskirts might also see congestion during peak hours.

4. Assessment of Road Quality and Infrastructure

- **Road Quality:** Primarily good on state highways but can deteriorate on local roads with potholes and uneven surfaces.
- **Infrastructure:** Adequate signage on major parts, but reduced visibility and unclear signs can be encountered in rural areas.

5. Suggestions for Alternative Routes for Emergencies

- **Alternative Routes:** National Highway 544 offers a parallel route if accessible, providing faster movement albeit with potential for traffic delays.
- **Local Bypasses:** Local bypass roads may be used to circumvent congestion, but caution is advised due to varying road conditions.

6. Summary of Local Regulations Affecting Hazardous Material Transport

- **Transport Regulations:** Movement of hazardous materials is restricted during peak hours. There are strict regulations on transporting dangerous goods, especially in proximity to populated areas.
- **Permits:** Ensure all necessary permits are acquired in advance to avoid legal complications.

7. Overview of Historical Incidents

- **Historical Incidents:** The area has witnessed occasional incidents involving overturned or stranded heavy vehicles, primarily due to driver error or adverse weather conditions. No significant hazardous material accidents have been reported recently.

8. Environmental Considerations and Sensitive Areas

- **Environmental Sensitivity:** The route crosses agricultural and semi-urban areas; caution is necessary to prevent impact on these environments.
- **Sensitive Zones:** Respect local wildlife areas and avoid contamination or spills in these regions.

9. Analysis of Communication Coverage

- **Communication Coverage:** Major networks provide reasonable coverage along the route, but potential dead zones exist in more remote sections and ghat areas.
- **Suggestions:** Carry backup communication tools like a satellite phone in case of emergencies.

10. Estimated Emergency Response Times

- **Response Times:** In urban zones, expect emergency response within 15-30 minutes. Rural sections may experience longer response times due to distance and accessibility issues.

12. Overall Summary of Risk Assessment

The route from Sangagiri to Kavundanpudur is moderately challenging for transporting hazardous materials due to varied road quality and weather impacts. Traffic congestion, particularly during peak hours, requires careful planning. With the presence of potential communication dead zones and delayed emergency response in rural areas, it is advisable to conduct thorough route planning, maintain vehicles properly, and ensure trained personnel are available to handle unforeseen circumstances.

Regular updates on weather and traffic conditions, adherence to local regulations, and emergency preparedness are essential to mitigate risks on this route.

Risk Assessment - Turns

	Risk Type	Risk Level	Coordinates	Speed Limit
0	Roundabout	High	11.38395, 77.89480	15 KM/Hr
1	Turn	High	11.43968, 77.87345	15 KM/Hr
2	Turn	High	11.44022, 77.87546	15 KM/Hr
3	Turn	High	11.37868, 77.89498	15 KM/Hr
4	Turn	Medium	11.37857, 77.89473	30 KM/Hr
5	Turn	High	11.36616, 77.88885	15 KM/Hr
6	Turn	Medium	11.34067, 77.86347	30 KM/Hr
7	Turn	Medium	11.33854, 77.86216	30 KM/Hr

	Risk Type	Risk Level	Coordinates	Speed Limit
8	Turn	Medium	11.33778, 77.86236	30 KM/Hr
9	Turn	Medium	11.30952, 77.77587	30 KM/Hr
10	Turn	Medium	11.30973, 77.76712	30 KM/Hr
11	Turn	High	11.29490, 77.74685	15 KM/Hr
12	Turn	High	11.29141, 77.74662	15 KM/Hr
13	Turn	Medium	11.28844, 77.74319	30 KM/Hr
14	Turn	Medium	11.28573, 77.74281	30 KM/Hr
15	Turn	High	11.27319, 77.72981	15 KM/Hr
16	Blind Spot	Blind Spot	11.27330, 77.72715	10 KM/Hr
17	Turn	Medium	11.23054, 77.71796	30 KM/Hr
18	Turn	Medium	11.22387, 77.71385	30 KM/Hr
19	Turn	Medium	11.20776, 77.70916	30 KM/Hr
20	Turn	High	11.15942, 77.70068	15 KM/Hr
21	Turn	Medium	11.12102, 77.67919	30 KM/Hr
22	Turn	Medium	11.11932, 77.67786	30 KM/Hr
23	Turn	Medium	11.11710, 77.67175	30 KM/Hr
24	Turn	Medium	11.09491, 77.66603	30 KM/Hr
25	Turn	Medium	11.08296, 77.65857	30 KM/Hr
26	Turn	Medium	11.06183, 77.63924	30 KM/Hr
27	Turn	High	11.00826, 77.56962	15 KM/Hr
28	Blind Spot	Blind Spot	11.00058, 77.56882	10 KM/Hr
29	Turn	High	11.00172, 77.56268	15 KM/Hr
30	Turn	Medium	11.00170, 77.56267	30 KM/Hr
31	Turn	Medium	11.00168, 77.56264	30 KM/Hr
32	Turn	High	10.97018, 77.42713	15 KM/Hr
33	Turn	High	10.96805, 77.42718	15 KM/Hr

Emergency Locations

	type	name	coordinates	speed_limit	risk_level
0	hospital	Tiruchengode, Goverment Hospital	11.3903328, 77.8920627	30 km/h	Medium
1	hospital	SPM Medical Centre,Tiruchengode	11.3881331, 77.8931963	30 km/h	Medium

	type	name	coordinates	speed_limit	risk_level
5	clinic	Kongu Nursing Home	11.3783065, 77.8961134	30 km/h	Medium
6	hospital	T.C.A Hospital Tiruchengode	11.3791885, 77.8965774	30 km/h	Medium
7	hospital	Soorya Multispecialty Hospital	11.3786429, 77.8931912	30 km/h	Medium
8	hospital	Tiruchengode Government Hospital	11.37645, 77.89426	30 km/h	Medium
9	hospital	Tirukumaran Hospitals	11.3782118, 77.8914933	30 km/h	Medium
10	hospital	Krishna Hospital, Namakkal	11.3754811, 77.8931817	30 km/h	Medium
13	hospital	Government Hospital	11.2343326, 77.719226	30 km/h	Medium
16	police	Kangeyam Police Station	11.0011411, 77.562688	30 km/h	Medium
17	hospital	J K Hospital	11.0042298, 77.5603345	30 km/h	Medium

Crowded Spots

	type	name	coordinates	speed_limit	risk_level
2	school	அரசு ஆண்கள் மேல்நிலைப் பள்ளி	11.3850439, 77.8948279	30 km/h	Medium
3	school	அரசு பெண்கள் மேல்நிலைப் பள்ளி	11.3844247, 77.8949053	30 km/h	Medium
4	marketplace	திருச்செங்கோடு தினசரி காய்கறி சந்தை	11.3833608, 77.8970145	30 km/h	Medium
11	school	KSR Educational institution	11.3772013, 77.8908807	30 km/h	Medium
12	school	MDV School	11.3719843, 77.8915244	30 km/h	Medium
14	college	Government Arts and Science College, Kangeyam	11.0626738, 77.636227	30 km/h	Medium
15	school	Carmel Girls Higher Secondary School	11.0009019, 77.5710182	30 km/h	Medium

Route Photos of Risky Spots



Risk Type: Roundabout

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.38395, 77.89480



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.44022, 77.87546



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.37868, 77.89498



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.37857, 77.89473



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.36616, 77.88885



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.34067, 77.86347



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.33854, 77.86216



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.33778, 77.86236



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30952, 77.77587



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.30973, 77.76712



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29490, 77.74685



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.29141, 77.74662



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28844, 77.74319



Risk Type: Turn

Risk Level: Medium

Speed Limit: 30 KM/Hr

Coordinates: 11.28573, 77.74281



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 11.27319, 77.72981



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.27330, 77.72715



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.23054, 77.71796



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.22387, 77.71385



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.20776, 77.70916



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.15942, 77.70068



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.12102, 77.67919



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11932, 77.67786



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.11710, 77.67175



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.09491, 77.66603



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.08296, 77.65857



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.06183, 77.63924



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.00826, 77.56962



Risk Type: Blind Spot
Risk Level: Blind Spot
Speed Limit: 10 KM/Hr
Coordinates: 11.00058, 77.56882



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 11.00172, 77.56268



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00170, 77.56267



Risk Type: Turn
Risk Level: Medium
Speed Limit: 30 KM/Hr
Coordinates: 11.00168, 77.56264



Risk Type: Turn
Risk Level: High
Speed Limit: 15 KM/Hr
Coordinates: 10.97018, 77.42713



Risk Type: Turn

Risk Level: High

Speed Limit: 15 KM/Hr

Coordinates: 10.96805, 77.42718

