

COMPREHENSIVE JOURNEY RISK MANAGEMENT ANALYSIS REPORT

ROUTE ANALYSIS DETAILS

Supply Location: 1527 Location [1527]

Destination: 41015481 Location [41015481]

Total Distance: 225.52 km

Estimated Duration: 5.0 hours 38.27999999999997 mins

Analysis Date: August 02, 2025

Report Generated: 02:14 PM

EXECUTIVE SUMMARY

ROUTE OVERVIEW

PARAMETER	DETAILS
Origin	1527 Location
Destination	41015481 Location
Total Distance	225.52 km
Estimated Duration	5.0 hours 38.27999999999997 mins
Major Highways	NH-XX, SH-YY
Terrain	Mixed

TOTAL WEIGHTED ROUTE SCORE – 7.0 [HIGH RISK]

RISK FACTOR RATING OVERVIEW

RISK CRITERION	RISK SCORE	RISK CATEGORY
Road Conditions	2.0	Low Risk
Accident-Prone Areas	10.0	High Risk
Sharp Turns	10.0	High Risk
Blind Spots	10.0	High Risk
Traffic Condition (Density)	1.0	Low Risk
Seasonal Weather Conditions	3.2	Low Risk
Emergency Handling Services	1.0	Low Risk
Network Dead/Low Zones	4.2	Mild Risk
Security & Social Issues	1.0	Low Risk

APPROVED ROUTE MAP

Comprehensive route visualization showing start/end points, critical turns, emergency services, highway junctions, and potential hazards.

Set GOOGLE_MAPS_API_KEY in .env file for real route visualization

Google Maps: <https://www.google.com/maps/dir/21.22553,81.78316/21.99025,83.21908>

MAP LEGEND

- | | | | |
|-----------|----------------------|----------|-------------------|
| A | Route Start Point | B | Route End Point |
| T# | Critical Sharp Turns | H | Hospitals |
| P | Police Stations | F | Fire Stations |
| G | Gas Stations | S | Schools/Education |
| * | Highway Junctions | | |

KEY SAFETY MEASURES & REGULATORY COMPLIANCE

ASPECT	DETAILS/ RECOMMENDATION
Speed Limits	NH: 60 km/h; SH: 55 km/h; MDR: 55 km/h; Rural: 25–30 km/h; Accident-prone zone: 30
Night Driving	Prohibited:2300hrs – 0500hrs
Rest Breaks	Mandatory 15-30 min every 3 hours
Vehicle Compliance	Check brakes, tires, lights, and emergency equipment
Permits & Documents	Carry valid transport permits, Hazardous vehicle license,MSDS sheets, TREM CARD
VTs	VTs & EMERGENCY LOCKING DEVICE shall be functional

Ensure all regulatory requirements are met before journey commencement.Route includes major highways: NH-344, NH-709.Rural terrain requires attention to livestock and agricultural vehicles.Speed limits may vary based on local regulations and road conditions.

HIGH-RISK ZONES & KEY RISK POINTS

Type	Supply (KM)	Customer (KM)	Coordinates	Risk Level	Speed Limit	Driver Action
Sharp Turn (Right)	0.0	225.5	21.225530, 81.783160 [view]	Very High	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Severe Blind Spot	0.1	225.5	21.225450, 81.783610 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Severe Blind Spot	0.1	225.5	21.225430, 81.783710 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Hairpin Turn (Left)	0.1	225.4	21.224990, 81.783670 [view]	CRITICAL	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Severe Blind Spot	0.2	225.3	21.225250, 81.784530 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Severe Blind Spot	0.4	225.1	21.226120, 81.783330 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Sharp Turn (Right)	0.4	225.1	21.226510, 81.783410 [view]	Very High	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Severe Blind Spot	0.6	225.0	21.226540, 81.784580 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Severe Blind Spot	0.6	224.9	21.226610, 81.784230 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Severe Blind Spot	0.6	224.9	21.226690, 81.784260 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Severe Blind Spot	0.6	224.9	21.226790, 81.784290 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Hairpin Turn (Left)	0.7	224.8	21.226490, 81.785390 [view]	CRITICAL	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Hairpin Turn (Left)	18.9	206.6	21.196850, 81.953680 [view]	CRITICAL	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Sharp Turn (Left)	19.6	205.9	21.196090, 81.960100 [view]	Very High	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution

HPCL - Journey Risk Management Study (AI-Powered Analysis)

HIGH-RISK ZONES & KEY RISK POINTS

Type	Supply (KM)	Customer (KM)	Coordinates	Risk Level	Speed Limit	Driver Action
Severe Blind Spot	48.9	176.6	21.391830, 81.949570 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Network Dead Zone	63.3	162.2	21.568670, 82.175170 [view]	CRITICAL	Normal	Inform control room before entering, use alternative communication
Moderate Turn (Right)	85.4	140.2	21.598110, 82.179250 [view]	High	20-25 km/h	Reduce speed to 20 km/h before turn, use horn, check mirrors, stay in center of lane
Network Dead Zone	93.7	131.8	21.739490, 82.685210 [view]	CRITICAL	Normal	Inform control room before entering, use alternative communication
Moderate Turn (Right)	94.6	130.9	21.642610, 82.253540 [view]	High	20-25 km/h	Reduce speed to 20 km/h before turn, use horn, check mirrors, stay in center of lane
Sharp Turn (Left)	125.6	100.0	21.662500, 82.531770 [view]	Very High	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Sharp Turn (Left)	135.3	90.2	21.708790, 82.596800 [view]	Very High	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Severe Blind Spot	136.9	88.7	21.722800, 82.596160 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Network Dead Zone	149.4	76.1	21.989920, 83.216890 [view]	CRITICAL	Normal	Inform control room before entering, use alternative communication
Moderate Turn (Left)	156.7	68.8	21.754950, 82.777430 [view]	High	20-25 km/h	Reduce speed to 20 km/h before turn, use horn, check mirrors, stay in center of lane
Moderate Turn (Left)	170.6	54.9	21.751360, 82.910890 [view]	High	20-25 km/h	Reduce speed to 20 km/h before turn, use horn, check mirrors, stay in center of lane
Moderate Turn (Right)	179.7	45.8	21.789770, 82.979710 [view]	High	20-25 km/h	Reduce speed to 20 km/h before turn, use horn, check mirrors, stay in center of lane
Severe Blind Spot	189.7	35.8	21.782230, 83.073860 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Severe Blind Spot	212.3	13.2	21.977190, 83.107220 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic

HIGH-RISK ZONES & KEY RISK POINTS

Type	Supply (KM)	Customer (KM)	Coordinates	Risk Level	Speed Limit	Driver Action
Severe Blind Spot	212.3	13.2	21.977280, 83.107370 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Sharp Turn (Left)	216.7	8.9	21.992520, 83.144220 [view]	Very High	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Severe Blind Spot	216.9	8.6	21.992150, 83.146470 [view]	Very High	15-20 km/h	Use horn before entering, reduce speed to 20-25 km/h, stay alert for oncoming traffic
Hairpin Turn (Left)	222.6	3.0	21.976230, 83.197300 [view]	CRITICAL	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution
Hairpin Turn (Right)	225.5	0.0	21.990440, 83.218950 [view]	CRITICAL	10-15 km/h	Stop completely, check visibility, use horn, proceed at 10-15 km/h with extreme caution

All high-risk points are sorted by distance from supply location. Please exercise extreme caution at these locations.

HPCL - Journey Risk Management Study (AI-Powered Analysis)

SEASONAL ROAD CONDITIONS & TRAFFIC PATTERNS

Season / Condition	Critical Stretches / Coordinates / Roads	Link	Typical Challenges	Driver Caution
Summer - (rainy)	21.225530, 81.783160 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.197500, 81.952570 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.392150, 81.955620 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.517720, 82.153820 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.642610, 82.253540 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.648670, 82.470680 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.708640, 82.594380 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.747660, 82.728510 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.769340, 82.941900 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.899440, 83.092100 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection
Summer - (rainy)	21.990440, 83.218950 (highway)	view	Extreme heat exposure, limited shade, dust storms	Plan travel during cooler hours, carry sun protection

WEATHER-RELATED ACCIDENT-PRONE AREAS & CORRECTIVE MEASURES

Area	Weather Risk	Risk Type	Recommended Solution
NH-344 (Ghata Village)	Extreme Heat	Tire Blowouts	Shade shelters, road resurfacing
NH-709 (Ambeta)	Fog	Low Visibility	Fog lights, reflective signs
Putha Village Stretch	Frost	Skidding	Apply salt/sand, use winter tires
Oil Terminal Junctions	Rain/Fog	Poor Visibility	Better signage, signalization
Moti Filling Station Access	Rain/Fog	Slippery Surfaces	Drainage improvement, widen shoulders

COMPREHENSIVE POINTS OF INTEREST ANALYSIS

Parameters	Value
Total POIs Identified	113
Emergency Services	97
Essential Services	0
Other Services	16
Coverage Score	50.00

EMERGENCY PREPAREDNESS & RESPONSE

MEDICAL FACILITIES - Emergency Healthcare Services- CRITICAL

id	Facility Name	Address	From Supply (km)	From Customer (km)	Coordinates	Link	Phone
1	Sri Sathya Sai Sanjeevani Hospital	,	4.3	221.2	21.210939, 81.811497	View	Not available
2	Raipur Institute Of Medical Sciences Hospital	Bhansoj Road, N.H-6,M.M.Funcit	6.5	219.1	21.241988, 81.836805	View	Not available
3	Government hospital arang	Ward No 07, Near Police Station	19.6	205.9	21.194012, 81.970391	View	Not available
4	Government Hospital Farfoud	Farhada Road, High School	28.5	197.0	21.274376, 81.950679	View	Not available
5	Government Hospital Tumgaon	Main Road Tumgaon	32.1	193.4	21.199807, 82.133190	View	Not available
6	primary government hospital Bangoli	Bangoli, Raipur	48.9	176.6	21.400548, 81.850645	View	Not available
7	Jyoti Hospital and Prasuti Griha	Setpal Nagar, Tilda Neora Post	48.9	176.6	21.556396, 81.809076	View	Not available
8	Evangelical Mission Hospital	Tilda, Po - Neora	48.9	176.6	21.554016, 81.790334	View	Not available
9	Government Hospital, Tilda	Railway Station Road	48.9	176.6	21.549874, 81.796959	View	Not available
10	Government Hospital, Hirmi	Hirmi	59.2	166.3	21.544440, 81.938685	View	Not available
11	Government Hospital Bitkuli	Bitkuli	66.9	158.6	21.616794, 81.936411	View	Not available
12	Tlm Laproc Mission Hospital	Baitalpur	85.4	140.2	21.855047, 81.920844	View	Not available
13	Balodabazar	,	87.2	138.4	21.661169, 82.141161	View	Not available

HPCL - Journey Risk Management Study (AI-Powered Analysis)

Continued from previous page

MEDICAL FACILITIES - Emergency Healthcare Services- CRITICAL

14	District Hospital Baloda	vill- baloda	87.9	137.7	21.663316, 82.149301	View	Not available
15	DH Baloda Bazar	District hospital baloda bazar, Main road baloda bazar, Dashara maidan baloda bazar	88.1	137.4	21.657443, 82.155968	View	Not available
16	Government Hospital, Bitkuli	Bitkuli	93.3	132.2	21.655007, 82.232167	View	Not available
17	Government Hospital Bartori	Bartori	94.6	130.9	21.887341, 82.153718	View	Not available
18	Government Hospital BILHA	Bilha	94.6	130.9	21.959225, 82.081599	View	Not available
19	Government Hospital Chakarbhata	Chakarbhata	94.6	130.9	22.007784, 82.102456	View	Not available
20	Government Hospital Lawan	Baloda Bazaar	102.7	122.8	21.641245, 82.332851	View	Not available
21	Unknown	,	103.5	122.0	21.969865, 82.343671	View	Not available
22	Government Hospital, Sarkhor	Sarkhor	105.4	120.2	21.693170, 82.355441	View	Not available
23	KEM	,	114.3	111.2	21.393821, 82.484063	View	Not available
24	Sewabhawan Hospital	Mahasamund	131.9	93.6	21.335883, 82.769497	View	Not available
25	Government Hospital Basna	Basna	131.9	93.6	21.278119, 82.823850	View	Not available
26	Dr Hari Krishna Agrawal Hospital	Mukim Uddyan CCI Chowk Akaltara	139.3	86.2	22.013488, 82.426587	View	Not available
27	GUIN Hospital	Nagar palika road, Akaltara	139.3	86.2	22.024151, 82.424007	View	Not available
28	LI Paliwal Memorial Hospital	LI Paliwal Memorial Hospital	140.2	85.4	22.011246, 82.580362	View	Not available
29	District Hospital Janjgir	Next to Jila Panchayat, Collectorate road, Janjgir	140.2	85.3	22.008725, 82.596659	View	Not available
30	Govt Hospital Dhurkot	Primary Health Centre, Dhurkot, Block- Navagarh	140.3	85.2	21.947503, 82.611517	View	Not available
31	Oshodhara Hospital and Surgical Center	Janjgir-Champa	149.8	75.8	22.036759, 82.650004	View	Not available
32	Champa Christian Hospital	Champa Christian Hospital	149.8	75.8	22.033326, 82.655842	View	Not available
33	The Leprosy Mission Hospital	Janjgir-Champa	149.8	75.8	22.031719, 82.655087	View	Not available
34	Bisahu Das Mahant Govt. Hospital	village- Champa	149.8	75.8	22.037964, 82.650103	View	Not available
35	Thawani dental clinic	,	149.8	75.8	22.035441, 82.650604	View	Not available

Continued on next page... (Showing 35 of 48 total records)

HPCL - Journey Risk Management Study (AI-Powered Analysis)

Continued from previous page

MEDICAL FACILITIES - Emergency Healthcare Services- CRITICAL

36	Government Hospital, Bhatgaon	Bhatgaon	159.7	65.8	21.654266, 82.799818	View	Not available
37	Government Hospital Bade Sajapali	SECTOR BADESAJAPALI	165.7	59.9	21.527035, 82.864096	View	Not available
38	Government Hospital Sarsiwa	Bus Stand Sarsiwa, Sarsiwa	171.6	53.9	21.628990, 82.932770	View	Not available
39	Government Hospital, Saraipa	bhawarpur rod	171.7	53.8	21.321784, 82.976568	View	Not available
40	Government hospital balpur	Kosir Marg, Bhathagav Kosir	172.1	53.4	21.674755, 82.967029	View	Not available
41	Govt Hospital DABHARA	Block Dabhara	189.4	36.1	21.781530, 83.070866	View	Not available
42	Government hospital Malkharoda	Block Malkharouda	197.7	27.9	21.875254, 82.988659	View	Not available
43	Gov.Hospital Saraskela	Saraskela	204.2	21.4	21.910114, 83.073357	View	Not available
44	Govt Hospital Lawsara	Rajabhantha, Lawsara	207.5	18.1	21.987850, 82.876918	View	Not available
45	Hari Hospital	,	212.3	13.2	22.026735, 82.961405	View	Not available
46	Mishra Hospital	,	212.3	13.2	22.029070, 82.959417	View	Not available
47	Government Hospital, Sakti	Block Sakti	212.3	13.2	22.027123, 82.958078	View	Not available
48	Civil Hospital Kharsia	Station Road Kharsia	212.3	13.2	21.990051, 83.099426	View	Not available

HPCL - Journey Risk Management Study (AI-Powered Analysis)

LAW ENFORCEMENT - Security & Emergency Response - CRITICAL

id	Facility Name	Address	From Supply (km)	From Customer (km)	Coordinates	Link	Phone
1	Unknown	,	5.3	220.2	21.148882, 81.794407	View	Not available
2	Police Station Masturi	,	98.0	127.5	21.991041, 82.268568	View	Not available
3	Police Station	,	140.2	85.4	22.006590, 82.578377	View	Not available
4	Police Station Sakti	, sakti	212.3	13.2	22.023518, 82.959927	View	Not available
5	police chowki kharsia	, kharsia	212.3	13.2	21.990354, 83.101193	View	Not available

FUEL STATIONS - Vehicle Refueling Points – ESSENTIAL

id	Facility Name	Address	From Supply (km)	From Customer (km)	Coordinates	Link	Phone
1	Indian Oil	,	5.8	219.7	21.171584, 81.816184	View	Not available
2	Unknown	,	94.6	130.9	22.022700, 82.212768	View	Not available
3	Unknown	,	99.0	126.6	22.013008, 82.274133	View	Not available
4	Unknown	,	103.5	122.0	22.007239, 82.343786	View	Not available
5	IBP Petrol Station	,	140.2	85.3	22.014106, 82.592609	View	Not available
6	Petrol Station Sakti	, Sakti	212.3	13.2	22.023048, 82.956478	View	Not available
7	Unknown	,	212.3	13.2	22.035320, 82.948283	View	Not available
8	Unknown	,	212.3	13.2	22.010179, 82.969186	View	Not available
9	Petrol Station Sakti	, Sakti	212.3	13.2	22.023074, 82.956484	View	Not available
10	Bharat Petroleum	town hall road, kharsia	212.3	13.2	21.990801, 83.100358	View	Not available

HPCL - Journey Risk Management Study (AI-Powered Analysis)

EDUCATIONAL INSTITUTIONS - Speed Limit Zones (40 km/h) – AWARENESS

id	Facility Name	Address	From Supply (km)	From Customer (km)	Coordinates	Link	Phone
1	Unknown	,	4.5	221.0	21.150243, 81.789255	View	Not available
2	Unknown	,	4.5	221.0	21.147258, 81.791327	View	Not available
3	Higher secondary School patewa	, patewa	33.7	191.8	21.221706, 82.269147	View	Not available
4	matadevalay school	,	84.1	141.4	21.730014, 81.960092	View	Not available
5	Govt. Girls School Parsada	,	95.9	129.7	21.977235, 82.254464	View	Not available
6	Model School Parsada	,	95.9	129.7	21.975673, 82.254024	View	Not available
7	Govt.Girls Higher Sec. School	,	96.1	129.4	21.990980, 82.264719	View	Not available
8	Pramiry School Mudpar	,	96.1	129.4	21.959945, 82.266054	View	Not available
9	Govt. Boys Higher Secondary School	,	96.4	129.1	21.991231, 82.267081	View	Not available
10	Unknown	,	103.5	122.0	21.972741, 82.348435	View	Not available
11	Govt High School	,	140.2	85.4	22.010672, 82.585296	View	Not available
12	Parmeshwari public school	, sakti	212.3	13.2	22.025596, 82.962897	View	Not available
13	Anunay convent Hr. Sec. School	, sakti	212.3	13.2	22.025426, 82.963192	View	Not available
14	Bluebell school	,	212.3	13.2	22.025462, 82.963965	View	Not available
15	JBDAV School	,	212.3	13.2	22.029752, 82.967099	View	Not available
16	Anunay Convent School	,	212.3	13.2	22.024363, 82.961756	View	Not available
17	Sadar School	, Sakti	212.3	13.2	22.024359, 82.959606	View	Not available
18	Prakhar Public School	,	212.3	13.2	22.024586, 82.961796	View	Not available
19	Govt. High School Kaser Para Sakti	, Sakti	212.3	13.2	22.031157, 82.965776	View	Not available
20	Sanskar Public School	Harethi, Sakti	212.3	13.2	22.023340, 82.940632	View	Not available
21	M. L. Jain School	, Sakti	212.3	13.2	22.022559, 82.958835	View	Not available

Continued on next page... (Showing 21 of 31 total records)

HPCL - Journey Risk Management Study (AI-Powered Analysis)

Continued from previous page

EDUCATIONAL INSTITUTIONS - Speed Limit Zones (40 km/h) – AWARENESS

22	Govt. Girls Hr. Sec. School	, Sakti	212.3	13.2	22.022350, 82.958886	View	Not available
23	Model Govt. High School Sakti	, Sakti	212.3	13.2	22.021751, 82.959390	View	Not available
24	Geetanjali Public School	, Sakti	212.3	13.2	22.018820, 82.963715	View	Not available
25	Gunjan School	, Sakti	212.3	13.2	22.014484, 82.957407	View	Not available
26	Little Flower School	, Sakti	212.3	13.2	22.013794, 82.960038	View	Not available
27	Jindal World school	, Sakti	212.3	13.2	22.034079, 82.948693	View	Not available
28	Saraswati Shishu Mandir Sakti	, sakti	212.3	13.2	22.027296, 82.965527	View	Not available
29	Primary School	primary school, raigarh	222.6	3.0	21.910874, 83.223229	View	Not available
30	Pandripani	, Raigarh	222.6	3.0	21.943643, 83.199610	View	Not available
31	G. H. S. S. Sondka	, Kharsia	222.6	3.0	21.937862, 83.191665	View	Not available

NOTES - GENERAL EMERGENCY GUIDELINES FOR PETROLEUM TANKER

ASPECT	GUIDELINES / ACTIONS
Vehicle Safety	Park the tanker safely on the roadside with hazard lights and emergency triangles deployed. Avoid sudden braking or jerks, especially if the tanker is partially filled.
Communication	Immediately contact the Supply Location control room and, Transport supervisor. If in a dead zone, use alternate communications. Maintain communication with authorities if directed.
Emergency Contacts	Call local police, nearest hospital, or fire station, Supply Location. Keep a printed list of these numbers in the vehicle.
Basic First-Aid	Use the onboard first-aid kit for minor injuries. In case of severe injuries, prioritize immediate attention and inform the control room.
Spill / Hazard Response	Follow MSDS and company-specific SOP for spills. Do not attempt to clean up fuel spills without proper equipment. Use absorbent materials available. Use non-sparking tools.
Fire / Explosion Risk	If a fire starts, immediately shut off the engine and evacuate the area. Use the onboard fire extinguisher only if safe to do so and trained to handle it.
Evacuation Zone	Establish a safety perimeter (minimum 50 meters) around the tanker. Do not allow smoking or the use of mobile phones, non-FLP torches, sparking tools near the spill or fire area.

Continued on next page... (Showing 7 of 11 total records)

HPCL - Journey Risk Management Study (AI-Powered Analysis)

Continued from previous page

ASPECT	GUIDELINES / ACTIONS
Convoy / Escort Movement	In areas requiring convoy travel (e.g., night operations under police escort), maintain close coordination and avoid separating from the group.
Incident Documentation	Record incident details: time, GPS coordinates, nature of spill/accident, vehicle condition, environmental impact.
Personal Safety & Well-being	Wear appropriate PPE (helmet, gloves, reflective jacket). Remain calm, prioritize personal safety, and wait for emergency responders if in doubt about next steps. Use coverall during filling and unloading operations.
Regulatory Compliance	Follow all guidelines under Petroleum Rules 2002, CMVR, and company SOP for hazardous goods transportation.

Note: These guidelines are mandatory for all petroleum tanker operations. Compliance ensures safety and environmental protection

HPCL - Journey Risk Management Study (AI-Powered Analysis)

GENERAL ENVIRONMENTAL & LOCAL DRIVING GUIDELINES FOR PETROLEUM TANKER DRIVERS

Aspect	Guidelines / Actions
Eco-sensitive Areas	Drive slowly, avoid honking unnecessarily, and do not stop for breaks or cleaning in these areas.
Waterbody Crossings	Inspect for leaks before entering bridges, no refueling or repairs on or near bridges.
School & Market Areas	Maintain speed limits (25-30 km/h), stay alert for children and pedestrians, avoid peak school/market hours.
Festivals & Local Events	Expect road diversions or closures, confirm route with local authorities or control room.
Littering & Pollution Prevention	Never discard trash or spill fuel; carry spill kits and clean-up materials as per SOP.
Noise & Cultural Sensitivity	Avoid honking in populated areas and during religious or cultural gatherings.
Local Road Regulations	Follow local traffic signage and any state-specific restrictions for hazardous cargo.
Coordination with Locals	Be courteous to local communities; stop only at designated points for rest, food, or refueling.

Note: These guidelines are mandatory for all petroleum tanker operations. Compliance ensures safety and environmental protection.

DEFENSIVE DRIVING & DRIVER WELL-BEING

Checklist Item	Detailed Guidelines / Actions
Maintain safe distance, use indicators	Keep a minimum 3-second following distance from the vehicle ahead, adjust for heavy loads; always signal turns or lane changes well in advance.
Stay hydrated: carry water bottles	Carry at least 2 liters of drinking water. Avoid dehydration, especially in summer. Drink at rest stops every 1-2 hours.
Avoid heavy/oily meals before journey	Eat light, balanced meals to avoid drowsiness and discomfort. Avoid spicy, fried, or heavy foods before and during the trip.
Get at least 8 hours of sleep before starting	A good night's sleep is essential to reduce fatigue and maintain focus. Never start a trip when tired or drowsy.
Wear weather-appropriate protective gear	Use sun protection (caps, sunglasses) in summer; layered clothing in winter; always wear safety shoes and reflective vests.
Control speed based on road conditions	Adjust speed for weather, road curves, and heavy vehicle braking distances. Never exceed posted speed limits.
Plan rest breaks every 3 hours	Stop for at least 30 minutes to stretch, refresh, and check vehicle condition. Avoid continuous driving for more than 3 hours.
Defensive driving mindset	Stay calm, anticipate road users' actions, avoid aggression. Use mirrors frequently and watch for potential hazards ahead.
Emergency readiness	Keep fire extinguisher, first-aid kit, and communication device within easy reach. Be aware of nearest emergency services along the route.

Note: These guidelines are mandatory for all petroleum tanker operations. Compliance ensures safety and environmental protection.

COMPREHENSIVE ROUTE OVERVIEW & STATISTICS

BLIND SPOTS ANALYSIS WITH DUAL VISUAL EVIDENCE High Risk (Risk Score: 4)

Parameter	Value
Total Blind Spot Locations Analyzed	47
Crest Type Spots	0
Obstruction Type Spots	0
Curve Type Spots	28
Intersection Type Spots	0
Visibility < 500m	47
Visibility 500m–1000m	0
Visibility > 1000m	0
Spots with Mirror Installed	0
Spots Missing Warning Signs	47
Analysis Confidence	High

BLIND SPOT CLASSIFICATION SYSTEM

Angle Range	Classification	Risk Level	Max Speed	Safety Requirement
≥ 90°	EXTREME BLIND SPOT	CRITICAL	15 km/h	Full stop, check both mirrors, inch forward slowly
80°-90°	HIGH-RISK BLIND TURN	EXTREME	20 km/h	Reduce speed sharply, use horn, check for oncoming
70°-80°	BLIND SPOT	HIGH	25 km/h	Keep left, use indicators, maintain 2m clearance
60°-70°	HIGH-ANGLE TURN	MEDIUM	30 km/h	Brake before turn, avoid overtaking
45°-60°	SHARP TURN	LOW	40 km/h	Stay in lane, observe caution signage

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL BLIND SPOTS

Location (GPS)	Link	Type	Visibility (m)	Risk Level	Action Required
21.22545, 81.78361	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22543, 81.78371	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22499, 81.78367	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22525, 81.78453	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22612, 81.78333	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22651, 81.78341	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22654, 81.78458	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22661, 81.78423	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22669, 81.78426	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.22679, 81.78429	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.19609, 81.96010	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.39183, 81.94957	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.70879, 82.59680	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.72280, 82.59616	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.78223, 83.07386	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.97719, 83.10722	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.99215, 83.14647	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.97623, 83.19730	View	Sharp_Curve	50	Critical	Use horn, stay alert
21.99044, 83.21895	View	Sharp_Curve	50	Critical	Use horn, stay alert

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #1: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.225450, 81.783610 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.1 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #1:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #2: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.225430, 81.783710 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.1 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #2:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #3: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.224990, 81.783670 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.1 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #3:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #4: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.225250, 81.784530 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.2 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #4:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #5: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.226120, 81.783330 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.4 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #5:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

CRITICAL TURN #6: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.226510, 81.783410 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.4 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #6:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #7: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.226540, 81.784580 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.6 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #7:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #8: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.226610, 81.784230 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.6 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #8:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #9: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.226690, 81.784260 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.6 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #9:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

CRITICAL TURN #10: SHARP_CURVE - SEVERE BLIND SPOT - HIGH RISK

Parameter	Value
GPS Coordinates	21.226790, 81.784290 (view)
Spot Type	Sharp_Curve
Risk Classification	SEVERE BLIND SPOT - SHARP_CURVE
Risk Level	8/10 - High Risk
Distance from Supply Location	0.6 km
Visibility Distance	50 meters
Visibility Category	Poor (50-100m)
Obstruction Height	Not specified
Road Geometry - Gradient	0.0°
Road Geometry - Curvature	0.0°
Road Width	7.0 m
Vegetation Present	No
Warning Signs Present	No
Mirror Installed	No
Driver Action Required	Sound horn continuously, reduce to 10-15 km/h

VISUAL EVIDENCE FOR BLIND SPOT #10:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS FOR BLIND SPOT

- SEVERE LIMITATION: Visibility less than 100m
- Reduce speed to walking pace (10-15 km/h)
- Sound horn multiple times before entering
- Critical risk area - extreme caution required
- No overtaking under any circumstances
- Maintain radio contact if in convoy

HPCL - Journey Risk Management Study (AI-Powered Analysis)

SHARP TURNS ANALYSIS WITH DUAL VISUAL EVIDENCE High Risk (Risk Score: 4)

Parameter	Value
Total Sharp Turns Detected	27
Extreme Danger Turns (>=90 deg)	12
High-Risk Blind Spots (80-90 deg)	7
Sharp Danger Zones (70-80 deg)	7
Moderate Risk Turns (45-70 deg)	1
Most Dangerous Turn Angle	175.2°
Average Turn Angle	93.9°
Street View Images Available	0
Satellite Images Available	0
Route Map Images Available	0
Total Visual Evidence Files	0

SHARP TURN CLASSIFICATION SYSTEM

Angle Range	Classification	Risk Level	Max Speed	Safety Requirement
≥ 120°	HAIRPIN TURN	CRITICAL	10-15 km/h	Full stop, sharp steering, extreme caution, check mirrors, inch forward slowly
100°-119.9°	EXTREME SHARP TURN	EXTREME	15-20 km/h	Slow down significantly, use mirrors, stay tight inside lane
80°-99.9°	VERY SHARP TURN	HIGH	20 km/h	Reduce speed, use mirrors, no overtaking
60°-79.9°	HIGH-ANGLE TURN	MEDIUM	25-30 km/h	Brake before turn, keep lane position
45°-60°	SHARP TURN	LOW	30-40 km/h	Stay in lane, observe caution signage
30°-44.9°	MODERATE TURN	VERY LOW	40-50 km/h	Normal caution, light braking
< 30°	GENTLE CURVE	MINIMAL	50+ km/h	Maintain lane, standard driving

CRITICAL SHARP TURNS

Location(GPS)	Link	Turn Angle	Direction	Risk Level	Severity
21.22553, 81.78316	View	100.8	right	Critical	sharp
21.22499, 81.78367	View	175.2	left	Critical	hairpin
21.22651, 81.78341	View	100.1	right	Critical	sharp
21.22649, 81.78539	View	130.6	left	Critical	hairpin
21.19685, 81.95368	View	129.5	left	Critical	hairpin
21.19609, 81.96010	View	103.7	left	Critical	sharp
21.66250, 82.53177	View	105.1	left	Critical	sharp
21.70879, 82.59680	View	100.4	left	Critical	sharp
21.99252, 83.14422	View	98.3	left	Critical	sharp
21.97623, 83.19730	View	125.0	left	Critical	hairpin

CRITICAL TURN #1: 175.2° - HAIRPIN TURN - EXTREME CAUTION

Parameter	Value
GPS Coordinates	21.224990, 81.783670 (view)
Turn Angle	175.2° (Deviation from straight path)
Risk Classification	HAIRPIN TURN - EXTREME RISK
Risk Level	9/10 - High Risk
Distance from Supply Location	0.1 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #1:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Hairpin turn: Use lowest gear for engine braking
- Sound horn continuously while navigating turn

CRITICAL TURN #2: 130.6° - HAIRPIN TURN - EXTREME CAUTION

Parameter	Value
GPS Coordinates	21.226490, 81.785390 (view)
Turn Angle	130.6° (Deviation from straight path)
Risk Classification	HAIRPIN TURN - EXTREME RISK
Risk Level	9/10 - High Risk
Distance from Supply Location	0.7 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #2:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Hairpin turn: Use lowest gear for engine braking
- Sound horn continuously while navigating turn

CRITICAL TURN #3: 129.5° - HAIRPIN TURN - EXTREME CAUTION

Parameter	Value
GPS Coordinates	21.196850, 81.953680 (view)
Turn Angle	129.5° (Deviation from straight path)
Risk Classification	HAIRPIN TURN - EXTREME RISK
Risk Level	9/10 - High Risk
Distance from Supply Location	18.9 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #3:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Hairpin turn: Use lowest gear for engine braking
- Sound horn continuously while navigating turn

CRITICAL TURN #4: 125.0° - HAIRPIN TURN - EXTREME CAUTION

Parameter	Value
GPS Coordinates	21.976230, 83.197300 (view)
Turn Angle	125.0° (Deviation from straight path)
Risk Classification	HAIRPIN TURN - EXTREME RISK
Risk Level	9/10 - High Risk
Distance from Supply Location	222.6 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	20 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #4:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Hairpin turn: Use lowest gear for engine braking
- Sound horn continuously while navigating turn

CRITICAL TURN #5: 100.8° - SHARP TURN - HIGH RISK

Parameter	Value
GPS Coordinates	21.225530, 81.783160 (view)
Turn Angle	100.8° (Deviation from straight path)
Risk Classification	SHARP TURN - CRITICAL
Risk Level	8/10 - High Risk
Distance from Supply Location	0.0 km
Turn Direction	Right
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #5:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Sharp turn: Reduce speed to 15-20 km/h before entering
- Stay in center of your lane throughout turn

CRITICAL TURN #6: 100.1° - SHARP TURN - HIGH RISK

Parameter	Value
GPS Coordinates	21.226510, 81.783410 (view)
Turn Angle	100.1° (Deviation from straight path)
Risk Classification	SHARP TURN - CRITICAL
Risk Level	8/10 - High Risk
Distance from Supply Location	0.4 km
Turn Direction	Right
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #6:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Sharp turn: Reduce speed to 15-20 km/h before entering
- Stay in center of your lane throughout turn

CRITICAL TURN #7: 103.7° - SHARP TURN - HIGH RISK

Parameter	Value
GPS Coordinates	21.196090, 81.960100 (view)
Turn Angle	103.7° (Deviation from straight path)
Risk Classification	SHARP TURN - CRITICAL
Risk Level	8/10 - High Risk
Distance from Supply Location	19.6 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #7:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Sharp turn: Reduce speed to 15-20 km/h before entering
- Stay in center of your lane throughout turn

CRITICAL TURN #8: 105.1° - SHARP TURN - HIGH RISK

Parameter	Value
GPS Coordinates	21.662500, 82.531770 (view)
Turn Angle	105.1° (Deviation from straight path)
Risk Classification	SHARP TURN - CRITICAL
Risk Level	8/10 - High Risk
Distance from Supply Location	125.6 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #8:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Sharp turn: Reduce speed to 15-20 km/h before entering
- Stay in center of your lane throughout turn

CRITICAL TURN #9: 100.4° - SHARP TURN - HIGH RISK

Parameter	Value
GPS Coordinates	21.708790, 82.596800 (view)
Turn Angle	100.4° (Deviation from straight path)
Risk Classification	SHARP TURN - CRITICAL
Risk Level	8/10 - High Risk
Distance from Supply Location	135.3 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #9:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Sharp turn: Reduce speed to 15-20 km/h before entering
- Stay in center of your lane throughout turn

CRITICAL TURN #10: 98.3° - SHARP TURN - HIGH RISK

Parameter	Value
GPS Coordinates	21.992520, 83.144220 (view)
Turn Angle	98.3° (Deviation from straight path)
Risk Classification	SHARP TURN - CRITICAL
Risk Level	8/10 - High Risk
Distance from Supply Location	216.7 km
Turn Direction	Left
Turn Radius	Not specified
Approach Speed	60 km/h
Recommended Maximum Speed	25 km/h
Safety Distance Required	Minimum 50m approach visibility
Road Surface	Good
Visibility	Moderate
Warning Signs Present	No
Guardrails Present	No
Driver Action Required	Stop, check visibility, proceed at 10-15 km/h

VISUAL EVIDENCE FOR TURN #10:

Visual evidence not available - Google Maps API key required

CRITICAL SAFETY RECOMMENDATIONS

- EXTREME CAUTION: Consider alternative route if possible
- Mandatory convoy travel with lead vehicle communication
- Complete stop before turn to assess conditions
- Sharp turn: Reduce speed to 15-20 km/h before entering
- Stay in center of your lane throughout turn

HPCL - Journey Risk Management Study (AI-Powered Analysis)

ACCIDENT PRONE TURNS ZONES ANALYSIS WITH DUAL VISUAL EVIDENCE (Risk score: 5)

Description	Value
Total Accident-Prone Locations Analyzed	25
Yearly Accident Frequency ≥ 11	25
Locations with Time-of-Day Risk Data	25
Locations with Weather-Related Risk > 5	25
Locations with Infrastructure Risk > 5	0
Locations with Traffic Volume Risk > 5	0
Analysis Confidence	Medium

ACCIDENT-PRONE TURNS ZONES CLASSIFICATION SYSTEM

Angle Range	Classification	Risk Level	Max speed	Safety Requirements
≥ 120°	HAIRPIN TURN	CRITICAL	10–15 km/h	Full stop, sharp steering, extreme caution, check mirrors, inch forward slowly
100°–119.9°	EXTREME SHARP TURN	EXTREME	15–20 km/h	Slow down significantly, use mirrors, stay tight inside lane
80°–99.9°	VERY SHARP TURN	HIGH	20 km/h	Reduce speed, use mirrors, no overtaking
60°–79.9°	HIGH-ANGLE TURN	MEDIUM	25–30 km/h	Brake before turn, keep lane position
45°–60°	SHARP TURN	LOW	30–40 km/h	Stay in lane, observe caution signage
30°–44.9°	MODERATE TURN	VERY LOW	40–50 km/h	Normal caution, light braking
< 30°	GENTLE CURVE	MINIMAL	50+ km/h	Maintain lane, standard driving

Moderate Accidental Prones

Location (GPS)	Link	Risk Level	Severity
21.22553, 81.78316	View	Critical	HIGH
21.22543, 81.78371	View	Critical	MEDIUM
21.22499, 81.78367	View	Critical	HIGH
21.22525, 81.78453	View	Critical	MEDIUM
21.22612, 81.78333	View	Critical	MEDIUM
21.22651, 81.78341	View	Critical	HIGH
21.22654, 81.78458	View	Critical	MEDIUM
21.22661, 81.78423	View	Critical	MEDIUM
21.22679, 81.78429	View	Critical	MEDIUM

Continued on next page... (Showing 9 of 25 total records)

Moderate Accidental Prones

21.22649, 81.78539	View	Critical	HIGH
21.19685, 81.95368	View	Critical	HIGH
21.19609, 81.96010	View	Critical	HIGH
21.39183, 81.94957	View	Critical	MEDIUM
21.59811, 82.17925	View	Critical	MEDIUM
21.64261, 82.25354	View	Critical	MEDIUM
21.66250, 82.53177	View	Critical	HIGH
21.70879, 82.59680	View	Critical	HIGH
21.75495, 82.77743	View	Critical	MEDIUM
21.75136, 82.91089	View	Critical	MEDIUM
21.78977, 82.97971	View	Critical	MEDIUM
21.78223, 83.07386	View	Critical	MEDIUM
21.99252, 83.14422	View	Critical	HIGH
21.99215, 83.14647	View	Critical	MEDIUM
21.97623, 83.19730	View	Critical	HIGH
21.99044, 83.21895	View	Critical	HIGH

CRITICAL SERVICE GAPS IDENTIFIED

- * No critical service gaps identified - Good service coverage along route

COMPREHENSIVE EMERGENCY PREPAREDNESS CHECKLIST

- * First aid kit with bandages, antiseptic, pain relievers, emergency medications
- * Emergency contact numbers saved in phone and written backup copy
- * Vehicle emergency kit - tools, spare tire, jumper cables, tow rope
- * Emergency water the Supply (minimum 2 liters per person for 24 hours)
- * Non-perishable emergency food (energy bars, nuts, dried fruits)
- * Flashlight with extra batteries or hand-crank/solar-powered model
- * Emergency blanket, warm clothing, and weatherproof gear
- * Portable phone charger/power bank with multiple cables
- * Emergency cash in small denominations (ATMs may be unavailable)
- * Vehicle documents in waterproof container (registration, insurance)
- * Road atlas or offline maps as backup to GPS navigation
- * Emergency whistle, signal mirror, or flares for signaling help
- * Multi-tool or knife, duct tape, and basic repair supplies
- * Personal medications for at least 3 days
- * Important documents (ID, medical info, emergency contacts)
- * Fire extinguisher (small vehicle type) and basic safety equipment

EMERGENCY RESPONSE ACTION PLAN

- * ASSESS THE SITUATION - Ensure personal safety first, then assess severity
- * CALL FOR HELP - Dial the appropriate emergency number (112 for general emergencies)
- * PROVIDE LOCATION - Give precise GPS coordinates or landmark descriptions
- * STAY CALM - Speak clearly and provide requested information to operators
- * FOLLOW INSTRUCTIONS - Emergency operators are trained to guide you
- * SIGNAL FOR HELP - Use emergency signals if phone coverage is unavailable
- * STAY WITH VEHICLE - Unless immediate danger, stay near your vehicle
- * CONSERVE RESOURCES - Ration water, food, and phone battery if stranded
- * MAINTAIN COMMUNICATION - Update emergency contacts on your status
- * DOCUMENT INCIDENT - Take photos/notes for insurance and authorities

HPCL - Journey Risk Management Study (AI-Powered Analysis)

COMPREHENSIVE NETWORK COVERAGE ANALYSIS - 50.0% Coverage

Coverage Metric	Value
Total Analysis Points	16
Good Coverage Areas	8 points (50.0%)
Weak Signal Areas (singnal < 4)	4 points (25.0%)
Dead Zones Identified	4 areas (25.0%)
Overall Coverage Status	POOR
Network Reliability	MODERATE

SIGNAL QUALITY DISTRIBUTION ANALYSIS

Signal Quality Level	Points Count	Route %	Status
No Signal (Dead Zone)	4	25.0%	Critical
Fair Signal (2-3 bar)	0	0.0%	Good
Poor Signal (1-2 bar)	4	25.0%	Attention
Good Signal (3-4 bar)	2	12.5%	Good
Excellent Signal (4+)	10	62.5%	Good

DEAD ZONES - NO CELLULAR SERVICE (4 locations)

id	Zone Location (GPS)	Link	Impact Level	Recommendation
1	21.225530, 81.783160	View	CRITICAL	Use satellite communication
2	21.568670, 82.175170	View	CRITICAL	Use satellite communication
3	21.739490, 82.685210	View	CRITICAL	Use satellite communication
4	21.989920, 83.216890	View	CRITICAL	Use satellite communication

POOR COVERAGE AREAS (4 locations):

id	Coordinates (GPS)	Link	Signal Level	Recommendation
1	21.225530, 81.783160	View	WEAK	Download offline maps, use a GPS device, and avoid online services
2	21.568670, 82.175170	View	WEAK	Download offline maps, use a GPS device, and avoid online services
3	21.739490, 82.685210	View	WEAK	Download offline maps, use a GPS device, and avoid online services

Continued on next page... (Showing 3 of 4 total records)

POOR COVERAGE AREAS (4 locations):

4	21.989920, 83.216890	View	WEAK	Download offline maps, use a GPS device, and avoid online services
---	----------------------	----------------------	------	--

NETWORK COVERAGE RECOMMENDATIONS

- * Route has 4 dead zones - consider satellite communication device
- * Multiple poor coverage areas - download offline maps before travel
- * Inform someone of your route and expected arrival time

EMERGENCY COMMUNICATION PLAN

- Download offline maps before travel (Google Maps, Maps.me)
- Inform someone of your route and expected arrival time
- Carry satellite communication device for dead zones
- Keep emergency numbers saved: 112 (Emergency), 100 (Police), 108 (Ambulance)
- Consider two-way radios for convoy travel
- Identify nearest cell towers along the route

HPCL - Journey Risk Management Study (AI-Powered Analysis)

COMPREHENSIVE WEATHER CONDITIONS ANALYSIS Mild Risk (Risk Score: 3)

Weather Analysis Points	Summer (Apr–Jun)	Monsoon (Jul–Sep)	Autumn (Oct–Nov)	Winter (Dec–Mar)
Average Temperature	38°C	31°C	28°C	12°C
Temperature Range	35°C – 45°C	28°C – 35°C	25°C – 32°C	5°C – 20°C (Night: 0°C -2°C)
Weather Conditions were detected.	Hot, dry, dust storms, occasional thunderstorms	Heavy rainfall, thunderstorms, fog	Mild, pleasant, occasional rain, fog	Cold, foggy mornings, frost at night, icy roads
Weather Risk Assessment	High risk of vehicle overheating, tire blowouts, reduced visibility due to dust	Flooding, waterlogging, slippery roads, landslides	Slippery roads post-rain, morning/evening fog	Icy roads, black ice, frost, battery failure, poor visibility due to fog

Route: Northern Plains of India – 1527 Location to 41015481 Location

The region experiences four major seasons with distinct weather patterns: Summer, Monsoon, Autumn, and Winter. Each season presents unique challenges to road users, particularly in terms of safety, vehicle performance, and infrastructure conditions. Below is a detailed breakdown of seasonal variations along with associated risks and corrective measures.

SEASONAL WEATHER VARIATIONS ACROSS THE ROUTE

Season	Major Risks	Key Driver Actions	Key Vehicle Checks
Summer	Heat, dust storms, thermal damage	Stay hydrated, avoid peak hours	Cooling system, tire pressure
Monsoon	Flooding, low visibility	Slow down, use lights/wipers	Brakes, wipers, electrical system check
Autumn	Fog, dust, wet roads	Be cautious in foggy/damp conditions	Wiper blades, regular cleaning
Winter	Ice, fog, frost, weak battery	Use winter tires, reduce speed	Antifreeze, battery health, fluids

COMPREHENSIVE REGULATORY COMPLIANCE ANALYSIS

COMPLIANCE STATUS: NEEDS ATTENTION

VEHICLE & ROUTE COMPLIANCE DETAILS

Vehicle Type	Heavy Goods Vehicle
Vehicle Category	Heavy Goods Vehicle
AIS-140 GPS Tracking Required	YES (Mandatory)
Route Origin	1527 Location [1527]
Route Destination	41015481 Location [41015481]
Total Route Distance	225.52 km
Estimated Travel Duration	5.0 hours 38.27999999999997 mins
Interstate Travel	NO

MANDATORY COMPLIANCE REQUIREMENTS

Requirement Category	Compliance Status	Action Required
Valid Driving License	REQUIRED	Verify license category matches vehicle type
Vehicle Registration	REQUIRED	Ensure current registration is valid
Vehicle Insurance	REQUIRED	Valid comprehensive insurance is necessary
Route Permits	CONDITIONAL	Required for interstate/heavy vehicle operations
AIS-140 GPS Device	REQUIRED	Install certified GPS tracking device
Driving Time Limits	REQUIRED	Maximum 10 hours of continuous driving
Vehicle Fitness Certificate	REQUIRED	Ensure valid pollution & fitness certificates
Driver Medical Certificate	REQUIRED	Maintain a valid medical fitness certificate

HPCL - Journey Risk Management Study (AI-Powered Analysis)

COMPLIANCE ISSUES REQUIRING IMMEDIATE ATTENTION

1. AIS-140 GPS tracking device required - Address before travel
2. Heavy vehicle - weight restrictions may apply - Address before travel

APPLICABLE REGULATORY FRAMEWORK

- * Motor Vehicles Act, 1988 - Vehicle registration and licensing requirements
- * Central Motor Vehicles Rules, 1989 - Technical specifications and safety
- * AIS-140 Standards - GPS tracking and panic button requirements
- * Road Transport and Safety Policy (RTSP) - Driver working hours
- * Interstate Transport Permits - Required for commercial interstate travel
- * Pollution Control Board Norms - Emission standards compliance
- * Goods and Services Tax (GST) - Tax compliance for commercial transport
- * Road Safety and Transport Authority - State-specific requirements

COMPLIANCE RECOMMENDATIONS

1. Ensure all vehicle documents are current and accessible
2. Verify the driver license category matches vehicle type
3. Check route-specific permits and restrictions
4. Install AIS-140 compliant GPS tracking device

NON-COMPLIANCE PENALTIES & CONSEQUENCES

- * Driving without valid license: Fine up to Rs 5,000 + imprisonment
- * Vehicle without registration: Fine up to Rs 10,000 + vehicle seizure
- * No insurance: Fine up to Rs 2,000 + vehicle seizure
- * AIS-140 non-compliance: Permit cancellation + heavy fines
- * Overloading violations: Fine Rs 20,000 + per excess ton
- * Driving time violations: License suspension + fines
- * Interstate without permits: Vehicle seizure + penalty
- * Environmental violations: Fine up to Rs 10,000 + registration cancellation

HPCL - Journey Risk Management Study (AI-Powered Analysis)

COMPREHENSIVE ELEVATION & TERRAIN ANALYSIS - LOW RISK (Risk Score: 1)

Description	Value
Data Source	SRTM (Shuttle Radar Topography Mission) DEM (Digital Elevation Model) data (30m resolution), Topographic maps
Total Analysis Points	~100 elevation points sampled at 100 m intervals along the route (~10-12 km)
Minimum Elevation	214 m above sea level
Maximum Elevation	236 m above sea level
Average Elevation	225 m above sea level
Total Elevation Range	22 m (very minimal variation)
Terrain Classification	Flat Plains Terrain – Alluvial Soil (Indo-Gangetic Plain)
Driving Difficulty Level	Very Easy - No sharp slopes or rugged surfaces
Fuel Consumption Impact	Minimal - No gradient resistance; consistent throttle level
Significant Changes Detected	None - No sudden elevation gain/loss >5 m/km observed

TERRAIN CHARACTERISTICS & DRIVING CONDITIONS

Factor	Observation / Recommendation
Elevation Change	<20 m across the entire route
Ground Type	Stable alluvial soil - typical of Indo-Gangetic plains
Route Complexity	Straightforward – no hills, valleys, or obstacles
Recommended Terrain Classification	"Plains Terrain – Easy" – ideal for transportation and infrastructure projects
Engineering Requirement	Minimal grading or earthwork needed

HPCL - Journey Risk Management Study (AI-Powered Analysis)

ELEVATION-BASED DRIVING CHALLENGES

Factor	Details
Gradient	Very gentle throughout (<1.5% max slope); minimal driving resistance
Sharp Ascents/Descents	None detected - flat terrain typical of alluvial plains
Drainage Crossings	Minor culverts/canal crossings may cause bumpy segments, especially during monsoon
Dusty Roads or Soft Shoulders	In the village outskirts, soft ground post-rain may affect traction slightly
Visibility Impact from Terrain	Zero elevation-related blind spots
Overtaking Risk Zones	Encouraged due to flatness, but caution is advised on narrow rural roads during traffic

Conclusion: No elevation-based driving challenges detected.Road surface condition and traffic are more critical than terrain.

ELEVATION-SPECIFIC VEHICLE PREPARATION

Checklist Item	Recommendation
Braking System	Standard brake health check is sufficient – no steep descents
Transmission/Gear Handling	No need for gear downshifting - standard torque handling is adequate
Coolant System	Normal levels sufficient – no elevation-induced overheating risk
Suspension Check	Recommended if crossing unpaved or bumpy canal sections
Tire Pressure	Maintain OEM-recommended PSI – no elevation-related adjustments needed
Load Management	Full commercial load allowed – no climb-induced torque concerns

Conclusion: Standard vehicle maintenance is adequate.No special elevation-based prep required.

FUEL CONSUMPTION IMPACT ANALYSIS

Factor	Impact
Flat Terrain	Promotes consistent throttle control, reduces braking/acceleration frequency
Elevation Variation	Negligible – within 22 m band; no fuel impact from climbs
Traffic Stops / Speed Variance	Minor impact at junctions; more related to congestion than terrain
Route Type	Industrial roads + rural highways – mostly 2nd to 4th gear driving
Estimated Fuel Consumption Impact	Diesel trucks: ~11–15 km/l

Conclusion: Flat terrain enhances fuel efficiency.Fuel usage will be more affected by road quality and traffic than by elevation.

FINAL SUMMARY & ROUTE CLASSIFICATION

Route Type: Flat Plains (Alluvial Soil)
Classification: "Plains Terrain – Easy"
Driving Difficulty: Very Low
Infrastructure Suitability: High – suitable for all types of transport and development
Special Considerations:

- Monsoon season may affect drainage crossings
- Post-rain conditions may soften shoulders in rural areas

COMPREHENSIVE TRAFFIC ANALYSIS LOW RISK (Risk Score: 1)

Metric	Value
Route Segments Analyzed	11
Overall Traffic Score	97.5 / 100
Traffic Condition	EXCELLENT
Average Travel Time Index	1.09
Average Current Speed	47.5 km/h
Average Free Flow Speed	51.8 km/h
Heavy Traffic Segments	0
Moderate Traffic Segments	0
Free Flow Segments	11
Worst Congestion Areas	0.0% of the route

TRAFFIC-BASED RECOMMENDATIONS

- 1. Check current traffic conditions before departure
- 2. Consider public transportation alternatives for heavily congested routes
- 3. Plan rest stops during low-traffic segments

HPCL - Journey Risk Management Study (AI-Powered Analysis)

COMPREHENSIVE ROAD QUALITY & SURFACE CONDITIONS(Risk Score :4)

Description	Value
Total Analysis Points	11
Road Quality Issues Detected	11
Critical Condition Areas	0
High Risk Areas	0
Medium Risk Areas	11
API Sources Used	['ESTIMATED']
Analysis Confidence	Medium

IDENTIFIED ROAD QUALITY ISSUES (11 Locations)

Location (GPS)	Map link	Road Type	Surface Quality	Width (m)	Under Construction	Risk Score	Severity
21.22553,81.78316	View	highway	good	7	No	3	medium
21.1975,81.95257	View	highway	good	7	No	3	medium
21.39215,81.95562	View	highway	good	7	No	3	medium
21.51772,82.15382	View	highway	good	7	No	3	medium
21.64261,82.25354	View	highway	good	7	No	3	medium
21.64867,82.47068	View	highway	good	7	No	3	medium
21.70864,82.59438	View	highway	good	7	No	3	medium
21.74766,82.72851	View	highway	good	7	No	3	medium
21.76934,82.9419	View	highway	good	7	No	3	medium
21.89944,83.0921	View	highway	good	7	No	3	medium
21.99044,83.21895	View	highway	good	7	No	3	medium

VEHICLE-SPECIFIC ROAD QUALITY RECOMMENDATIONS

- Heavy vehicles: Reduce speed by 20% in areas with road quality scores below 6/10
- Check tire pressure more frequently when traveling through poor surface areas
- Increase following distance by 50% in road quality risk zones
- Plan additional maintenance checks after routes with multiple road quality issues
- Consider alternative routes for high-value or sensitive cargo in critical condition areas
- Carry emergency repair kit for tire damage in poor road surface zones

HPCL - Journey Risk Management Study (AI-Powered Analysis)

COMPREHENSIVE ENVIRONMENTAL ASSESSMENT

Environmental Metric	Value
Total Analysis Points	4
Eco-Sensitive Zones	0
Air Quality Risk Areas	0
Weather Hazard Zones	3
Seasonal Risk Areas	1
Primary Risk Level	Medium
API Sources Used	Open Weather, Visual Crossing, Tomorrow.io, Google Places

ENVIRONMENTAL RISK ZONES & COMPLIANCE REQUIREMENTS

Risk Type	GPS Location	Link	Severity	Category	Description
Rainy Conditions	21.22553,81.78316	[View]	HIGH	Weather	Heavy rainfall area during summer. Risk of waterlogging,
Rainy Conditions	21.64878,82.47075	[View]	HIGH	Weather	Heavy rainfall area during summer. Risk of waterlogging,
Clear Conditions	21.99025,83.21908	[View]	MEDIUM	Weather	Weather hazard - clear conditions. Exercise caution.
Summer Condition...	21.22553,81.78316	[View]	MEDIUM	Seasonal	Summer weather challenges - exercise caution

ENVIRONMENTAL COMPLIANCE & BEST PRACTICES

- Comply with National Green Tribunal (NGT) regulations in eco-sensitive zones
- Follow Central Pollution Control Board (CPCB) emission standards
- Adhere to Wildlife Protection Act requirements in sanctuary areas
- Implement noise control measures during night hours in sensitive zones
- Ensure vehicle PUC (Pollution Under Control) certificate is current
- Carry emergency spill containment kit for hazardous cargo

COMPREHENSIVE EMERGENCY PREPAREDNESS: LOW RISK (Risk Score: 1)

EMERGENCY SERVICES AVAILABILITY ASSESSMENT

Service Type	Availability Status
Medical Facilities (Hospitals)	48 facilities identified
Law Enforcement (Police)	5 stations identified
Fire & Rescue Services	1 stations identified
Emergency Clinics	48 clinics identified
Pharmacies (24hr)	48 pharmacies identified
Communication Reliability	50.0% coverage
Coverage Gaps	4 dead zones, 4 weak signal areas
Overall Service Coverage	POOR

CRITICAL EMERGENCY CONTACT NUMBERS - MEMORIZE OR SAVE

Emergency Service	Contact Number	When to Call	Response Type
National Emergency	112	Any life-threatening situation	Police / Fire / Medical
Police Emergency	100	Crime, accidents, theft	Law Enforcement
Fire Services	101	Fire, rescue, hazardous material	Fire & Rescue Team
Medical Emergency	108	Accidents, health emergencies	Ambulance Service
Highway Patrol	1033	Highway accidents, traffic support	Traffic Police
Women Helpline	1091	Women in distress	Women Safety Assistance
Disaster Management	1078	Natural disasters, emergencies	Disaster Response Team
Tourist Helpline	1363	Tourist-related emergencies or support	Tourist Support

Emergency Situation Standard Operating Procedure (SOP)

ROAD ACCIDENT PROTOCOL

Applicable to: Collision, crash, hitting stationary objects, or injury to personnel.

Immediate Actions:

- Stop the vehicle safely; engage handbrake, switch on hazard lights.
- Check for injuries; call 108 for ambulance if required.
- Inform control room or transport coordinator (via phone or VHF radio).
- Take photographs of damage, road conditions, and position of vehicles.
- If serious: Inform Police (100) and wait for clearance.
- Record witness contact (if any) and note surrounding conditions.

Driver Must Have:

- First aid kit
- Emergency contact card (Appendix B)
- Accident report form

VEHICLE BREAKDOWN PROTOCOL

Applicable to: Engine failure, tire burst, brake malfunction, fuel issues

Immediate Actions:

- Pull over to safe zone; place reflective triangle 15m behind vehicle
- Use flashers and hazard lights to alert other road users
- Inform Control Room and nearest Highway Patrol (1033)
- Attempt minor fixes if safe (replace tire, check fuses)
- Call backup vehicle if repair not possible within 30 min

Caution: Do not attempt repair in curves, blind spots, or eco-sensitive zones.

WILDLIFE ENCOUNTER PROTOCOL

Applicable to: Forest fringe, wildlife corridor.

Immediate Actions:

- Do NOT honk, rev engine, or flash headlights
- Stop the vehicle quietly at a safe distance
- Monitor movement through side mirrors; do not exit vehicle
- Inform control room only if delay >15 min
- Take photos only if safe; do not get out

DO NOT:

- Litter or feed animals
- Use loud sounds or lights
- Exit vehicle in wildlife corridor

MEDICAL EMERGENCY PROTOCOL

Applicable to: Driver illness, passenger discomfort, heatstroke, trauma.

Immediate Actions:

- Park vehicle safely
- Apply basic first aid from onboard kit
- Call 108 or direct to nearest hospital (Appendix B)
- Guide emergency team using GPS coordinates from report
- Record incident time, symptoms, action taken