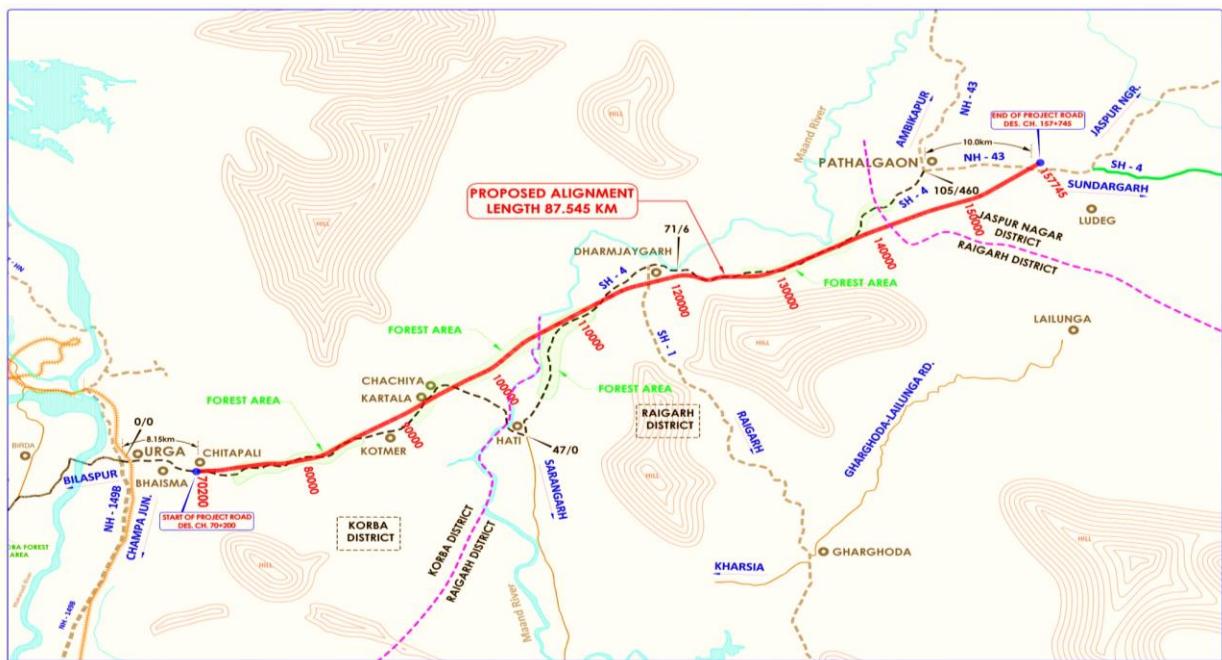


FINAL ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



PROJECT PROPOSER	:	NATIONAL HIGHWAY AUTHORITY OF INDIA (NHAI)
ENVIRONMENT CONSULTANT	:	P AND M SOLUTION
DATE & VERSION	:	JUNE 2023, VERSION 1



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

TABLE OF CONTENTS

1	INTRODUCTION	1
1.1	Project Background.....	1
1.2	Project Proponent.....	1
1.3	Project Consultant	1
1.4	The Project.....	2
1.4.1	<i>Project Location</i>	2
1.5	Scope of Study.....	4
1.6	Approach and Methodology	5
1.6.1	<i>Approval of Terms of Reference from MoEF&CC</i>	6
1.6.2	<i>Review of Applicable Environmental Regulations.....</i>	16
1.6.3	<i>Review of the Project Information.....</i>	16
1.6.4	<i>Reconnaissance Survey.....</i>	16
1.6.5	<i>Assessment of Baseline Environmental Profile</i>	16
1.6.6	<i>Assessment of Alternatives.....</i>	26
1.6.7	<i>Assessment of Impacts</i>	26
1.6.8	<i>Environment Management and Monitoring Plan.....</i>	26
1.7	Structure of the Report	27
2	Project Description	28
2.1	Alignment Profile.....	28
2.2	Project Features	29
2.2.1	<i>Design Speed</i>	29
2.2.2	<i>Proposed Right of Way.....</i>	29
2.2.3	<i>Cross Sectional Elements</i>	29
2.2.4	<i>Drainage</i>	31
2.2.5	<i>Culverts.....</i>	31
2.2.6	<i>Bridges.....</i>	31
2.3	Project Facilities	32
2.3.1	<i>Way-side Amenities.....</i>	32
2.3.2	<i>Truck Lay-byes</i>	32
2.3.3	<i>Toll Plaza</i>	32
2.4	Raw Material for the Project	33
2.4.1	<i>Borrow Area Soil.....</i>	33
2.4.2	<i>Aggregate and Stone Quarries</i>	35
2.4.3	<i>Water.....</i>	35
2.5	Manufactured Materials	35
2.5.1	<i>Cement</i>	35
2.5.2	<i>Steel.....</i>	36
2.5.3	<i>Bitumen</i>	36
2.5.4	<i>Fly Ash.....</i>	36
2.6	Power for Project.....	36
3	Analysis of Alternatives.....	37
3.1	With and Without Project Alternatives.....	37
3.1.1	<i>Without Project Scenario</i>	37
3.1.2	<i>With Project Scenario</i>	37
3.2	Criteria for Fixing Alignment for Economic Corridor.....	39
3.3	Analysis of Alternative.....	40



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

3.3.1	<i>Justification for Selection of the Site</i>	43
3.4	Environmental Considerations	43
3.4.1	<i>Improvement of Air and Noise Quality</i>	43
4	DESCRIPTION OF ENVIRONMENT	44
4.1	General.....	44
4.2	Study Area	44
4.3	Methodology	44
4.4	Physical Environment	44
4.4.1	<i>Physiography</i>	44
4.4.2	<i>General Geology</i>	46
4.4.3	<i>Existing Land- Use Pattern</i>	47
4.4.4	<i>Drainage</i>	52
4.4.5	<i>Climatology</i>	52
4.4.6	<i>Seismicity</i>	55
4.4.7	<i>Soil Quality</i>	56
4.4.8	<i>Ambient Air Quality</i>	58
4.4.9	<i>Ambient Noise Quality</i>	61
4.4.10	<i>Water Quality</i>	70
4.5	Biological Environment.....	76
4.5.1	<i>Description of Study Area</i>	76
4.5.2	<i>Description of Eco-sensitive Zones in Study Area</i>	76
4.5.3	<i>Scope & Objective of Study</i>	79
4.5.4	<i>Methodology of Data Collection</i>	79
4.5.5	<i>Flora of the Study Area</i>	82
4.5.6	<i>Faunal Diversity of the Study Area</i>	90
4.5.7	<i>Observation of the Present Study</i>	101
4.6	Socio-Economic Profile	101
4.6.1	<i>General Socio-Economic Profile of Project State</i>	102
4.6.2	<i>General Socio-Economic Profile of Project Districts</i>	103
4.6.3	<i>General Socio-Economic Profile of Project Influenced Area (Project Villages)</i>	108
4.6.4	<i>Socio-economic Profile of the PAPs along the Project Road</i>	111
4.6.5	<i>Social Consultation</i>	114
5	ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES	115
5.1	Introduction	115
5.1.1	<i>The Context of Impact Analysis</i>	115
5.1.2	<i>Analysis of Impacts</i>	115
5.2	Meteorological Parameters	115
5.3	Physical Environment	116
5.3.1	<i>Impacts on Land Use</i>	116
5.3.2	<i>Impacts on Physiography</i>	116
5.3.3	<i>Impacts on Geology and Seismology</i>	116
5.3.4	<i>Impact due to Quarries</i>	117
5.3.5	<i>Soil</i>	117
5.3.6	<i>Air Quality</i>	119
5.3.7	<i>Water Resources</i>	122
5.3.8	<i>Noise levels</i>	124
5.4	Biological Environment	130



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

5.4.1	<i>Construction Phase.....</i>	130
5.4.2	<i>Operation Phase</i>	132
5.5	Social Environment.....	134
5.5.1	<i>Land Acquisition and Extent of Loss to Properties.....</i>	134
5.5.2	<i>Impact on Properties</i>	134
5.5.3	<i>Land use Change</i>	135
5.5.4	<i>Exploitation of Resources</i>	135
5.5.5	<i>Loss to access of Common Property</i>	135
5.5.6	<i>Traffic congestion during construction</i>	135
5.5.7	<i>Working conditions.....</i>	136
5.5.8	<i>Risk from Electrical Equipment.....</i>	136
5.5.9	<i>Risk at Hazardous Activity</i>	136
5.5.10	<i>Malarial Risk.....</i>	136
5.5.11	<i>First Aid.....</i>	136
5.5.12	<i>Potable Water.....</i>	137
5.5.13	<i>Construction Camp.....</i>	137
6	ENVIRONMENT MONITORING PROGRAM	138
6.1	General.....	138
6.2	Monitoring Indicators	138
6.3	Monitoring Parameters and Standards	138
6.3.1	<i>Ambient Air Quality Monitoring (AAQM)</i>	138
6.3.2	<i>Noise Quality Monitoring</i>	140
6.3.3	<i>Water Quality Monitoring.....</i>	141
6.4	Environmental Monitoring Plan	145
6.5	Monitoring of Earthworks Activities.....	148
7	ADDITIONAL STUDIES.....	149
7.1	Stakeholder Consultation.....	149
7.1.1	<i>Objectives.....</i>	149
7.1.2	<i>Type of Stakeholders.....</i>	149
7.1.3	<i>Methodology</i>	150
7.1.4	<i>Consultations with Community / Primary Stakeholders</i>	150
7.1.5	<i>Outcome of the Consultation.....</i>	150
7.2	Public Hearing.....	158
7.3	Traffic Study	205
7.4	Disaster Management, Risk Assessment and Mitigation Procedures	205
7.4.1	<i>The Risk Assessment Process and Hazard Identification</i>	205
7.4.2	<i>Objectives of Risk Assessment of Highways</i>	205
7.4.3	<i>Types of Risk associated with Highways</i>	206
7.4.4	<i>Person(s) at Risk</i>	206
7.4.5	<i>Risk Control Measures</i>	206
7.4.6	<i>Emergency Response Plan.....</i>	207
7.4.7	<i>Traffic Management.....</i>	209
7.4.8	<i>Traffic Management Practices</i>	213
7.4.9	<i>Traffic Management on Road Junction</i>	215
7.5	Disaster Management Manual.....	215
7.5.1	<i>Natural Hazards.....</i>	216
7.5.2	<i>Human-Induced Disasters</i>	218



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

7.5.3	<i>Levels of Disasters</i>	218
7.5.4	<i>Project Specific Provisions for Disaster Management Plan</i>	218
7.5.5	<i>Mitigation Measures Undertaken</i>	219
7.6	Code of Conduct for Contactor and Labour	224
7.6.1	<i>Code of Conduct for Contractors and Workers</i>	224
7.6.2	<i>Code of Conduct for Occupational Health and Safety</i>	226
8	PROJECT BENEFITS	227
8.1	Introduction	227
8.2	Improvement in Physical Infrastructure	227
8.3	Generation of Employment Opportunities	228
8.4	Efficient and Safe Connectivity Option	228
8.5	Health and Education	228
8.6	Movements of Goods.....	228
8.7	Benefit to Local Trade and Economy	228
8.8	Benefits to Environment	229
9	ENVIRONMENTAL MANAGEMENT PLAN.....	230
9.1	General.....	230
9.2	The Objective and Scope for EMP.....	230
9.3	Environmental Management Plan for the Project	230
9.4	Specific Activities by Concessionaire / Contractor	231
9.5	Site Specific Management Plan	231
9.5.1	<i>Air Quality Management</i>	231
9.5.2	<i>Noise Management</i>	232
9.5.3	<i>Vibration Mitigation</i>	233
9.5.4	<i>Water Source Protection Management</i>	233
9.5.5	<i>Soil and Land Management</i>	233
9.5.6	<i>Site Restoration and Green Belt Development</i>	234
9.5.7	<i>Traffic Movement Management</i>	234
9.5.8	<i>Community and Cultural Properties</i>	234
9.5.9	<i>Project Specific Occupational Health and Safety Measures:</i>	234
9.5.10	<i>Management of Ecology</i>	236
9.6	Implementation of EMP	237
9.7	EMP Budget	238
10	SUMMARY AND CONCLUSION	244
10.1	Introduction	244
10.2	Description of the Project	244
10.3	Analysis of Alternatives	244
10.4	Baseline Environmental Profile.....	244
10.4.1	<i>Physical Environment</i>	244
10.4.2	<i>Biological Environment</i>	246
10.4.3	<i>Social Environment</i>	246
10.5	Potential Environmental Impacts.....	247
10.5.1	<i>Impact on Air Quality</i>	247
10.5.2	<i>Impact on Noise Levels</i>	247
10.5.3	<i>Impact on Water Resources and Quality</i>	247
10.5.4	<i>Impact on Ecology</i>	247
10.5.5	<i>Impact on Land</i>	248



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

10.5.6 Social Impacts.....	248
10.5.7 Impact on Properties	248
10.6 Mitigation Avoidance and Enhancement Measures	248
10.7 Institutional Requirements and Environmental Monitoring Plan.....	248
10.8 Environmental Monitoring	248
10.9 Additional Studies.....	249
10.10 Project Benefits.....	249
10.11 Environment Management Plan	249
10.12 Conclusion.....	252
11 Disclosure of Consultant.....	253
11.1 Declaration by Consultant.....	253
11.2 Declaration by the Head of the Organization.....	256

LIST OF TABLES

Table 1-1: Project Salient Features	2
Table 1-2: Pointwise Compliance of Terms of References.....	6
Table 1-3: Applicability review of the Regulatory Environment Framework	17
Table 1-4: Primary and Secondary Information Sources	26
Table 2-1: Project Coordinates	28
Table 2-2: Districts along Proposed Alignment / Channage	28
Table 2-3: Summary of Grade-Separated Structures	30
Table 2-4: Details of Vertical Clearances at Underpasses	30
Table 2-5: Summary of Proposed Culverts	31
Table 2-6: Details of Major Bridges	31
Table 2-7: Details of Minor Bridges	31
Table 2-8: Location of Wayside Amenities	32
Table 2-9: Location of Truck Lay-byes	32
Table 2-10: Raw Material Requirement	33
Table 2.2-11: Details of Borrow Areas, Urga to Pathalgaon Road	35
Table 2-12: Details of Stone Quarries.....	35
Table 2-13: Details of Sand Quarries.....	35
Table 2-14: Details of Water Resource.....	35
Table 3-1: Comparative Assessment of "With and Without" Project Scenarios.....	38
Table 3-2: The comparative statement for proposed alignment	41
Table 3-3: Minimization of Environmental Impacts	43
Table 4-1: Land Use/Land Cover Map of 500 m Buffer Zone of the Project Stretch	51
Table 4-2: Land Use/Land Cover Map of 10 km Buffer Zone of the Project stretch	51
Table 4-3: Long-term (1981-2000) Climatological Conditions at IMD Observatory at Korba	53
Table 4-4: Soil Quality (SQ) Monitoring Stations/Location	56
Table 4-5: Soil Test Result.....	57
Table 4-6: Soil Test Result Standard Classification	58
Table 4-7: Ambient Air Quality (AAQ) Monitoring Stations/Location.....	59
Table 4-8: Results of Ambient Air Quality Monitoring	60
Table 4-9: Ambient Noise Quality Monitoring Stations/Location	61
Table 4-10: Results of Ambient Noise Quality Monitoring	62
Table 4-11: Ambient Noise Standards (CPCB).....	70



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 4-12: Ground Water Monitoring Stations/Location.....	70
Table 4-13: Surface Water Monitoring Stations/Location	70
Table 4-14: Ground Water Monitoring Results.....	71
Table 4-15: Surface Water Monitoring Results	74
Table 4-16: Sampling Locations Identified for Biological Environment.....	80
Table 4-17: List of forest (sq.km) in Study Area (India State of Forest Report-2021).....	82
Table 4-18: List of Seasonal Crops in the Study Area	83
Table 4-19: List of Aquatic Macro-phytic vegetation of Core and Buffer Zone.....	83
Table 4-20: List of Phytoplankton in Different Water Bodies of Study Area	84
Table 4-21: Site wise Qualitative list of Phytoplankton in Study Area	86
Table 4-22: List of Trees, Shrubs, Herbs and Grasses in Study Area	87
Table 4-23: List of Mammals/Reptiles/Amphibians/Birds recorded from the Core Zone.....	90
Table 4-24: Butterflies observed in the Core Zone.....	91
Table 4-25: List of Mammals, Reptiles and Amphibians recorded from the Buffer Zone	92
Table 4-26: Avian Fauna observed from the study area (Core and Buffer Zone).....	94
Table 4-27: Butterflies observed from the Buffer Zone	95
Table 4-28: Zooplankton in Water Bodies of Buffer Zone	96
Table 4-29: Macro-invertebrates in the study area	98
Table 4-30: Fish Fauna in Seasonal & Perennial Water Bodies in Study Area	100
Table 4-31: Salient Feature of the Chhattisgarh State, 2011.....	102
Table 4-32: Salient Feature of the Korba District.....	103
Table 4-33: Salient Feature of the Raigarh District	105
Table 4-34: Salient Feature of the Jashpur District	107
Table 4-35: List of Affected Villages	109
Table 4-36: Demographic Profile of the Project Affected Villages	109
Table 4-37: Affected Households and PAPs.....	111
Table 4-38: Number of Affected Persons	111
Table 4-39: District wise Project Affected Population	112
Table 4-40: Religious Categories of the Affected Families	112
Table 4-41: Social Stratification of Affected Families	112
Table 4-42: Family Types of PAHs.....	112
Table 4-43: Occupational Pattern of Working Population.....	113
Table 4-44: Annual Income of the affected households	113
Table 4-45: Education and Literacy among PAPs	114
Table 4-46: Vulnerable Groups along the Project Road.....	114
Table 5-1: Traffic and Emission Rate used for Model	122
Table 5-2: Predicted Ground Level Concentration	122
Table 5-3: Summary of Mitigation Measures for Construction Stage	126
Table 5-4: Noise Level due to Vehicular Traffic (Year 2053)	127
Table 5-5: Species Recommended	133
Table 5-6: Details of Proposed Wildlife/Elephant Underpass	134
Table 5-7: Project Impacts	135
Table 6-1: National Ambient Air Quality Standards	139
Table 6-2: National Ambient Noise Quality Standards	140
Table 6-3: Primary Water Quality Standards.....	141
Table 6-4: Indian Standard Drinking Water Specifications: IS 10500:2012	142
Table 6-5: Environmental Monitoring Plan	146



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 7-1: Summary of Stakeholder Meetings	151
Table 7-2: Summary of Public Hearing	158
Table 7-3: Response of Verbal Suggestions / Issues (Dharamjaigarh)	160
Table 7-4: Response of Written Suggestions / Issues (Dharamjaigarh).....	170
Table 7-5: Response of Verbal Suggestions / Issues (Pathalgaon)	175
Table 7-6: Response of Written Suggestions / Issues (Pathalgaon)	187
Table 7-7: Response of Verbal Suggestions / Issues (Korba).....	189
Table 7-8: Response of Written Suggestions / Issues (Korba)	197
Table 7-9: Emergency Contact Number	208
Table 7-10: Minimum Sightline Distance and the Minimum Size of the Signs	210
Table 7-11: Categories of Natural Hazards	216
Table 7-12: SOP requirement.....	219
Table 7-13: Role and Action Plan of Various Departments.....	219
Table 9-1: Project Environmental Budget.....	238
Table 10-1: Environment Impact and Management Matrix	249
Table 11-1: List of Experts Involved.....	253

LIST OF FIGURES

Figure 1-1: Location Map of the Project	3
Figure 1-2: Figure showing start and end point of the proposed Greenfield Road	4
Figure 1-3: Methodology of EIA	5
Figure 2-1: Key map of Proposed Alignment.....	29
Figure 2-2: Quarry Map.....	34
Figure 3-1: Map Showing all the Alternatives.....	40
Figure 4-1: Physiography of the Study Area	45
Figure 4-2: Elevation Profile of the Project Road	46
Figure 4-3: Geological classification map of Chhattisgarh	47
Figure 4-4: Land Use/Land Cover map of 500 m buffer zone of the Project stretch.....	48
Figure 4-5: Land Use/Land Cover map of 1 km buffer zone of the Project stretch.....	49
Figure 4-6: Land Use/Land Cover map of 10 km buffer zone of the Project stretch.....	50
Figure 4-7: Land Use classification of 500 m buffer zone of the Project stretch	51
Figure 4-8: Land Use classification of 10 km buffer zone of the Project stretch	52
Figure 4-9: Windrose Diagrams (Pathalgaon & Kotmer)	53
Figure 4-10: Wind Hazard Map of India	54
Figure 4-11: Seismic Map of India	55
Figure 4-12: Eco sensitive Zone Map of Study Area	77
Figure 4-13: Project site on toposheet with 10km buffer zone & Distance from Wildlife Sanctuary	78
Figure 4-14: Location of Sampling Sites of Terrestrial Flora & Fauna	81
Figure 4-15: Location of Sampling Sites of Aquatic Flora & Fauna	81
Figure 4-16: Qualitative list of Aquatic Macro-phytic vegetation of Core and Buffer Zone	84
Figure 4-17: Site wise qualitative list of Phytoplankton in Study Area.....	86
Figure 4-18: Site wise qualitative variation in Zooplankton species in the study area.....	98
Figure 4-19: Site wise qualitative variation in macro-invertebrates in the study area.....	99
Figure 4-20: Site wise Qualitative Distribution of fishes in Study Area	101
Figure 5-1: Day-time Construction Noise Intensity vs Distance from the Source	125
Figure 5-2: Night-time Construction Noise Intensity vs Distance from the Source	125
Figure 5-3: Noise Intensity due to Vehicular Operation vs Noise Standards (Year 2053).....	128



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 5-4: A sample of Cross Section of Compound Wall as Noise Barrier	129
Figure 5-5: Elephant movement within project Districts	131
Figure 7-1: Glimpses of Public Consultation.....	156
Figure 7-2: Glimpses of Public Hearing	159
Figure 7-3: Risk Assessment Process.....	206
Figure 7-4: Drum Reflections	210
Figure 7-5: Road Traffic Signals.....	211
Figure 7-6: Warning Sign by Flagmen	212
Figure 7-7: Safety Barricades.....	212
Figure 7-8: Traffic Signages	214

LIST OF ANNEXURES

- Annexure 1.1: Terms of Reference
- Annexure 2.1: RoW Requirement in Forest Area
- Annexure 2.2: Typical Cross-section
- Annexure 2.3: Details of Grade-Separated Structures
- Annexure 4.1: Monitoring Photographs
- Annexure 5.1: Socio-economic Questionnaire
- Annexure 5.2: Tree Plantation Strategy
- Annexure 5.3: Format for Reporting of Roadkill
- Annexure 5.4: Traffic Control and Safety during Construction
- Annexure 5.5: Guidelines for Siting and Layout of Construction Camp
- Annexure 5.6: Engineering Drawings for Elephant Underpasses / Overpasses
- Annexure 6.1: Guidelines for Existing Quarry Management
- Annexure 6.2: Guidelines for New Quarry Management
- Annexure 6.3: Plan for Borrow Area Management
- Annexure 6.4: Guidelines for Identification of Debris Disposal Sites & Precautions
- Annexure 6.5: Guidelines for Rehabilitation of Dumpsites & Quarries
- Annexure 6.6: Guidelines for Sediment Control
- Annexure 7.1: Public Hearing Proceedings
- Annexure 9.1: Environment Management Matrix
- Annexure 10: Tree Inventory Details
- Annexure 11.1: Disclosure of Consultant (NABET)
- Annexure 11.2: Laboratory Certificate (NABL)

LIST OF APPENDICES

- Appendix 1 – Traffic Study Report
- Appendix 2 – Resettlement Action Plan
- Appendix 3 – Wildlife Conservation and Management Plan



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

ABBREVIATIONS

AAQ	Ambient Air Quality
AAQMS	Ambient Air Quality Monitoring Station
AIDS	Acquired Immuno-Deficiency Syndrome
AE	Authority Engineer
APHA	American Public Health Association
BDL	Below Detectable Limit
BGL	Below Ground Level
BOD	Biochemical Oxygen Demand
BPL	Below Poverty Line
CALINE	California Line Source Dispersion Model
CBRN	Chemical, Biological, Radiological, and Nuclear
CCTV	Closed-circuit television
CGWB	Central Ground Water Board
CO	Carbon Monoxide
COD	Chemical Oxygen Demand
CPCB	Central Pollution Control Board
CPR	Community Property Resource
Cr.	Crore
CRRI	Central Road Research Institute
CSIR	Council of Scientific and Industrial Research
CTE	Consent to Establish
CTO	Consent to Operate
DFO	Divisional Forest Officer
dB	Decibels
DO	Dissolved Oxygen
E. coli	Escherichia coli
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
ESMP	Environment and Social Management Plan
ESZ	Environment Sensitive Zone
FGD	Focus Group Discussions
GO	Government Order
GW	Ground Water
HC	Hydrocarbon
I-BAT	Integrated Biodiversity Assessment Tool
INR	Indian Rupee
IMD	Indian Meteorological Department
IRC	Indian Roads Congress
IS	Indian Standard
Leq	Equivalent Continuous Noise Level
LHS	Left Hand Side
LARR	Land Acquisition, Rehabilitation and Resettlement
LULC	Land Use and Land Cover
LVUP	Light Vehicular Under pass



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

MoH&UA	Ministry of Housing and Urban Affairs
AMSL	Above Mean Sea Level
MPN	Most Probable Number
MoEF&CC	Ministry of Environment, Forests and Climate Change
NAAQS	National Ambient Air Quality Standards
NBWL	National Board of Wildlife
NGO	Non-Governmental Organisations
NH	National Highway
NHAI	National Highways Authority of India
NOC	No-objection Certificate
NOx	Oxides of Nitrogen
OHT	Over Head Tanks
PAF	Project Affected Family
PAH	Project Affected Household
PAP	Project Affected Person
PD	Project Director
PF	Protected Forest
PM	Particulate Matter
PUC	Pollution Under Control
PMC	Project Monitoring Consultant
PRoW	Proposed Right of Way
PWD	Public Works Department
R&R	Resettlement and Rehabilitation
RAP	Resettlement Action Plan
RF	Reserved Forest
RHS	Right Hand Side
RoW	Right of Way
ROB	Road Over Bridges
RUB	Road Under Bridges
SEIAA	State Environment Impact Assessment Authority
SH	State Highways
SO ₂	Sulphur Dioxide
SOP	Standard Operating Procedures
SPCB	State Pollution Control Board
SW	Surface Water
Sq. Km	Square kilometer
TDS	Total Dissolved Solids
TL	Team leader
UV	Ultraviolet
USEPA	US Environment Protection Agency
WHH	Woman Headed Households

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

1 INTRODUCTION

1.1 Project Background

The Ministry of Road Transport and Highways (MoRT&H), Government of India, announced **BHARAT MALA PARIYOJANA** as a new umbrella program for the highways sector to improve road connectivity across the nation by focusing on optimizing efficiency of freight and passenger movement across the country by bridging critical infrastructure gaps through effective interventions like development of Economic Corridors, Inter Corridors and Feeder Routes, National Corridor Efficiency Improvement, Border and International connectivity roads, Coastal and Port connectivity roads and Green-field expressways.

The Bharat Mala Pariyojana envisages development of about 26,000 km length of Economic Corridors, which along with Golden Quadrilateral and North-South and East-West Corridors are expected to carry majority of the Freight Traffic on roads. Further, about 8,000 km of Inter Corridors and about 7,500 km of Feeder Routes have been identified for improving effectiveness of Economic Corridors, Golden Quadrilateral and North-South and East-West Corridors. The programme envisages development of Ring Roads / bypasses and elevated corridors to decongest the traffic passing through cities and enhance logistic efficiency; 28 cities have been identified for Ring Roads; 125 choke points and 66 congestion points have been identified for their improvements. Further, to reduce congestion on proposed Corridors, enhance logistic efficiency and reduce logistics costs of freight movements, 35 locations have been identified for development of Multimodal Logistics Parks. The proposed Project highway is a greenfield with 4 lane configuration dual carriageway being developed under Bharat Mala Pariyojana.

1.2 Project Proponent

National Highways Authority of India (NHAI), a nodal agency of the Ministry of Road Transport and Highways (MoRT&H), Government of India is responsible for management of the network of national highways across the country. NHAI vision is to meet the nation's need for the provision and maintenance of national highways network to global standards and to meet user expectations in time-bound and cost-effective manner, within the strategic policy framework set by the Government of India and thus promoting economic well-being and quality of life of the people. The NHAI is the Nodal Authority/Project Proponent for the development of the highway project under present study.

1.3 Project Consultant

M/s. Transys Consulting Pvt. Ltd., in association with Accrete Consulting Engineers' (P) Ltd. Gurugram has been appointed as consultants by National Highway Authority of India (NHAI), to prepare the Detailed Project Report for Lot-3/Chhattisgarh/ Package-1 under Bharat Mala Pariyojana. The Lot-3/Chhattisgarh/ Package-1 comprises of following six stretches:

- Durg to Raipur (Part of Mumbai-Kolkata Economic Corridor)
- Bilaspur to Urga (Part of Raipur-Dhanbad Economic Corridor)
- Urga to Pathalgao (Part of Raipur-Dhanbad Economic Corridor)
- Saitangar Toli to Jariya (Part of Raipur-Dhanbad Economic Corridor)
- Sohela to Barpali (Part of Sohela-Khurdha Inter Corridor)
- Saraipali to Manikpur (Part of Saraipali-Raigarh Feeder Route)



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

M/s Transys Consulting Pvt. Ltd. has sub-contracted the work of Environment Impact Assessment to M/s Feedback Infra Pvt. Ltd., Gurugram (Hereinafter "FIPL"). FIPL has conducted the EIA study in accordance with MoEF&CC and NABET-QCI Guidelines. FIPL has gone through the organization restructuring and M/s Transys Consulting Pvt. Ltd., Gurugram further sub-contracted the task of Environment Clearance to M/s P and M Solution, Noida (A NABET-QCI approved organization for Highway Projects).

1.4 The Project

The Project highway is a greenfield highway with 4 lane configuration dual carriageway having central raised median is a part of Raipur-Dhanbad Economic Corridor. The Project shall follow the 4 lane standards as per IRC SP 84-2019. Salient features of the Project are as follows.

Table 1-1: Project Salient Features

S. No.	Particular	Details
1	Project Name	Development of Economic Corridor to improve the efficiency of freight movement in India under Bharatmala Pariyojana, Urga-Pathalgaon Section of NH-130A (Raipur – Dhanbad Economic Corridor)
2	Nature of Project	Economic Corridor
3	Project stretch	The Project highway alignment starts from Bhaisma village at Ch. 8/150 of SH-04 and terminates near Turuama village, 10 km away from Pathalgaon along NH-43 towards Jharkhand border.
4	Geographical Coordinates	22°15'54.02"N 82°47'49.93"E to 22°33'42.87"N 83°33'52.53"E
5	Land details	Agricultural land and patches of Forest
6	Water demand	34,09,045 KL
7	Sources of water	Tanker Supply and Groundwater if required
8	Manpower	1500
9	Power requirement	8000 kVA which shall be managed from State Electricity boards.
10	Nearest railway station	Urga Railway Station: 6.2 km in the West Direction from the starting point of the highway
11	Nearest state highway / national highway	The proposed project is itself a newly declared National Highway i.e., NH 130A. Project highway shall pass through SH4, SH1 and NH43.
12	Nearest airport	Nearest airstrip is at Raipur approachable by road from Bilaspur. A small airstrip has also been constructed at Bilaspur for smaller aircrafts.
13	Seismic zone	Zone II and III

1.4.1 Project Location

The existing road from Urga to Pathalgaon is a State Highway-04 which became the part of National Highway 130A vide Gazette notification dated 5th Dec 2017. National Highway 130A starts from junction with NH-30 near Pondi and traverse through Panderia, Mungeli, Bilaspur, Siapat, Dhania, Baloda, Panthora, Urga, Hati Bhaisma, Dharmjaygarh and terminates at junction with NH-130 near Pathalgaon. Totalling 106 km from Urga to Pathalgaon the existing carriageway width is single lane from Urga to Dharmjaygarh for length of 70 km and intermediate lane

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

carriageway from Dharmjaygarh to Pathalgaon for a length of 35 km stretch. The existing geometry is very substandard and requires geometric correction at many locations. The proposed Greenfield Highway alignment starts from Bhaisma village at chainage 8/150 of State Highway-04 and terminates near Turua Ama village, 10 km away from Pathalgaon along NH-43 towards Jharkhand border. Total length of the proposed alignment will be 87.535 km, which will lead to 17.5% reduction in the length of travel between Urga and Pathalgaon, thus, saving the fuel and time of commuters. Location of the Project stretch is presented in **Figure 1.1** while, start and end point of the proposed greenfield road is presented in **Figure 1.2** as below.

Figure 1-1: Location Map of the Project





FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 1-2: Figure showing start and end point of the proposed Greenfield Road



Start of project Road at Urga



End of the Project Road

1.5 Scope of Study

EIA study has been undertaken as per the legislations and guidelines levied under EIA notification by Ministry of Environment, Forest and Climate Change, Government of India to understand potential environmental impacts associated with proposed developments and ToR accorded for the Project dated 13th August 2019 and subsequent amendment in ToR dated 18th January 2020 from MoEF&CC. The study shall also discuss about appropriate mitigation measures and management plan to prevent and minimize adverse impacts (if any). The environmental and social assessment has been carried out against the following reference frameworks:

- EIA Notification 14th Sep' 2006 and amendments thereof,
- Applicable National, State, and Local regulatory requirements 2)
- National road safety policy and guidelines

The objectives of the EIA include:

- Collection and analysis of baseline environmental information on various components of the environment.
- Identification of impacts and determination of the magnitude of environmental impacts so that due consideration is given to them during design, construction, and operational phases of the road project. Identification of areas and aspects, which are environmentally or socio-economically insignificant. Suggestion of mitigation measures and preparation of Environmental Management Plans for enhancing and mitigating the negative impacts and strengthening the beneficial impacts.
- Economical assessment of project from the environmental point of view and preparation of environmental budge for implementation of mitigation measures.
- Development of the road alignment in such a way that the environment and settlements are affected the least.
- Presentation of public consultation and public view on various aspects of environment and the Project.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

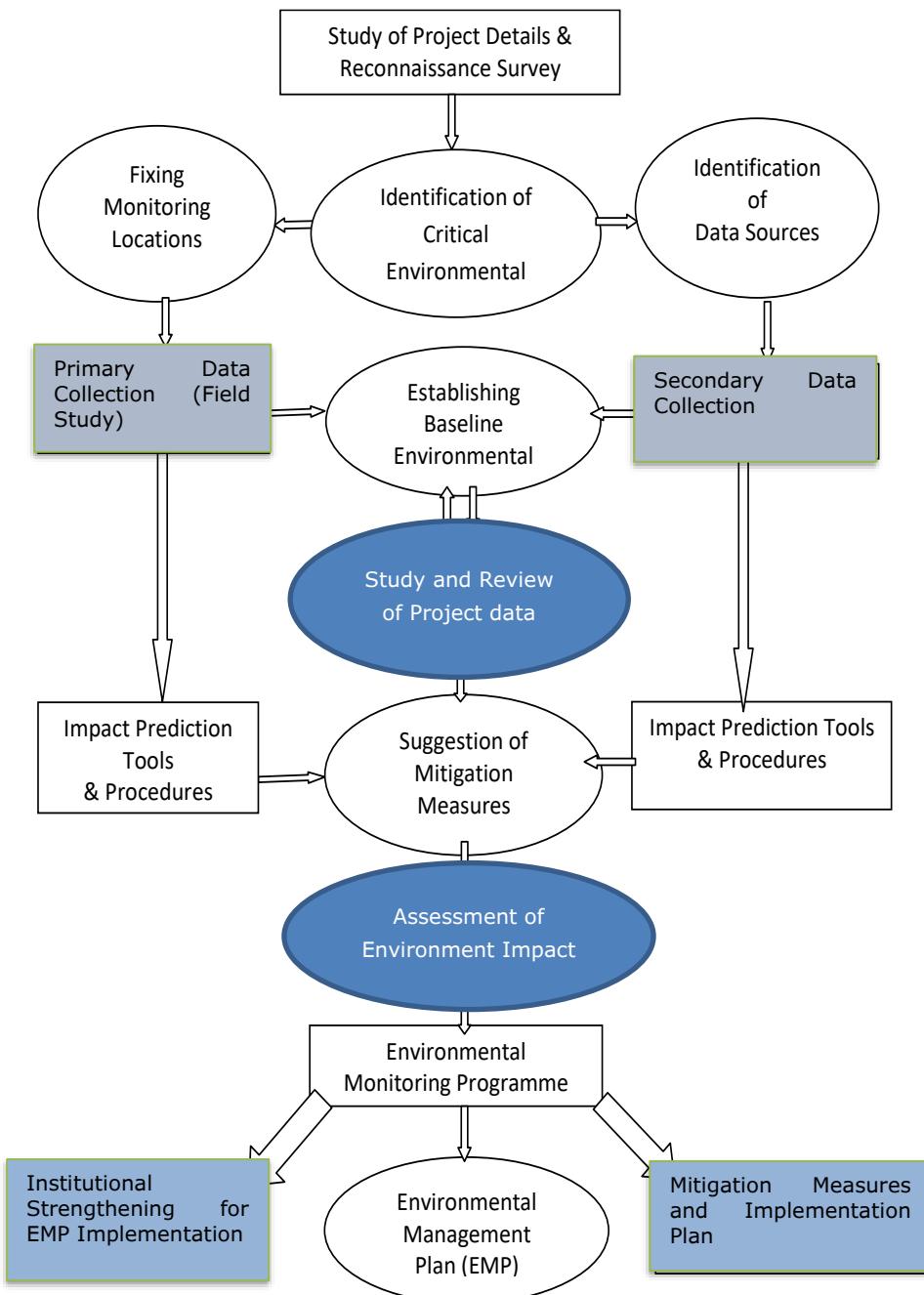
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- The sections below detail out the methodology adopted for the assessment of environment for the Project.

1.6 Approach and Methodology

The study methodology for the EIA employs a simplistic approach and analyses the environmental issues identified. The sections below detail out the methodology adopted for the environment and social assessment of the Project and a flow of process is presented as below in **Figure 1-3**.

Figure 1-3: Methodology of EIA





FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

1.6.1 Approval of Terms of Reference from MoEF&CC

The Expert Appraisal Committee, Ministry of Environment, Forest, and Climate Change (MoEF&CC) scoped the Project and recommended for the issuance of TOR for conducting the Environment Impact Assessment (EIA) study for the Project. MoEF&CC issued the TOR vide letter No. 10-33/2019-IA.III dated 13th August 2019. A subsequent amendment in ToR was also issued by MoEF&CC vide letter No. 10-33/2019-IA.III dated 18th January 2020. The ToR letter is attached as **Annexure 1.1**.

Table 1-2: Pointwise Compliance of Terms of References

S. No.	ToR Point	Compliance Status
A. Project Specific Conditions		
1	Proposed alignment passes through the Elephant corridor area. It was advised to map wildlife crossing accurately through thorough consultations with the forest department and Project Elephant at MoEF&CC, New Delhi. Wildlife Conservation Plan (including construction of underpasses of adequate length for elephant movement) and other appropriate mitigation measures shall be prepared in consultation with the Chief Wildlife Warden of the State along with implementation schedule and appropriate monitoring mechanism.	As desired, a separate study on Elephant movement within the Project study area and impact of elephants on the Project has been undertaken for the Project and attached separately with EIA study.
2	Since the proposed alignment passes through snake infested areas, proponents shall conduct study on impact of project on snakes and its consequences on human beings.	As desired, a separate study on the impact of snakes on the Project has been undertaken and attached separately with EIA study.
3	Study to be carried out on Acoustic and Light Proofing measures considering the Wildlife Institute of India manual and other studies by the reputed institutes on the matter. The study shall be carried out by the qualified professionals, scientists from any national institute/universities of repute having requisite experience to conduct such study.	As desired, a study has been undertaken and attached separately with EIA study.
4	RoW of the proposed alignment shall be restricted to 60 m in general and 30 m in forest areas. Standardization of ROW for non-forest land and forest land to be defined and to be remain constant for all the projects of NHAI.	The proposed RoW shall be minimum 60m in general throughout the Project stretch however, PRoW in forest area varies from 30m to 65m as the proposed road is passing through undulated, rolling, and hilly terrain at several locations. RoW will also vary at locations such as Toll Plaza, Rest Area, Highway Amenities, Truck Lay Bye, Interchanges and Junction, where additional land shall be acquired as per design requirement.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
5	The proposal for diversion of forest land shall be revised as per reduced RoW, i.e., 30 m in forest areas.	Complied
6	Since the proposed alignment will pass through forest land and the traffic shall be predominantly Coal transportation, pollution impact studies are essential. Also, the proponent to carry out detailed traffic study to assess inflow of traffic from adjoining areas.	Traffic report including Traffic Surveys, Analysis and Demand Forecast utilizing the data taken from DPR consultant is attached along with measures for Traffic Control and Safety during Construction.
7	Rainwater harvesting structures to be constructed at the either sides of the road with special precaution of oil filters and de-silting chambers	Rainwater harvesting structures are proposed at every 500m interval to augment and conserve rainwater as per IRC 42:2014 guidelines and location specific requirements.
8	Provide compilation of road-kill data on existing roads (national and state highways) in the vicinity of the proposed project.	The project road is a green field alignment. 11 VUPs, 1 Flyovers, 126 Box Culverts are proposed along the project stretch for movement of the wildlife in project vicinity. The format for reporting of Roadkill is enclosed as Annexure 5.3.
9	Provide measures to avoid road kills of wildlife by the way of road-kill management plan.	There will be proper embankment with crash barriers & other barricades to stop the wild & domesticated animals entering or crossing the road. Project is an access- controlled expressway. Entry and exit at the expressway at the highway shall only be allowed through interchanges. The project is passing through the forest area. LVUP / SVUP shall be provided & maintained for crossings of animals. Therefore, no roadkill is likely due to the proposed improvement. Roadkill data of the expressway shall be recorded during the operation stage of the project. Format for reporting of Roadkill is provided in Annexure 5.3
10	The alignment of roads should be such that the cutting of trees is kept at bare minimum and for this, the proponent shall obtain permission from the competent authorities.	Tree falling shall be undertaken by proponent after obtaining necessary permission from respective authority
11	A comprehensive plan for the plantation of three rows of native species, as per IRC guidelines, shall be provided. Such plantation alongside of forest stretch will be over and above the compensatory afforestation. Tree species should be the same as per the forest type.	Plantation shall be undertaken as per the provision of IRC SP 21:2009 on available RoW. Cost budgeted in EMP in Chapter 9.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
12	The activities and budget earmarked for Corporate Environmental Responsibility (CER) shall be as per ministry's O.M No 22-65/2017-IA. II (M) dated 1 st May 2018 and the action plan on the activities proposed under CER shall be submitted at the time of appraisal of the project included in the EIA/EMP Report.	EMP budget of Rs. 46.22 crores have been earmarked for environmental management. CER budget is not applicable as per MoEF&CC OM.
13	The PP shall not use groundwater/surface water without obtaining approval from CGWA/SGWA as the case may be. The project proponent shall apply to the Central Ground Water Authority (CGWA)/ State Ground Water Authority (SGWA)/ Competent Authority, as the case may be, for obtaining No Objection Certificate (NOC), for withdrawal of ground water.	The total demand for water to be used during the construction phase will be around 34,09,045 KL. The demand though is only indicative in nature and shall differ during the period of construction. The demand shall be met through the availability of supply both from surface and ground sources. However, mostly surface water shall be used for the construction work. In case of ground water requirement prior approval obtained from CGWA/SGWA.
14	The Action Plan on the compliance of the recommendations of the CAG as per Ministry's Circular No. J-11013/71/2016-IA.1 (M), dated 25 th October 2017 needs to be submitted at the time of appraisal of the project and included in the EIA/EMP Report.	All directions and guidelines of MoEF&CC in compliance with the Circular shall be adhered.

B. General Conditions

1	A brief description of the project, project name, nature, size, its importance to the region/state and the country shall be submitted.	Project descriptions are provided in Chapter 2 of the EIA report.
2	In case the project involves diversion of forests land, guidelines under OM dated 20.03.2013 shall be followed and necessary action be taken accordingly.	About 169.0231 ha of forest land shall be affected by the crossing of the proposed expressway.
3	Details of any litigation(s) pending against the project and / or any directions or orders passed by any court of law / any statutory authority against the project to be detailed out.	No litigation is pending against the project.
4	Detailed alignment plan, with details such as nature of terrain (plain, rolling, hilly), land use pattern, habitation, cropping pattern, forest area, environmentally sensitive areas, mangroves, notified industrial areas, sand dunes, sea, rivers, lakes, details of villages, tehsils, districts and states, latitude and longitude for important locations falling on the alignment by employing remote sensing techniques followed by "ground truthing" and	Details of Physiography, topography, water bodies, land use pattern, habitation, cropping pattern, forest area, environmental sensitive location, Land use Land Cover map and notified industrial areas are provided in chapter 4 of EIA Report.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
	also through secondary data sources shall be submitted.	
5	Describe various alternatives considered, procedures and criteria adopted for selection of the final alternative with reasons.	The details of alternative analysis provided in Chapter-3 of EIA report.
6	Land use map of the study area to a scale of 1: 25,000 based on recent satellite imagery delineating the crop lands (both single and double crop), agricultural plantations, fallow lands, waste lands, water bodies, built-up areas, forest area and other surface features such as railway tracks, ports, airports, roads, and major industries etc. along with detailed ground survey map on 1:2000 scale showing the existing features falling within the right of way namely trees, structures including archaeological & religious, monuments etc. if any, shall be submitted.	Land use Land Cover map of project area is given in under Chapter 4 of the EIA report.
7	If the proposed route is passing through any hilly area, the measures for ensuring stability of slopes and proposed measures to control soil erosion from embankment shall be examined and submitted.	Turfing is proposed in high embankment areas to control soil erosion.
8	If the proposed route involves tunnelling, the details of the tunnel and locations of tunnelling with geological structural fraction should be provided. In case the road passes through a flood plain of a river, the details of micro-drainage, flood passages and information on flood periodicity at least of the last 50 years in the area shall be examined and submitted.	No tunnel is proposed. The project alignment cross Maand River at 106+375, hydrology study with last 50 years flood data has been conducted for bridge design.
9	If the project is passing through / located within the notified ecologically sensitive zone (ESZ) around a notified National Park/Wildlife Sanctuary or in the absence of notified ESZ, within 10 km from the boundary of notified National Park / Wildlife Sanctuary, the project proponent may simultaneously apply for the clearance for the standing committee of NBWL. The EC for such project would be subject to obtaining the clearance from the standing committee of NBWL.	The proposed alignment is not passing through any notified ecologically sensitive zone (ESZ) declared as a protected area under Wildlife (Protection) Act, 1972.
10	Study regarding the animal bypasses /underpasses etc. across the habitation areas	A total of 78 structures including 01 Flyovers, 06 Major Bridges, 21 Minor Bridges, 06 LVUPs,



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
	shall be carried out. Adequate cattle pass for the movement of agriculture material shall be provided at the stretches passing through habitation areas. Underpasses shall be provided for the movement of Wild animals.	11 VUPs, 06 LVUPs, 18 SVUPs, 01 EOP and 11 EUP are proposed for the Project.
11	Study regarding in line with the recent guidelines prepared by Wildlife Institute of India for linear infrastructure with strong emphasis on animal movement and identifying crossing areas and mitigation measures to avoid wildlife mortality.	The proposed highway is to travel through the Elephant Corridor connecting the forests of Raigarh, Dharam Jaigarh and Korba with Jashpur. Therefore, major part of the Project study area is reported as an Elephant affected zone and at places there is heavy movement of Elephants. Considering that the proposed alignment is passing through the Elephant Corridor, twelve (12) underpasses and overpasses for safe crossing of wildlife and elephants are proposed for the safe movement of wildlife, lists of such crossings area is provided in Table 5.6 and engineering drawing of such underpasses and overpasses is attached as Annexure 5.6.
12	The information shall be provided about the details of the trees to be cut, including their species and whether it also involves any protected or endangered species. Measures taken to reduce the number of trees to be removed should be explained in detail. The details of compensatory plantation shall be submitted. The possibilities of relocating the existing trees shall be explored.	Nearly 33,685 trees are likely to be felled within RoW. However, to reduce the number of felling trees, construction shall be limited for construction zones only as per MoRTH & IRC guidelines. The direction of forest / horticulture department shall be adhered regarding relocation of existing trees.
13	Necessary green belts shall be provided on both sides of the highway with proper central verge and cost provision should be made for regular maintenance.	Avenue plantation on both sides of the project highway and median plantation shall be undertaken as per IRC SP-21:2009. Cost provision for regular maintenance provided in EMP budget.
14	If the proposed route is passing through a city or town, with houses and human habitation on either side of the road, the necessity for provision of bypasses / diversions / under passes shall be examined and submitted. The proposal should also indicate the location of wayside amenities, which should include petrol stations / service centres, rest areas including public conveyance, etc.	Project is a greenfield expressway project and alignment has been selected in such a way that, project maintain an enough distance from major settlement areas.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
15	Details about measures taken for the pedestrian safety and construction of underpasses and foot-over bridges along with flyovers and interchanges shall be submitted.	Project is an access-controlled expressway and entry & exit shall only be allowed through interchanges. Traffic control devices and road safety features, including Traffic Signs, Road Markings etc. are proposed and designed as per relevant IRC codes and standards. Details of the interchanges are provided in Chapter 2 of the EIA report.
16	The possibility that the proposed project will adversely affect road traffic in the surrounding areas (e.g., by causing increases in traffic congestion and traffic accidents) shall be addressed.	Proposed road is a green field access-controlled expressway, which does not have any adverse effect on existing traffic and surrounding area.
17	The details of use of fly ash in the road construction, if the project road is located within 100 km from the Thermal Power Plant shall be examined and submitted.	As per Government of India's notification, it is mandatory to use fly-ash in embankment, within 300 km. which is available from KSK Mahanadi Power, Korba Super Thermal Power Plant and of Hasdeo Thermal Power Station, Korba etc. may also be used in the Project.
18	The possibilities of utilizing debris / waste materials available in and around the project area shall be explored.	Waste material shall be used for land filling in high embankment areas based on their specification.
19	The details on compliance with respect to Research Track Notification of Ministry of Road, Transport and Highways shall be submitted.	This project is being completed with all the Guidelines & Notifications issued by MoRTH.
20	The details of sand quarry and borrow area as per OM No.2-30/2012-1A-III dated 18.12.2012 on 'Rationalization of procedure for Environmental Clearance for Highway Projects involving borrow areas for soil and earth" as modified vide OM of even No. dated March 19, 2013, shall be examined and submitted.	Details of sand quarry or borrow area (proposed for the project) are given in Section 2.4.3 and Table 2.12 of EIA report. The <i>Extraction or sourcing or borrowing of ordinary earth for linear projects such as roads, pipelines, etc.</i> has been exempted from Environmental Clearance as per MoEF&CC Notification dated 28 th March 2020. Quarry material shall be arranged from already approved quarries.
21	Climate and meteorology (max and min temperature, relative humidity, rainfall, frequency of tropical cyclones and snow fall); the nearest IMD meteorological station from which climatological data have been obtained to be indicated.	The Indian Meteorological Department's (IMD) observatories in vicinity of proposed alignment is located at Korba. Long-Term climatological data (Long-term data 1981- 2000) has been analysed for assessment of prevailing meteorological scenario in the project region. The details of the climate and meteorology of project area are provided in section 4.4.5 & table 4.3 respectively of EIA report.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
22	The air quality monitoring shall be carried out as per the notification issued on 16 th November 2009. Input data used for Noise and Air quality modelling shall be clearly delineated.	The air quality monitoring has been carried out as per the notification issued on 10 th November 2009. Input data used for Air and Noise quality has been defined in section 4.4.8 of EIA report.
23	The project activities during construction and operation phases, which will affect the noise levels and the potential for increased noise resulting from this project shall be identified. Discuss the effect of noise levels on nearby habitations during the construction and operational phases of the proposed highway. Identify noise reduction measures and traffic management strategies to be deployed for reducing the negative impact if any. Prediction of noise levels shall be done by using mathematical modelling at different representative locations.	The various effects of noise during construction phase on sensitive receptors are provided in section 5.3.8.
24	The impact during construction activities due to generation of fugitive dust from crusher units, air emissions from hot mix plants and vehicles used for transportation of materials and prediction of impact on ambient air quality using appropriate mathematical model, description of model, input requirement and reference of derivation, distribution of major pollutants and presentation in tabular form for easy interpretation shall be examined and carried out.	The various impacts on ambient air quality during operation and construction phase are discussed in section 5.2.3.
25	The details about the protection to existing habitations from dust, noise, odour etc. during construction stage shall be examined and submitted.	The measures for minimizing the impact of dust, noise and Odour include greenbelt development, dust suppression measures, acoustic enclosures, provision of PPE to the workers, scheduling of activities, etc. The details are provided during construction in Chapter-5 of EIA report.
26	If the proposed route involves cutting of earth, the details of area to be cut, depth of cut, locations, soil type, volume and quantity of earth and other materials to be removed with location of disposal/ dump sites along with necessary permission.	Details of sand quarry or borrow area (proposed for the project) is given in section 2.4.3 and respective impacts are discussed in section 5.3.4 of EIA report.
27	If the proposed route is passing through low lying areas, details of filling materials and initial and final levels after filling above MSL, shall be examined and submitted.	The proposed project is a green field alignment, which passes through mostly plain area.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
28	The water bodies including the seasonal ones within the corridor of impacts along with their status, volumetric capacity, quality and likely impacts on them due to the project along with the mitigation measures, shall be examined and submitted.	6 ponds, 5 nallas and 2 rivers are likely to be affected due to alignment. Bridges & culverts are proposed over water bodies that are being crossed. Silt fencing shall be installed along the water bodies during construction phase.
29	The details of water quantity required and source of water including water requirement during the construction stage with supporting data and classification of ground water based on the CGWA classification, shall be examined and submitted.	The total demand for water to be used during the construction phase will be around 34,09,045 KL. The demand shall be met through the availability of supply both from surface and ground sources. However, mostly surface water shall be used for the construction work. In case of ground water requirement prior approval obtained from CGWA/SGWA.
30	The details of measures taken during construction of bridges across rivers / canals / major or minor drains keeping in view the flooding of the rivers and the life span of the existing bridges shall be examined and submitted. Provision of speed breakers, safety signals, service lanes and foot paths shall be examined at appropriate locations throughout the proposed road to avoid accidents.	Bridges are designed based on 50 years of rainfall data. Project is accessing controlled expressway and entry & exit shall only be allowed through interchanges. Road safety measures should be provided as per IRC guidelines.
31	If there will be any change in the drainage pattern after the proposed activity, details of changes shall be examined and submitted.	The drainage system has been designed as IRC SP 42:2014. Cross drainage structures have been provided based on the outcome of hydrology study.
32	The rainwater harvesting pit shall be at least 3 - 5 m above the highest ground water table. Provisions shall be made for oil and grease removal from surface runoff.	Rainwater harvesting structures are proposed on either side at every 500m interval as per IRC 42:2014 guidelines and location specific requirements.
33	If there is a possibility that the construction/widening of road may cause an impact such as destruction of forest, poaching or reduction in wetland areas, examine the impact and submit details.	About 169.0231 ha of forest land shall be affected by the crossing of the proposed expressway.
34	The details of road safety, signage, service roads, vehicle under passes, accident prone zones and the mitigation measures, shall be submitted.	Traffic control devices and road safety features, including Traffic Signs, Road Markings etc. are proposed and designed as per relevant IRC codes and standards. Details are provided in Chapter 2.
35	IRC guidelines shall be followed for widening & upgradation of roads.	Project is a greenfield expressway and relevant IRC guidelines are followed.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
36	The details of social impact assessment due to the proposed construction of the road shall be submitted.	The details of existing scenario of the socio-economic environment are provided in section 4.6 and social impacts are discussed in section 5.6 of the EIA report.
37	Examine the road design standards, safety equipment specifications and Management System training to ensure that design details take account of safety concerns and submit the traffic management plan.	Safety and Traffic management plan shall be as per IRC SP 55:2014.
38	Accident data and geographic distribution shall be reviewed and analysed to predict and identify trends - in case of expansion of the existing highway and provide Post accident emergency assistance and medical care to accident victims.	An Emergency Response Plan shall be prepared by the contractor and approved by the Monitoring consultant. Arrangements for proper assistance and medical care for the victims shall be made to avoid any casualty. (Refer Section 7.3 of EIA report)
39	If the proposed project involves any land reclamation, details shall be provided of the activity for which land is to be reclaimed and the area of land to be reclaimed.	The proposed project will change land use patterns in areas adjacent of the ROW only.
40	Details of the property, houses, business activities etc. likely to be affected by land acquisition and an estimation of their financial losses, shall be submitted.	The details of the properties, houses, business activities etc. are likely to be affected by land acquisition and the estimation of their financial losses has been earmarked in Section 5.5.2 and Table 5.7.
41	Detailed R&R plan with data on the existing socio-economic status of the population in the study area and broad plan for resettlement of the displaced population, site for the resettlement colony, alternative livelihood concerns/employment and rehabilitation of the displaced people, civil and housing amenities being offered, etc and the schedule of the implementation of the specific project, shall be submitted.	
42	The environment management and monitoring plan for construction and operation phases of the project shall be submitted. A copy of your corporate policy on environment management and sustainable development shall also be submitted.	The details of Environment Management and Environment Monitoring Plan are provided in Annexure 9.1 of the EIA report.
43	Estimated cost of the project including that of environment management plan (both capital and recurring) and source of funding. Also, the mode of execution of the project, viz, EPC, BOT, etc, shall be submitted.	Detailed EMP budget has been provided in Chapter 9 of the EIA report.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
44	A copy of your CSR policy and plan for meeting the expenditure to address the issues raised during Public Hearing, shall be submitted.	NHAI abides by the Central Govt. CSR Policy.
45	Details of blasting if any, methodology/ technique adopted, applicable regulations/ permissions, timing of blasting, mitigation measures proposed keeping in view mating season of wildlife.	No blasting is proposed for the project.
46	In case of river/creek crossing, details of the proposed bridges connecting on either bank, the design and traffic circulation at this junction with simulation studies.	Details of bridges proposed along the project highway are provided in Chapter 2.
47	Details to ensure free flow of water in case the alignment passes through water bodies/riverstreams etc.	Cross drainage structures (bridges and culverts) are proposed on crossing water bodies. Details are provided in Chapter 2.
48	In case of bye passes, the details of access control from the nearby habitation / habitation which may come up after the establishment of road.	Project is an access controlled greenfield expressway project.
49	Bridge design in eco sensitive area /mountains be examined keeping in view the rock classification hydrology etc.	06 major bridges varying from 60m to 330 m length are proposed on 04 Nalas and Chuiya Nadi and Mand River. Specifications are provided in Chapter 2 of the EIA.
50	Details of litigation pending against the project, if any, with direction / order passed by any Court of Law against the Project should be given.	No litigation is pending against the project.
51	The cost of the Project (capital cost and recurring cost) as well as the cost towards implementation of EMP should be clearly spelt out.	Detailed Environment Management Budget is provided in Chapter 9.
52	In case of alignment passing through coastal zones:	Project is an inland project & this is not applicable.
a	HTL/LTL map prepared by authorized agencies superimposed with alignment and recommendation of Coastal Zone Management Authority.	-
b	Details of CRZ-I (I) areas, mangroves required to be removed for the project along with the compensatory afforestation, area, and location with budget.	-
c	Details of road on stilt in CRZ-I areas, design details to ensure free tidal flow.	-
d	Details of Labour camps, machinery location.	-
53	Any further clarification on carrying out the above studies including anticipated impacts due	Referred as advised



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	ToR Point	Compliance Status
	to the project and mitigative measure, project proponent can refer to the model ToR available on Ministry website " http://moef.nic.in/Manual/Highways ".	

1.6.2 Review of Applicable Environmental Regulations

Applicability of various environmental regulations and guidelines were reviewed for the Project and its allied activities. Review analysis in respect to Government of India guidelines and regulatory environment framework is presented in the **Table 1-2 below**.

1.6.3 Review of the Project Information

Project information from available reports and documents were reviewed to understand the Project objectives, its main components, its boundary etc. After having the background information about the Project, the Project specific data pertaining to all facets of environment which include physical, ecological, and socioeconomic environment were collected from both through primary and secondary sources.

Secondary data such as Survey of India Toposheets, District Planning Maps, Forest Working Plans, booklet of Central Ground Water Board, details of Archaeological Monuments etc. have been collected from various secondary sources. Further, secondary data, which are relevant to understand the baseline as pertaining to physical and biological environments has been collected and reviewed. Sources of key relevant information have been summarised in Table 1-3 below.

1.6.4 Reconnaissance Survey

A reconnaissance survey has been undertaken for identification of Valued Environment Components (VECs) falling within the Right of Way (RoW) of proposed highway. Locations of environmentally protected areas (National Parks, Wildlife Sanctuaries, Biosphere Reserves, Reserved / Protected Forest, Important Bird Areas, World heritage Sites, Archaeological Monuments, etc.); surface water bodies; environmentally sensitive receptors (educational institutions, religious structures, medical facilities, etc.) along the green field alignment have been identified during the survey. The Consultant conducted preliminary analysis of the nature, scale, and magnitude of the impacts that the Project is likely to cause on the environment, especially on the identified VECs.

1.6.5 Assessment of Baseline Environmental Profile

For assessing the baseline status of the environment, primary monitoring was carried out for ambient air noise, ground, and surface water at various locations in proposed project stretch. The monitoring locations were identified to determine baseline pollution levels, vicinity of habitation and identified sensitive receptors, land use, accessibility, etc. The collection and analysis of data for each component were carried out by National Accreditation Board for Testing and Calibration Laboratories (NABL) accredited laboratory as per MoEF&CC and CPCB prescribed guidelines. The results of the monitoring were compared with the relevant national standards.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**Table 1-3: Applicability review of the Regulatory Environment Framework**

S. NO.	Regulation / Guidelines	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
1.	The Environmental (Protection) Act. 1986, and the Environmental (Protection) Rules, 1987-2002 (various amendments)	To protect and improve overall environment, this umbrella act imposes certain restrictions and prohibitions on new projects or activities, or on the expansion or modernization of existing projects or activities based on their potential environmental impacts. It is a comprehensive act covering the overall objective to improve the environment by prevention and control of air, water, soil pollution etc. Clearances from different authorities are independently obtained. The Act has been Effective since 1986.	Yes	All environmental Notifications, Rules and Schedules are issued under the EP Act. Applicable as project construction will lead to environmental pollution due to air and noise emission, generation of waste and other impacts.	MoEF&CC, State Dept. of Environment and Forest, CPCB and SPCB
2.	The EIA Notification, 14 th September 2006 and amended thereof	Identifies all new national highways, expansion of national highways projects greater than 100 km involving additional RoW or land acquisition greater than 40m on existing alignments and 60m on re-alignments or bypasses (item 7 (f) of schedule) as one of the Projects requiring prior clearance.	Yes	Project Highway is a new national highway project. Hence, Environment Clearance is required from MoEF&CC.	MoEF&CC and SEIAA
		Opening of new Quarry Area (including excavation of Riverbed)	Yes	Prior EC to be taken by Contractor if there is any need of mining activity	
3.	The Water (Prevention and Control of Pollution) Act, 1974	Central and State Pollution Control Boards to establish / enforce water quality and effluent standards, monitor water quality, prosecute offenders, and issue licenses for construction / operation of certain facilities.	Yes	Applicable since water pollution is expected from project activity during construction phase. Consent required for not polluting ground and surface water during construction	SPCB

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation / Guidelines	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
4.	The Air (Prevention and Control of Pollution) Act. 1981	Empowers SPCBs to set and monitor air quality standards and to prosecute offenders, excluding vehicular air and noise emission.	Yes	Applicable since air emission is expected from project activity during construction phase. Consent required for establishing and operation of crushers, hot mix, and batching plants etc.	SPCB
5.	Noise Pollution (Regulation and Control) Act, 1990. Guidelines for Noise and Vibrations, Sept. 2019	The Rules stipulate ambient noise limits during daytime and night-time for industrial, commercial, residential, and ecologically sensitive areas. The rules apply both during the construction and operation of the Project. Violation of the standards for assessing the noise quality due to the Project will lead to penalty as under the EP Act 1986. the Project. Violation of the standards for assessing noise quality due to the Project will lead to penalties under the EP Act 1986.	Yes	Applicable since noise emission is expected from project activity during construction phase. Construction machinery and vehicles to conform to the standards for construction	SPCB
6.	Forest (Conservation) Act, 1980 its subsequent amendments.	The Forest Conservation Act and Rules mandate projects requiring diversion of forest land for non-forest purposes to seek Forest Clearance from the Ministry of Environment and Forests.	Yes	It is envisaged as alignment is passing through the forest area therefore diversion of forest land shall be required under Forest Conservation Act.	State Forest Department, MoEF&CC
7.	Biodiversity Act of 2002 Wildlife Protection Act, 1972 and Wildlife (Protection)	This overarching Act provides protection to wild animals, birds, plants, and matters connected with habitat protection, processes to declare protected areas, regulation of wildlife trade, constitution of state and national board for wildlife, zoo authority,	No	The proposed alignment is not passing through boundaries of any designated wildlife protected area.	State Wildlife Board Central Wetlands Regulatory Authority

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation / Guidelines	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
	Amendment Act of 2002 Wetlands (Conservation and Management) Rules, 2017	tiger conservation authority, penalty clauses and other important regulations. The Rules specify activities which are harmful and prohibited in the wetlands such as industrialization, construction, dumping of untreated waste and effluents, and reclamation. The Central Government may permit any of the prohibited activities on the recommendation of the Central Wetlands Regulatory Authority.		The Project alignment is not located in or crossing from any designated Ramsar site and Important Bird Area (IBA).	
8.	Ancient Monuments and Archaeological sites and Remains Act 1958 and amended thereof. Antiquities and Art Treasures Act (No. 52), 1972	To protect and conserve cultural and historical remains, the act designates area within the radius of 100 m and 300 m from the "protected property" as "protected area" and "controlled area" respectively. No development activity (including building, mining, excavating, blasting) is permitted in the "protected area" and development activities likely to damage the protected property are not permitted in the "controlled area" without prior permission of the Archaeological Survey of India (ASI) if the site / remains / monuments are protected by ASI or the State Directorate of Archaeology if these are protected by the State. Control of moveable cultural property consists of antiquities and art treasures. Regulate the export and trade of antiquities and art.	No	The Project alignment is not passing through any designated Archaeological sites and /or Ancient Monuments. However, if any archaeological remains are found during excavation, NHAI will notify to Archaeological Survey of India.	Archaeological Survey of India, State Dept. of Archaeology
9.	The Motor Vehicle Act. 1988 its subsequent amendments.	Empowers State Transport Authority to enforce standards for vehicular pollution. From August 1997 the "Pollution Under Control Certificate" is issued to reduce vehicular emissions.	Yes	All vehicles used for construction will need to comply with the provisions of this act and obtain Pollution Under Control (PUC)	State Motor Vehicles Department

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation Guidelines /	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
				Certificate for vehicles to be used for projects before commencement of the construction.	
10.	The Explosives Act (& Rules) 1884 (1983) its subsequent amendments.	Sets out the regulations as to regards the use of explosives and precautionary measures while blasting and quarrying.	Yes	Use of blasting materials if required for new quarrying operation and storing of Diesel / Petrol at project site. Contractors need to obtain permission before installation.	Chief Controller of Explosives
11.	Public Liability and Insurance Act, 1991	Protection from accidents due to hazardous materials.	Yes	The Project will involve storage of hazardous materials like Bitumen, blasting and/or other hazardous activities.	Labour Commissioner / District Magistrate
12.	Hazardous and Other Wastes (Management, and Trans-boundary Movement) Rules, 2016 and amended thereof	These Rules outline the responsibilities of the generator, transporter, and recycler of the hazardous waste for handling and management in a manner that is safe and environmentally sound. Project proponent is required to obtain consent from the State Pollution Control Board for generation and storage of hazardous waste like transformer oil, etc. irrespective of quantity of waste. As per the law the occupier and the operator of the facility should be liable to pay financial penalties as levied for any violation of the provisions under these rules by the State Pollution Control Board with the prior approval of the Central Pollution Control Board.	Yes	The Project activities will result in generation of hazardous waste therefore, contractor/s engaged for the Project are required to obtain the prior permission/s from competent authority before installation.	SPCB

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation / Guidelines	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
13.	Construction and Demolition Waste Management Rules, 2016 and Solid Waste Management Rules 2016	Safe disposal of construction waste and municipal solid waste.	Yes	Construction waste shall be generated during the construction phase, which shall be utilized in the Project e.g., for base camp area and haul road. The remaining waste shall be disposed to the Government designated dumping site.	SPCB
14.	E-Waste (Management) Rules, 2016 and as amended in 2018	The Rules have been notified with aim to ensure proper handling, disposal, and environmentally sound management of e-waste.	Yes	E-waste shall be generated during construction and operation phase, which shall be given to the Government approved vendor for disposing.	SPCB
15.	Plastic waste management rules, 2016 and as amended in 2018	The Rules have been notified with aim to ensure proper handling, disposal, and environmentally sound management of plastic.	Yes	Plastic waste shall be generated during construction and operation phase, which shall be given to the Government approved vendor for disposing.	SPCB
16.	Biomedical waste rules, 2016	The Rules have been notified with the aim of ensuring proper handling, disposal, and environmentally sound management of Biomedical waste. These rules apply to all persons who generate, collect, receive, store, transport, treat, dispose, or handle bio medical waste in any form.	Yes	Construction waste shall be generated during construction and operation phase, which shall be given to the Government approved vendor for disposing.	SPCB
17.	Chemical Accidents (Emergency Planning,	Protection against chemical accidents while handling any hazardous chemicals resulting.	Yes	The Project will involve storage and handling of hazardous (flammable, toxic	District and Local Crisis Group headed by the District Magistrate

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation / Guidelines	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
	Preparedness and Response) Rules, 1996			and explosive) chemicals during road construction.	
18.	Mines and Minerals (Regulation and Development) Act, 1957 and amended thereof,	Permission of Mining of aggregates and sand from riverbed and aggregates.	Yes	Mining of sand, soil or aggregates shall require permission from the mining dept.	State Department of Mining
19.	The Building and Other Construction Workers (Regulation of Employment and Conditions of Service) BOCW Act, 1996	This Act provides for safety, health and welfare measures of building and construction workers in every establishment which employs or employs ten or more such workers during the preceding year. These measures include fixing hours for normal working day, weekly paid rest day, wages for overtime, provision of basic welfare amenities like drinking water, latrines, urinals, crèches, first aid, canteens, and temporary living quarters within or near the work site. This Act also requires application of the following: Building or other construction workers' (regulation and Employment Conditions of Service) Central Rules 1998 and Workman's compensation Act, 1923 to buildings and other construction workers. These will be followed by contractors and developers during construction and operation phase.	Yes	The Project will employ labour therefore, it is to be ensure through project contractors that basic amenities are provided to the labours and all vendors employed have valid labour license.	District labour Commissioner
20.	The Workmen's Compensation Act, 1923	The Workmen's Compensation Act, 1923 requires if personal injury is caused to a workman by accident arising out of and in the course of his employment, his employer shall be liable to pay compensation in accordance with the provisions of this Act.	Yes	The Project Proponent is required to ensure through its contractors in case of any accident/ injury/ loss of life the workmen should be paid a minimum compensation as	District labour Commissioner

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation Guidelines /	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
				calculated under this act both during construction and operation phase of the Project. The reporting of accidents needs to be done in prescribed forms as per the act and the incident / accident register needs to be maintained accordingly. The Act also gives a framework for calculating the amount of compensation and wages.	
21.	The Contract Labor (Regulation and Abolition) Act, 1970 and Rules	As per the contract labor act, every principal employer is required to get the establishment registered before employing any contract labor. The contractors are also required to provide at minimum amenities like canteen, urinals, restrooms, or alternate accommodation (if night halting labor), first aid, safe drinking water, etc. in case of contractor's failure to provide these amenities, the principal employer is liable to provide such amenities at its cost.	Yes	All vendors will be employed including contractors should have valid labour license.	District labour Commissioner
22.	The Bonded Labor System (Abolition) Act 1976	The Bonded Labor System (Abolition) Act 1976: States that all forms of bonded labor stand abolished, and every bonded labor stands freed and discharged from any obligations to render any bonded labour.	Yes	The Project Proponent is required to ensure compliance with conditions in the Act.	District labour Commissioner
23.	Minimum Wages Act, 1948	The Minimum Wages Act, 1948 requires the Government to fix minimum rates of wages and reviews this at an interval of not more than five (05)	Yes	It needs to be ensured that all the contract workers are provided with conditions of	District labour Commissioner

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation Guidelines /	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
		years. The minimum wage as prescribed for industry by the government is required to be paid by the employers to the staff.		services, rate of wages, holidays, hours of work as stipulated in the rules as per applicability and tenure of service, by the deputed contractor. Compensation to contract workers (own and vendors) should not be below daily wage rate as specified by Government of India. Master roll must be maintained.	
24.	The Child Labor (Prohibition and Regulation) Act, 1986	A child is defined as a person who has not completed 14 years of age. The Act prohibits employment of children in certain occupations and processes (part II, Section 3).	Yes	Project Proponent to ensure that no child labour will be engaged at site for construction or operation works either directly or by the contractors/sub-contractors. Include a clause in the subcontractor agreements prohibiting employment of child labour	District labour Commissioner
25.	ESI Act, 1948 (Employees State Insurance Act, 1948)	The ESI Act provides for certain benefits to employees in case of sickness, maternity, and employment injury. Applicable to employees with less than or equal to a maximum basic salary of INR 15000 per month.	Yes	Contractors to ensure compliance as per the applicability.	District labour Commissioner
26.	Interstate Migrant workmen (Regulation of employment and	This act helps the government to keep track of the number of workers employed by the establishments	Yes	The Project may employ migrant labour therefore, contractors to ensure	District labour Commissioner

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Regulation / Guidelines	Relevance	Applicability (Yes / No)	Reason for Applicability	Implementing / Responsible Agency
	condition of service) Act, 1979	<p>and provide a legal basis for improving the conditions of the migrant workers.</p> <p>As per this law, the contractors deploying the migrant workers must provide terms and conditions of the recruitment to the workers mainly related to the remuneration payable, hours of work, fixation of wages and other essential amenities.</p> <p>This law is applicable to all the establishments employing five or more migrant workmen from other states. In addition to this, this law is also applicable to contractors who have employed five or more inter-State workmen.</p>		compliance as per the applicability of the Act and specifically guidelines imposed by the State and Center Government during COVID 19 Pandemic.	
27.	Equal remuneration act, 1976	Act provides for payment of equal wages for work of same and similar nature to male and female workers and for not making discrimination against female employees in the matters of transfers, training, and promotion etc.	Yes	Compensation to all workers (own and vendors) should be paid equally as specified by Government of India. No discrimination on payments to the workers should be made due to gender, religion, race, age, etc.	District labour Commissioner
28.	Sexual harassment of women at workplace act, 2013	An Act to provide protection against sexual harassment of women at workplace and for the prevention and redressal of complaints of sexual harassment and for matters connected therewith or incidental thereto.	Yes	Project proponent is required to sterically enforce the provision of the Act for the protection of women workforce in the Project.	Ministry of women and child development/ District labour Commissioner



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 1-4: Primary and Secondary Information Sources

Parameters	Information Source
Technical information	Design Report
Inventory of Community structures, environmentally sensitive locations areas, etc.	Total station surveys, Google Earth, Bhuvan, Survey of India Maps, Primary Transect Walk
Climatic Condition and Meteorological data	India Meteorological Department, Districts Groundwater Brochure of CGWB, Primary data collection
Geology, Seismicity, Soil and Topography	Districts Groundwater Brochure of CGWB, Seismicity data available of National Disaster Management Authority Website
Land Use / Land Cover (100m and 15 km on either side of project alignment)	Survey of India Toposheet, Google Earth, Bhuvan, and Ground Truthing
Drainage Pattern (100m either side of project alignment)	Survey of India Toposheet, Total Station Survey, Districts Groundwater Brochure of CGWB, field observation and consultation with stakeholders
Ecology and Biodiversity and identification of Forest Area (in and around vicinity of project alignment)	Onsite survey, Consultation in DFO/wildlife office, Research generals and I-bat
Ambient Air quality, Noise Level, Soil Characteristics and Water Quality	Onsite monitoring and Analysis of Field samples, SPCB and CPCB published data
River geo-morphology, hydrology, drainage, flood patterns	Water resource Dept., Districts Groundwater Brochure of CGWB, outcome of the consultation and field observations
Socioeconomic Environment	Primary Survey, Census of India, and Public Consultation

1.6.6 Assessment of Alternatives

With and without project scenarios have been assessed. The assessment of alternatives included that of Process Technology (pavement, cross-sections, etc.), sources of materials from an environmental management perspective, selection of alignment, etc.

1.6.7 Assessment of Impacts

Assessment of potential impacts has been carried out based on the Project design and baseline environment data as collected from primary and secondary sources. Assessment of the environmental impacts were carried out to ascertain the direct and indirect impacts likely to be induced due to proposed development. The general impacts are land acquisition and allied impacts on society, dust, and air pollution due to removal of structures, trees and vegetation, and other construction activities; noise pollution due to construction activities, loss of flora and its impacts on the ecology and impacts on water resources.

For each impact predicted, feasible and cost-effective mitigation measures have been suggested to reduce potentially significant adverse environmental impacts to acceptable levels.

1.6.8 Environment Management and Monitoring Plan

All affirmative action's not only to avoid and deter but also to capitalise on the opportunities provided by the Project to improve the environmental conditions have been deliberated. The various mitigation and enhancement measures proposed have been included in the EIA report. Based on their applicability, both general and case specific measures were incorporated.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

The EMP action plan has been prepared to detail out the implementation plan of the proposed mitigation and enhancement measures. Monitoring indicators have been identified to have a continuous check on impacts associated with project activities.

1.7 Structure of the Report

The EIA report excluding the first chapter has been structured into the following chapters:

Chapter- 1 Introduction describes the Project category, location, and sensitivities etc.

Chapter- 2 Project Description describes the Project design features related to environment, health, and safety aspects.

Chapter- 3 Analysis of Alternatives details out the various alternatives for the Project stretch, construction technology alternative, etc.

Chapter- 4 Description of the Environmental describes the existing environmental set up of the study area.

Chapter- 5 Anticipated Environmental Impact and Mitigation Measures details out about impacts associated with the proposed developmental activities. Mitigation measures for identified impacts are also covered in this chapter.

Chapter- 6 Environmental Monitoring Programme discuss about the monitoring indicators, reporting mechanism and responsibility distribution for successful implementation of Environment Management Plan

Chapter -7 Additional Studies covers details about the Public Consultation and Hearing. Chapter also contains the brief of additional studies suggested by MoEF&CC during ToR appraisal meeting.

Chapter- 8 Project benefits to the local community and environment are discussed in this chapter.

Chapter- 9 Environmental Management Plan details both the generic and specific EMPS for the Project Highway. Implementation arrangements give a brief about the implementation methodology. This chapter also discusses about the Environmental Budget.

Chapter- 10 Summary and Conclusion briefs the EIA study outcome along with recommendation for the Project.

Chapter- 11 Disclosure of Consultant briefs the consultant engagement in the Project.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

2 PROJECT DESCRIPTION

This Chapter covers the description of those aspects of the Project likely to cause environmental effects. This chapter also provides background information of the proposed project, brief description and objectives of the Project and description of the area.

2.1 Alignment Profile

The proposed Greenfield Highway alignment starts from Bhaisma village at Ch. 8/150 of State Highway-04 and terminates near Turua Ama village, 10 km away from Pathalgaon along NH-43 towards Jharkhand border. Total length of the proposed alignment will be 87.535 km.

Project road runs in west-east direction and lies almost in central part of Chhattisgarh state. The latitude and longitude of the start and end point of the proposed alignment are as given below.

Table 2-1: Project Coordinates

Location	Latitude	Longitude
Urga/ Bhaisma	22° 15' 54" N	82° 47' 50" E
Pathalgaon/ Tarua ama	22° 33' 42.96" N	83° 33' 52.58" E

The proposed alignment runs through nearby villages of Gidhauri, Dongdarha, Dongama, Nonbirra, Srimar, Sakdukan, Kotmer, Kartala, Champa, Chachiya, Katkona, Jilga, Narkalo, Bayasi, Dharamjaigarh Colony, Ganeshpur, Sisringa, Bhalupakhana, Saskoba, Charkhapara, Tildega, Pathalgaon, Kumekela. bypassing all major/minor built-up areas. The proposed alignment passes through three districts namely Korba, Raigarh and Jaspurnagar at the locations shown below:

Table 2-2: Districts along Proposed Alignment / Chaninage

District	From	To	Length (km)
Korba	70+200	106+400	36.200
Raigarh	106+400	145+510	39.110
Jaspurnagar	145+510	157+745	12.235

MAJOR ROADS CROSSING

- Kharsia – Hati – Dharmjaygarh Road at Design Chainage 113+300
- Raigarh – Dharmjaigarh SH-01 at Design Chainage 118+050
- Katni – Ambikapur - Pathalgaon - Kunkuri – Gumla NH-43 at Design Chainage 156+680

RAILWAY CROSSING

The Project Road crosses Korba-Champa broad gauge railway line at existing km. 1+040 before start of project road. At present Railway has planned a new railway line Dharamjaigarh – Durgapur mine feeder route for which DPR is in progress. ROB at km. 111+589. is proposed to be constructed as per requirement of railway.

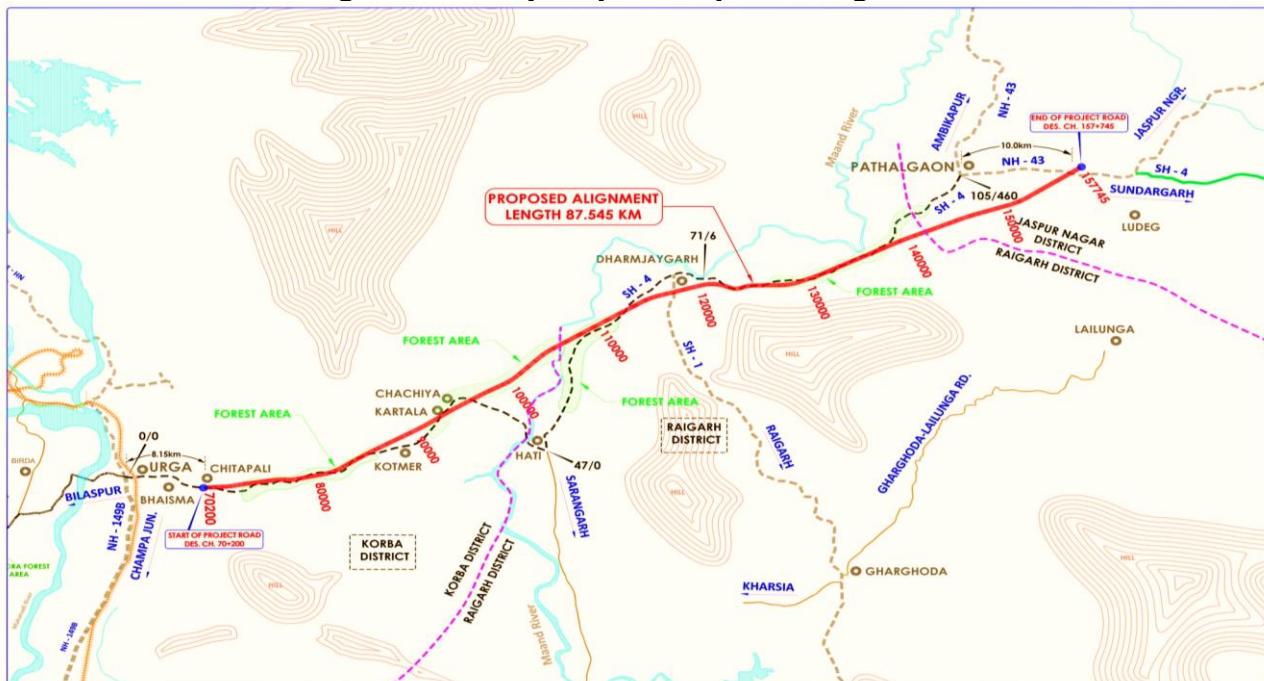


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 2-1: Key map of Proposed Alignment



2.2 Project Features

The Project highway is a greenfield highway with 4 lane configuration dual carriageway with central raised median and shall follow the 4 lane standards as per IRC SP 84-2019. The various aspects of design that have been considered in the development of design for the proposed highway are brought out in this section. It mainly consists of geometrics of highway, interchange design, junction design, cross sections, drainage design, pavement design, structure design for culverts, bridges, flyover, VUP's, LVUP's, SVUP's, and interchanges.

2.2.1 Design Speed

Design speed adopted for main highway – 100 km/h and for service road – 60 km/h.

2.2.2 Proposed Right of Way

The proposed RoW shall be minimum 60m in general throughout the Project stretch however, PRoW in forest area varies from 30m to 65m as the proposed road is passing through undulated, rolling, and hilly terrain at several locations. RoW will also vary at locations such as Toll Plaza, Rest Area, Highway Amenities, Truck Lay Bye, Interchanges and Junction, where additional land shall be acquired as per design requirement. RoW requirements in Forest area is presented in Annexure 2.1.

2.2.3 Cross Sectional Elements

Drawings of these Cross-sections and schedule of Cross-sections are given as Annexure 2.2.

Access Control Measures: The proposed project highway will be operated as a fully access controlled highway, to improve the safety and operational efficiency of the highway. The control on access is provided through the measures such as underpasses, service roads, acceleration/deceleration lanes, designed entry/exits etc.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

GRADE SEPARATED STRUCTURES

Grade separate structures are provided at 50 different locations. The details of proposed grade separated structures is provided in **Annexure 2.3** while the summary for the same is given in **Table below:**

Table 2-3: Summary of Grade-Separated Structures

Type of Structure		Nos.
EUP	(2x30x7,3x30x7,4x30x7,5x30x7 & 8x30x7)	11
EOP	2x25x5.5	1
VUP	2x20x5.5	1
VUP	1x20x5.5	10
Flyover	6x30x5.5	1
LVUP	1x12x4	6
SVUP	1x7x4	18
Overpass	2x30x5.5	2
Total grade separator		50
ROB	1x35+1x54+1x35	1

VERTICAL CLEARANCE AT UNDERPASSES

Four types of underpasses are proposed as per the requirement of vertical clearances.

Table 2-4: Details of Vertical Clearances at Underpasses

S. No.	Structure	Vertical clearance
1	At VUP/VOP/EOP	5.5 m
2	At LVUP	4.0 m
3	At SVUP	4.0 m
4	At EUP	7.0 m

SERVICE ROADS/SLIP ROADS

The service roads were proposed under following scenarios:

- At built-up areas to facilitate the movement of local traffic.
- If any road is not provided with grade separation facility due to site condition, the same is connected through service road with the nearest grade separator.

ENTRY/EXITS RAMPS

Entry/Exits have been provided at six (06) locations at proposed toll plaza.

PAVEMENT DESIGN

The pavement condition of existing road varies from fair to very poor condition and for most of the section of project corridor is poor. The pavement condition of the Project Road in the initial sections from km. 0+000 to km. 30+000 is good and offering good riding quality. Whereas for the section from km. 30+000 to km. 58+600 pavement condition is very poor. The pavement condition of the Project Road is 12% of existing length is fair condition, 46% in poor and 42% is in very poor condition.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

2.2.4 Drainage

The roadside drainage system shall be designed as per IRC SP: 42 and IRC SP: 50. Provisions have been made for throughout roadside drainage for the proposed road to facilitate the effective drainage of runoff. The safety and durability of roads depends on the proper provision of roadside drains. In the Project alignment, the following types of drains will generally be proposed:

- Lined Drain in Between Main Carriage Way and Service Road
- Unlined Drain in Rural Areas
- Median Drains in Super Elevated Sections
- Chute Drains at High Embankments

2.2.5 Culverts

There is total 159 nos. of culverts out of which 126 are box culverts and 33nos of culverts are proposed for crossroads cum drain works. For junctions 69nos of pipe culverts are proposed.

Table 2-5: Summary of Proposed Culverts

Culvert type	Culverts size	Cross drainage works	Crossroads	For junctions	Total
Box culvert	Variable sizes with max 2x2m			69	69
Box	1x2x2	2	0		2
Box	1x3x3	106	1		107
Box	1x5x3	1	4		5
Box	1x5x4	17	22		39
Box	1x6x4	0	6		6
Total		126	33	69	228

Source: Detailed Project Report

2.2.6 Bridges

27 nos. of bridges are required along the Project Road consisting of 6 major bridges and 21 minor bridges.

Table 2-6: Details of Major Bridges

S. No.	Design Chainage	Name of Nallah	Span (m)	Total Length (m)	Total Width of Structure (m)
1	89+150	Kortimasara Nala	3x30	90	2x13.5
2	92+520	Dhawan Nala	2x30	60	2x13.5
3	99+825	Chuiya Nadi	6x30	180	2x13.5
4	106+375	Mand River	11x30	330	2x13.5
5	120+470	Chikatwani Nala	6x30	180	2x13.5
6	145+498	Bharari Nala	3x30	90	2x13.5

Table 2-7: Details of Minor Bridges

S. No.	Design Chainage	Name of Nallah	Span (m)	Total Width of Structure (m)
1	72+054	Dom Nala	2x25	2x13.5
2	73+630	Nala	1 x 10	2x13.5
3	74+200	Nala	2x8.5	2x13.5
4	74+376	Canal	1x10	2x13.5
5	86+510	Nala	2x10	2x13.5



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Design Chainage	Name of Nallah	Span (m)	Total Width of Structure (m)
6	86+880	Nala	2x11	2x13.5
7	88+420	Nala	2x12	2x13.5
8	93+965	Nala	2x10	2x13.5
9	97+620	Nala	2x7.5	2x13.5
10	100+230	Diwan Nala	2x25	2x13.5
11	101+723	Nala	2x8.5	2x13.5
12	104+580	Nala	2x11	2x13.5
13	119+610	Nala	1x12	2x13.5
14	120+960	Nala	1x10	2x13.5
15	127+150	Nala	2x12	2x13.5
16	128+768	Canal	1x10	2x13.5
17	129+302	Canal	1x10	2x13.5
18	129+463	Nala	3x10	2x13.5
19	129+723	Nala	1x10	2x13.5
20	139+840	Nala	1x10	2x13.5
21	142+443	Nala	1x10	2x13.5

Source: Detailed Project Report

2.3 Project Facilities

2.3.1 Way-side Amenities

Way-side amenities of 2 ha (250x80m) area has been proposed at 2-locations. The area shall accommodate the services such as parking, catering, toilets, essential shopping, repair and refuelling, highway information etc.

Table 2-8: Location of Wayside Amenities

S. NO.	Design Chainage	Side
1	112+080	RHS
2	114+610	LHS

2.3.2 Truck Lay-byes

Truck lay-byes have been proposed at the following locations.

Table 2-9: Location of Truck Lay-byes

S. No.	Design Chainage	Side	Nearest Village
1	88+100	LHS	Kartala
2	95+100	RHS	Chachiya
3	127+640	LHS	Ganeshpur
4	145+150	RHS	Charkhapara

Source: Detailed Project Report

2.3.3 Toll Plaza

Toll Plaza have been proposed at 6 locations on slip road with entry/exit ramps. Traffic Signs and Other Road Appurtenances. The road furniture proposed to be provided includes routine and special road signs, kilometre, and 200 m stones. Road delineators and warning/ caution/ informatorily signs are also considered in the estimate. Road marking would be generally standard



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

centreline using thermoplastic paints. Boundary Pillars are proposed in the entire length on both sides at an interval of 200m.

Design details, Optical performance details and details of fixing and placement shall be in accordance with 4 lane manuals. The size of "Chevron" Signboard is 400mm x 550mm. The signboard shall be in accordance with specification Cl. 801.3 of MoRT&H guidelines for high intensity grade sheeting. Chevron sign boards shall be installed at 10m c/c at all curves with their embankment height more than 3 along the outer edge facing the traffic of nearby lane.

2.4 Raw Material for the Project

Quantity of the construction material required for the proposed Project is given in table below.

Table 2-10: Raw Material Requirement

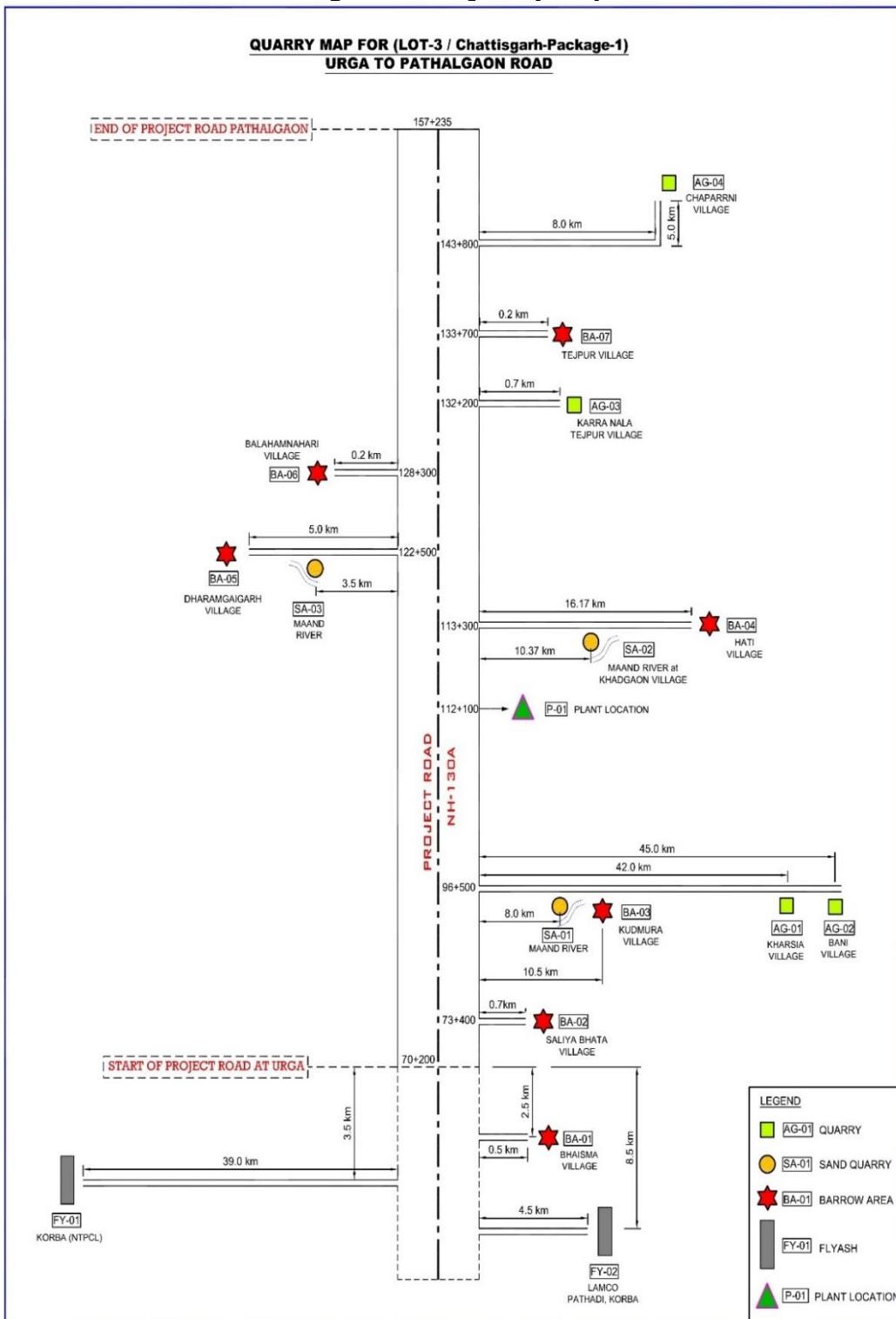
S. No.	Particulars	Unit	Compacted volume	Loose volume
1	Embankment fill	m ³	54,78,364	76,69,710
2	Selected fill on RE wall	m ³	11,86,193	16,60,671
3	Sub grade fill	m ³	13,67,198	19,14,077
4	Fly ash fill	m ³	55,41,700	77,58,380
5	Median fill	m ³	1,42,838	1,99,973
6	Bitumen	MT	36,664	36,664
7	Emulsion	MT	2,282	2,282
8	Cement	MT	2,21,007	2,21,007
9	Steel reinforcement	MT	37,546	37,546
10	Strand wire		1,922	1,922
11	Aggregates	m ³	20,47,776	20,47,776
12	Sand	m ³	6,89,190	6,89,190
13	Stone	m ³	3421.00	3,421
14	Water			
14.a	1 water requirement for earth work	KL	32,91,910	
14.b	Water requirement for concrete work	KL	1,10,504	
14.c	Water for curing	KL	6,631	
Total requirement of water		KL	34,09,045	

Source: Detailed Project Report

2.4.1 Borrow Area Soil

Extensive survey was conducted to locate the potential source of borrow area soil required for the construction of embankment and subgrade. 07 borrow areas located on both sides along the Project Road were identified.

Figure 2-2: Quarry Map



The locations, lead, and village of borrow soil are given in Table below. The distance of these borrows areas from the Project Road location varies from 0.2 km. to 16.1 km. as shown in the quarry map in **Figure 2.2** below.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 2.2-11: Details of Borrow Areas, Urga to Pathalgaon Road

S. No.	Sample No.	Chainage (km)	Left/ Right	Location/Name of Village	Lead (Km)	Remarks
1	BA 01	67+600	Right	Bhaisma Village	0.4	Private Land
2	BA 02	73+400	Right	Saliya bhata Village	0.7	Private Land
3	BA 03	96+500	Right	Kudmura Village	10.5	Private Land
4	BA 04	113+300	Right	Hatti Village	16.1	Private Land
5	BA 05	122+500	Left	Dharamjaigarh	2.0	Private Land
6	BA 06	128+300	Left	Balahmnahari	0.2	Private Land
7	BA 07	133+700	Right	Tejpur Village	0.2	Private Land

2.4.2 Aggregate and Stone Quarries

A reconnaissance survey was carried out along the entire stretch of highway and identified stone, and sand quarries are listed in **tables below**.

Table 2-12: Details of Stone Quarries

S. No.	Village	Chainage	Side	Dist. From project road (Km)	Capacity
AG 01	Kharsia	96+500	RHS	42.0	Abundant
AG-02	Bani	96+500	RHS	45.0	Abundant
AG-03	Tejpur	132+200	RHS	0.70	Abundant
AG-04	Chaparrni	143+800	RHS	8	Abundant

Table 2-13: Details of Sand Quarries

S. No.	Chainage	Side	Name of Village/River	Lead (Km)
SA 01	96+500	Right	Maand River	8.0
SA 02	113+300	Right	Maand River	10.4
SA 03	122+500	Left	Maand River	3.5

2.4.3 Water

The total water demand of the Project is 34,09,045 KL.

Table 2-14: Details of Water Resource

S. No.	Chainage	Source
W 01	89+110	Canal
W 02	106+900	Maand River
W 03	121+600	Maand River

2.5 Manufactured Materials

2.5.1 Cement

Cement of all verities/types i.e., Ordinary Portland, Portland Slag, and Portland Pozzolana confirming to relevant IS standards are readily available in the market in sufficient quantity, and would be directly supplied by the manufacturer to the Project site.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

2.5.2 Steel

High strength deformed bars manufactured by various steel manufacturing companies confirming IS 1786 are also available with few stock lists. Majority of retailers sell re-rolled steel bars. The materials approved by DGSD can be produced directly from the local market.

2.5.3 Bitumen

The Bitumen of different grades (VG-30, VG-40) will be obtained from HPCL refinery at Vizag, IOCL refinery at Haldia West Bengal and at Paradip (Odisha) and BORL (JV) refinery at Bina (Madhya Pradesh). Selection of refinery shall be as per the availability of material and lead.

2.5.4 Fly Ash

As per Government of India's notification, it is mandatory to use fly-ash in embankment, within 300 km. which is available from KSK Mahanadi Power, Korba Super Thermal Power Plant and of Hasdeo Thermal Power Station, Korba etc. can be used in the Project.

2.6 Power for Project

Power, during construction, will be sourced from local power distribution agency. DG sets as alternative arrangement will be used in construction and labour camp.



3 ANALYSIS OF ALTERNATIVES

Alternative analysis is a technique used to evaluate identified options to select which options or approaches to use have no or minimum adverse impact due to project. The analysis is planned and carried out with the sole purpose of avoiding any negative impact, this section also covers no action alternatives, in situation where no impacts are indicated on local people and area.

This chapter is an attempt to compare feasible alternatives to the proposed project in respect to site selection. The criteria adopted for the evaluation of the alternate route for construction of proposed highway comprise of engineering, economic, environmental, and social considerations. The chapter discusses how environmental and social parameters were assigned due importance and were carefully considered in the analysis of alternatives.

3.1 With and Without Project Alternatives

Considering the site conditions and the scope of development of the area, the 'with' and 'without' project scenarios have been compared and discussed as below.

3.1.1 Without Project Scenario

The "Without project" alternative will have no impacts on the biophysical environment. However, the capacity of the existing highways is insufficient for handling the high volume of traffic and freight movement. especially with respect to anticipated increase in traffic volumes for future use. Further, there are sections of dense settlements/habitations along the existing highway which causes disruptions to the traffic flow and further compounded by the various land use conflicts, in terms of uncontrolled development along the existing highway, vehicular-pedestrian conflicts will create higher probability for accident occurrence. These conflicts lead to reduced efficiency and mobility of the existing infrastructure. The population growth increase in traffic volumes and the economic development along the corridor would continue to occur and will worsen the already critical situation. In the absence of proposed development, the existing unsafe conditions, and the adverse environmental consequences in terms of the environmental quality along the existing roads would continue to worsen. Moreover, if it is decided not to proceed with the Project, then the regional beneficiaries (sub-urban and rural population) of the proposed project will be deprived of the socio-economic development of project region. Therefore, the no-action alternative is neither a reasonable nor a prudent course of action for the proposed project, as it would amount to failure to initiate any further improvements and impede economic development. The inability of the existing infrastructure to meet future demands calls for development of a greenfield access-controlled highway.

3.1.2 With Project Scenario

The 'with project scenario' is found to have a positive impact in the long run on social, environmental, economic, and financial issues. This scenario includes the development of greenfield access-controlled highway. The scenario is economically viable and will improve the existing socio-economic conditions of the Project area. It would thereby, contribute to the developmental goals envisaged by NHAI, MoRT&H, Government of India and enhance the growth potential of the area.

In-spite of the various development benefits likely to grow due to the Project, as is the case of every road development project, the Project would be accompanied by certain impacts on the natural, social, and environmental components. The potential impacts on the various



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

environmental components can be avoided through good environmental practices. Wherever avoidance of negative impact has not been possible, appropriate mitigation and enhancement actions are worked out to effectively offset the environmental damages inflicted due to the Project. Comparative assessments of the "with and without" project scenarios are presented in the following table below.

Table 3-1: Comparative Assessment of "With and Without" Project Scenarios

Component	"With" Project Scenario	"Without" Project Scenario
Highway Geometrics	Access controlled highway	Existing highways of four / six lanes carriageway with poor geometrics
Design Speed	Speed will be higher than the existing highway with no or very less traffic jam incidences	50-60 kmph with traffic jam incidences
Congestion in Settlements	Project will provide free flow of traffic due to access controlled movement	Congestion in urban areas
Felling of trees	Project will involve felling of trees however, a comprehensive plan for plantation of three rows of native species, as per IRC guidelines, shall be provided. Such plantation alongside of forest stretch will be over and above the compensatory afforestation. Tree species should be same as per the forest type.	No felling of trees.
Road Safety Measures	The Project will have access controlled highway, provision of proper road markings and design geometry to reduce accidents	Accident incidents shall rise with an increased traffic volume
Environmental Quality	An aggressive tree plantation as per IRC guidelines and compensatory plantation shall not only improve aesthetics. further shorten distance and free flow traffic condition will reduce carbon emission as expected from similar traffic volumes on existing highway will have less impact on quality of air	Poor due to congestion and high emission levels because of slow movement of traffic. A further deterioration is expected due to Increase in traffic volumes and further congestion
Drainage	Drainage along side the proposed highway shall be improved due to both side drainage facility	These issues shall remain unaddressed on existing highways
Road Side Amenities	Appropriate road side amenities to be provided at various locations along the corridor.	Not adequate
Social Benefits	Employment to local workers during the execution of the Project Development due to improvement in access and connectivity Strengthening of local economies and local industries. Improved quality of life	

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

By looking at the table it can be concluded that "with" Project Scenario, with positive/beneficial impacts will greatly enhance social and economic development of the region and improve the environment, when compared to the "without" project scenario.

"With" project scenario with some reversible impacts is an acceptable option rather than the "Without" project scenario. The implementation of the Project therefore will be advantageous to improve the environmental quality of the region besides to achieve an all-round development of the economy and progress of the region.

3.2 Criteria for Fixing Alignment for Economic Corridor

- The section of the Economic Corridor between two terminal stations should be short and straight as far as possible, but due to engineering, social and environmental considerations some deviations may be required.
- The Project should be constructible and easy to maintain; the Greenfield project should reduce the vehicle operation cost with respect to the existing option already available i.e., using the NH/SHs in combination to reach from point A to point B.
- It should be safe at all stages i.e., during design, construction, and operation stages. Safety audits at each stage should confirm the same.
- The Project initial cost, maintenance cost, and operating cost should be optimum to be considered economical with respect to its options.
- The alignment should be finalised giving due consideration to siting/location of major structures including Major/Minor Bridges, Interchanges and ROBs. The space requirement of interchanges to be kept into consideration to avoid major resettlement.
- The location of spurs for connecting the important towns to be decided while fixing the alignment Options.
- The alignment should follow the unused / barren land to the extent possible to reduce the cost of land acquisition.
- The proposed option in the present case connects the underdeveloped regions of Chhattisgarh which would lead to the development of new growth centres along the proposed highway i.e., paving the way for economic development of the region.

Obligatory points through which alignment options should not pass are detailed below:

Habitations: Proposed alignment is fixed in such a way that traverses at a certain distance from built up areas and avoiding important buildings and structures. However, few isolated buildings falling along the alignment cannot be avoided due to Geometric requirements.

Wildlife Sanctuaries, National Parks, Reserve Forest, and other Eco Sensitive Zones: The proposed alignment does not pass through any Wildlife Sanctuary, National Park, and other Eco Sensitive Zones. However, it passes through forest land. Utmost care is taken while fixing the alignment near forest areas. The MOEF&CC guidelines have been adhered to and the alignment has been fixed keeping it away from any eco-sensitive zone. It was not possible to completely avoid the reserve forest areas. However, every effort has been made to reduce the acquisition of forest area.

Water Bodies: The proposed alignment has been fixed taking due consideration and importance of retaining the existing water bodies as far as feasible.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

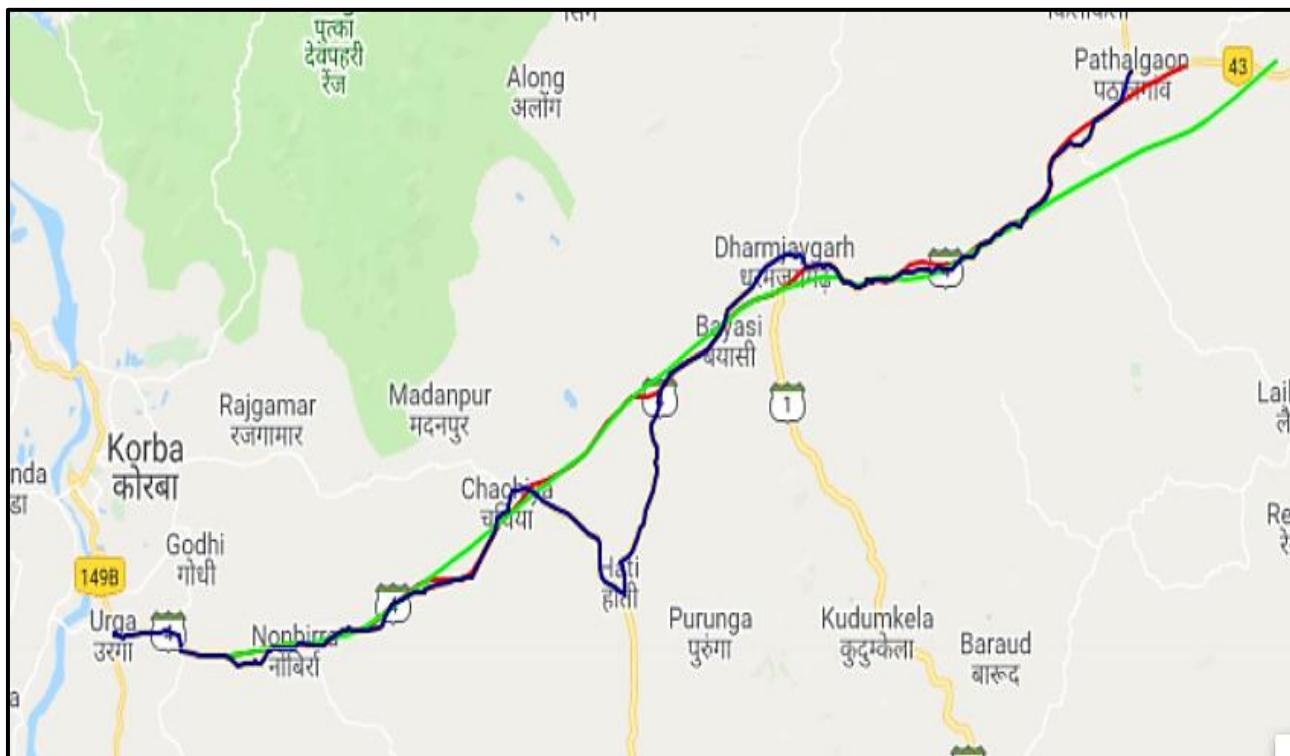
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Railway Crossings and Important Structures: The components which increases the Project cost are the presence of the Major bridges and other structures. To reduce the Project cost number of structures and its length were given due consideration while finalising the alignment.

3.3 Analysis of Alternative

An assessment of alternatives was carried out by considering three alternative routes for the proposed greenfield development. The alternatives were selected through professional experience and consultation with project stakeholders, screening criteria considering potential environmental effects and social acceptability, engineering feasibility and cost. The different parameters considered for each alternative is presented in **Table below** and shown in **Figure 3.1**.

Figure 3-1: Map Showing all the Alternatives



Green: Option -1, Blue: Option -2 & Red: Option -3

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**Table 3-2: The comparative statement for proposed alignment**

S. No.	Description	Option I	Option II	Option III
1.	Length (Km.)	87.545	92.3	107.3
2.	Start point	Alignment starts at Bhaisma village at Ch. 8/150 of SH-04	Alignment starts at Bhaisma village at Ch. 8/150 of SH-04	Alignment Starts at SH 9 near Urga village
3.	End point	The alignment terminates at Turua Ama village, 10km away from Pathalgaon along NH-43 towards Jharkhand border.	The alignment terminates at Turua Ama village, 10km away from Pathalgaon along NH-43 towards Jharkhand border.	The alignment terminates at Ambikapur Highway, Pathalgaon
4.	Districts	Korba, Raigarh and Jashpur	Korba, Raigarh and Jashpur	Korba, Raigarh and Jashpur
5.	Connecting Highways	NH43	NH43	NH43
		SH4	SH4	SH4
6.	Lane Configuration	4		
7.	Proposed Right of Way (m)	60	60	60
8.	Ex. Right of Way (m)	0, as it is a greenfield alignment	0, as it is a greenfield alignment	10 m
9.	Approx. Travel Time (Hrs., Mins.)	2 hrs. 6 minutes	2 hrs. 20 Mins	2 hrs. 45 Mins
10.	No of NH crossings	1	1	1
11.	No of SH crossings	1	1	1
12.	Features	Underpasses 47	Underpasses 57	Underpasses 64
		Flyover 1	Flyover 1	Flyover 3
		Major Bridge 6	Major Bridge 7	Major Bridge 6
		Minor Bridge 21	Minor Bridge 27	Minor Bridge 20
		6 Rivers 03 canal	6 Rivers 27 canal	8 Rivers 20 canal
13.	Number of settlements shall be affected	5	7	43
14.	Length of proposed road along the settlements (Km.)	0.3	0.7	12
15.	Affected Forest Area (Ha)	170(approx.)	188(approx.)	210(approx.)
16.	Land Acquisition (Ha)	769.015	798.171	927.89

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Description	Option I	Option II	Option III
17.	Land Acquisition Cost (Cr.)	641	622	1190
18.	Eco-sensitive/Protected Area	None	None	None
19.	Merits	1. Major part of the alignment passing through the agricultural and barren land with patches of Forest 2. No ESZ areas in the RoW 3. The forest area is less than Option 3. 1. Least Pollution Envisaged 5. Shortest Distance. Hence least time required for commuting. 6. Least land to be Acquired 7. Least number of settlements to be affected 8. Least number of Sensitive Features		
20.	Demerits	-	1. Maximum number of bridges proposed	1. Maximum number of Sensitive Features 2. Maximum Forest Area 3. Maximum Land to be acquired 4. Maximum Settlements to be affected.



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

3.3.1 Justification for Selection of the Site

Based on the analysis of all three alternatives, Option I is preferred due to following reasons:

- Least forest area involved as major part of the alignment is passing through the agricultural and barren land with less patches of Forest as compared to other options.
- There is no Environment Sensitive Zone (ESZ) within the RoW.
- Option 1 has the shortest distance hence it is the fastest requiring least time for commuting.
- Land acquisition for Option 1 will be less in comparison to the other 2 Options.
- The least number of settlements to be affected.
- Least number of Sensitive Features.

3.4 Environmental Considerations

Various mitigation measures for minimizing the extent of environmental impacts and avoiding of sensitive environmental features have been worked out. The table below provides the measures that have been adopted for offsetting the impacts. A description of the measures has been presented in the following sections.

Table 3-3: Minimization of Environmental Impacts

Criteria	Means
Maintenance of Design Speed through traffic	Geometrics as per standard IRC codes
Improvement of Road Safety	Intersection as per IRC safety codes
Adequate drainage	Provision of drains
Reduction of Air and Noise Pollution	Aggressive tree plantations; good EMP implementation practices
Displacement of Local Population	Limiting of development within PROW, SIA and RAP
Minimisation of Direct Impact on Sensitive Receptors, cultural and religious properties	Alignment option analysis, Public consultations, Good EMP measures
Minimisation of Property acquisition	Alignment selection, SIA and RAP
Loss of Water body	Wise design
Avoidance of contamination due to Siltation/ spillage	Silt Fencing, Oil Interceptor
Displacement of Commercial Properties	Alignment Selection, SIA and RAP
Minimisation of Loss of Utility Lines	Utility shifting after concurrence of regulatory authority and stakeholders
Minimisation of Tree Loss	Maximum effort shall be given to avoid avoidable tree felling
Stabilisation of Slope	Turfing / Pitching
Accidental Road Kill of Fauna	Proper Signage, Speed Control

3.4.1 Improvement of Air and Noise Quality

- Siting of greenfield highway beyond the settlement reach;
- Lesser the distance (in comparison to existing route options) will result in lesser carbon footprint;
- Free flow traffic conditions will reduce the jam related air and noise pollutions;
- Provision of Noise barrier.



4 DESCRIPTION OF ENVIRONMENT

4.1 General

As a precursor for the prediction of various types of environmental impacts likely to arise due to implementation of the Project, it is essential to establish the baseline environmental status in project study area. Details of baseline environment parameters are required for decision making for the Project.

This chapter describes the existing environmental settings in the study area. The objective of Environmental Impact Assessment (EIA) is to ascertain the baseline environmental conditions and then assess the impacts because of the proposed project during various phases of the Project cycle. Data on land environment has been collected and compiled from various published sources and field focused surveys. Attributes of the physical environment like air, water, soil, and noise quality in the surrounding area were assessed, primarily through field studies, and by undertaking monitoring and analysis of samples collected from field. Information about geology, hydrology, prevailing natural hazards like earthquakes, etc. have been collected from literature reviews and authenticated information made available by government departments. Climatological data was collected from Indian Meteorological Department. The methodology adopted for data collection is highlighted wherever necessary.

4.2 Study Area

As per the EIA Guidance Manual for Highways (MoEF&CC, February 2010), a study area of 15 km radius from the proposed highway was considered for secondary data collection. Primary data has been collected within 500 meters on both side of the proposed alignment.

To determine the existing status of various environment attributes viz., Air, Water, Noise, Soil quality for proposed project, Baseline Environmental Monitoring study was carried out conducted on either side of the Project during the period from 1st December 2018 to 28th February 2019.

4.3 Methodology

The Approach of consultant to undertake the baseline environment study includes sound scientific and management practices, to suit the Project requirements to ensure efficiency and effectiveness. The methodology followed for assessment of baseline environment status includes following generic steps:

- Reconnaissance survey
- Secondary data collection from government, non-government, and academic institutions.
- Primary data generation at various points representing study area for multi-disciplinary activities.
- Data compilation, collation, and analysis.
- Data interpretation with respect to regulatory requirements.

4.4 Physical Environment

Physical environmental components along the Project Road are described below.

4.4.1 Physiography

Physio graphically, Chhattisgarh can be divided into three distinct units i.e.,

- Bastar plateau region on the southern part,
- Chhattisgarh Plain region on the central part and



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Northern hilly region on the northern parts of the State.

Geomorphologically the study area displays Structural Plains, Pediment/Pedi plain, Denudational Hills and Valleys which can be divided into two distinct physiographic units as Chhattisgarh Plain with an elevation ranging from 290 to 320m amsl. and Northern Hills Region represented by Structural Plain on Gondwana rocks, Pediment/Pediplain, Denudational Hills and Valleys.

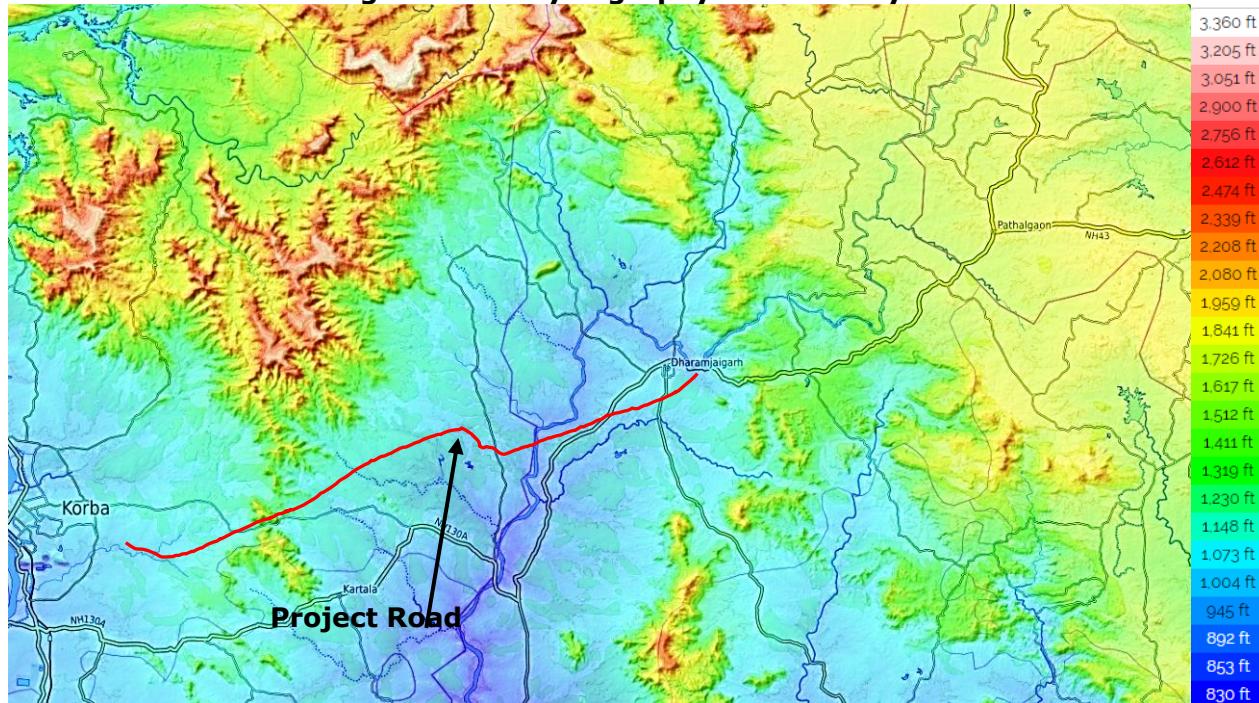
THE CHHATTISGARH PLAIN

It is spread over the central part of the State and covers parts of Bilaspur, Mungeli, Janjgir-Champa, Mahasamund, Dhamtari, Raipur, Balodabazar, Gariyaband Durg, Balod, Bemetara, Rajnandgaon and Kawardha districts. It forms the structural plains on Proterozoic rocks and matures Pediplain with remnants of few isolated hills and ridges in between flood plains of numerous tributaries of Mahanadi River system. It is characterized by a gently undulating and flat terrain. The overall altitude varies from 750m amsl on north-eastern parts of the area to 284m amsl on south-western parts.

NORTHERN HILLY REGION

It covers from north to the north central part of the area and occupies parts of Sarguja, Balrampur, Surajpur Koriya, Korba, Bilaspur, Jashpur and Raigarh districts. It is a part of Maikal and Hazaribagh hill ranges of central India. It represents structural plains of Gondwana rocks, pediment/pediplain, structural and denudational plateaus, structural and denudational hills and valleys. It supports north flowing tributaries of Son River and south flowing Hasdeo and other tributaries of Mahanadi River. The 4 Narmada, an important west-flowing River of central India, originates from Amarkantak in the central part of this physiographic unit. The highest point in the State is 1197m amsl at Tulisi Dongri range in Dantewada district and the lowest point is 50m amsl at Konta in Dantewada district. A generic topography map of the study area and Elevation Profile of the Project Road is presented in **Figure 4.1** and **4.2** as below:

Figure 4-1: Physiography of the Study Area



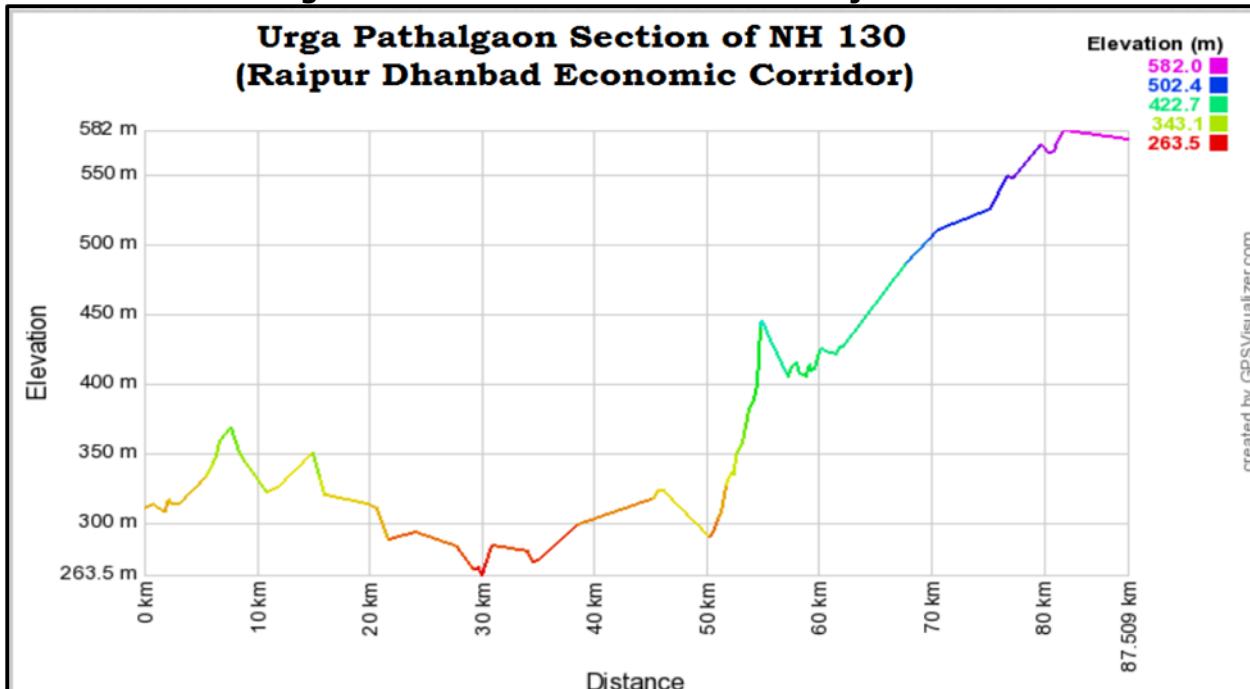


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-2: Elevation Profile of the Project Road



The landform along the stretch of project road is plain to undulating with highly varying elevations as low as 261m amsl to 582m amsl.

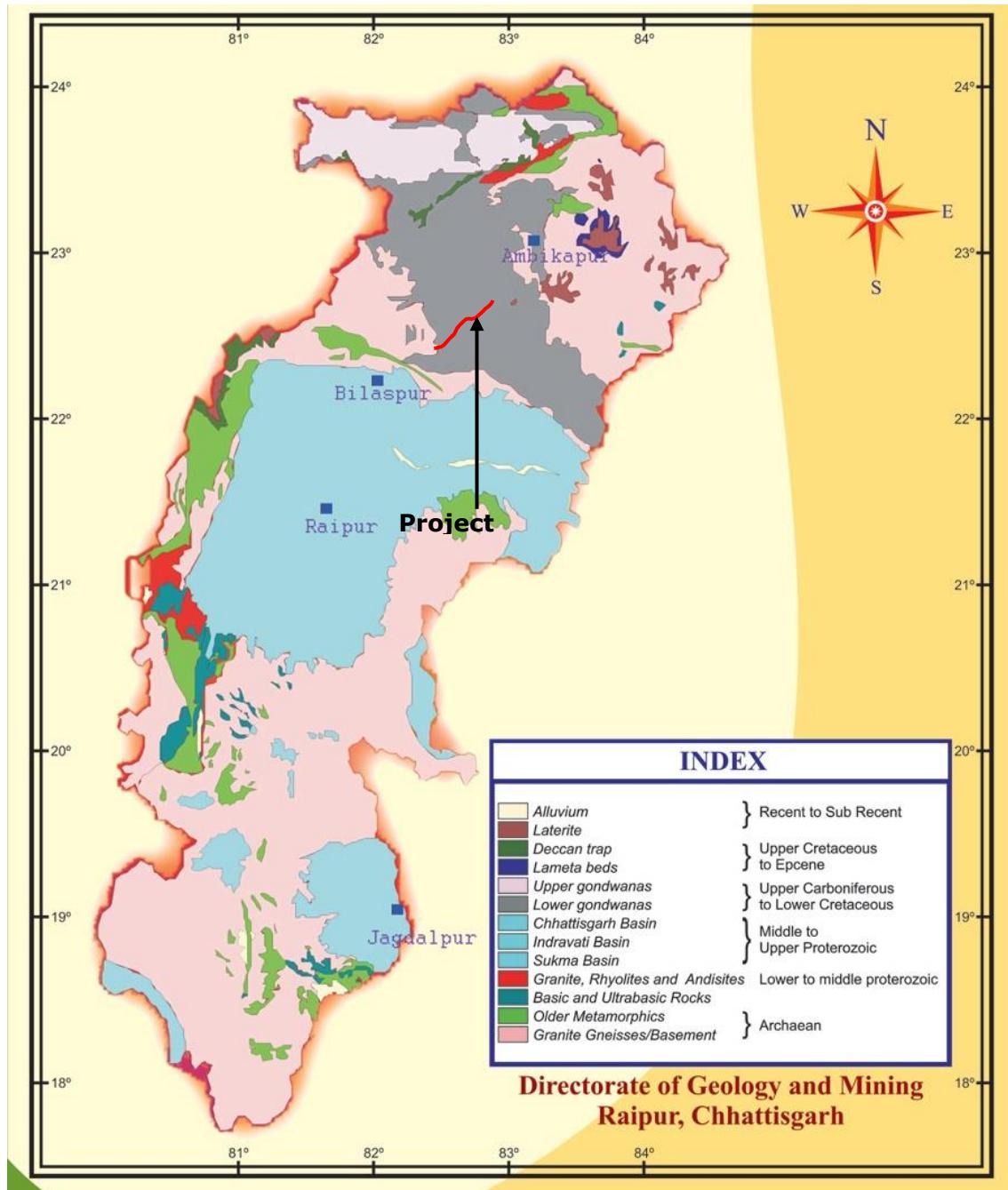
4.4.2 General Geology

The regional geology of the terrain comprises rocks belonging to Dongargarh and Chhattisgarh Supergroups. The thick sedimentary rocks of Chhattisgarh Supergroup are deposited in an intracratonic basin (Pascoe, 1963) and metasedimentary and metavolcanic rocks (Dongargarh supergroup) are exposed in the west of the basin. The 90 km wide and 150 km long NNE Dongargarh supergroup constitutes a major stratigraphic unit in the CIPS (Sarkar, 1957-58). The details are as follows.

Dongargarh Supergroup: It comprises rocks of Nandgaon, Chilipand Khairagarh groups. The Nandgaon group consists of Bijli rhyolite and Pitepani volcanic of andesitic rock formation. Amgaon Group: It is unconformable underlain by Nandgaon Group, consists of quartz sericite and schist, felspathic-garnet epidote, hornblende schist and amphibolite.

Bijli Rhyolite: The Bijli Rhyolite represents thick series of rhyolite with intertrappean rhyolitic conglomerate sandstone, siltstone, shale, and tuffs. These rocks unconformably overlies the Amgaon Group, Sakoli Group rocks and Granitoid gneisses. The folding of Bijli rhyolite took place during Nandgaon orogenic phase and this event followed the extrusion of Pitepani volcanic. Colour range in rhyolite is from white, grey, pink, black etc. with varying proportion of phenocrysts of quartz, potash feldspar and albite plagioclase.

Figure 4-3: Geological classification map of Chhattisgarh



4.4.3 Existing Land- Use Pattern

The land use of the proposed project stretch is agricultural, agricultural/barren areas intercepted with isolated built-up areas with patches of settlements and forest. Majority of the land is owned by local farmers and other private stakeholders. However, there are patches which are owned by forest and revenue dept. of government of Chhattisgarh.

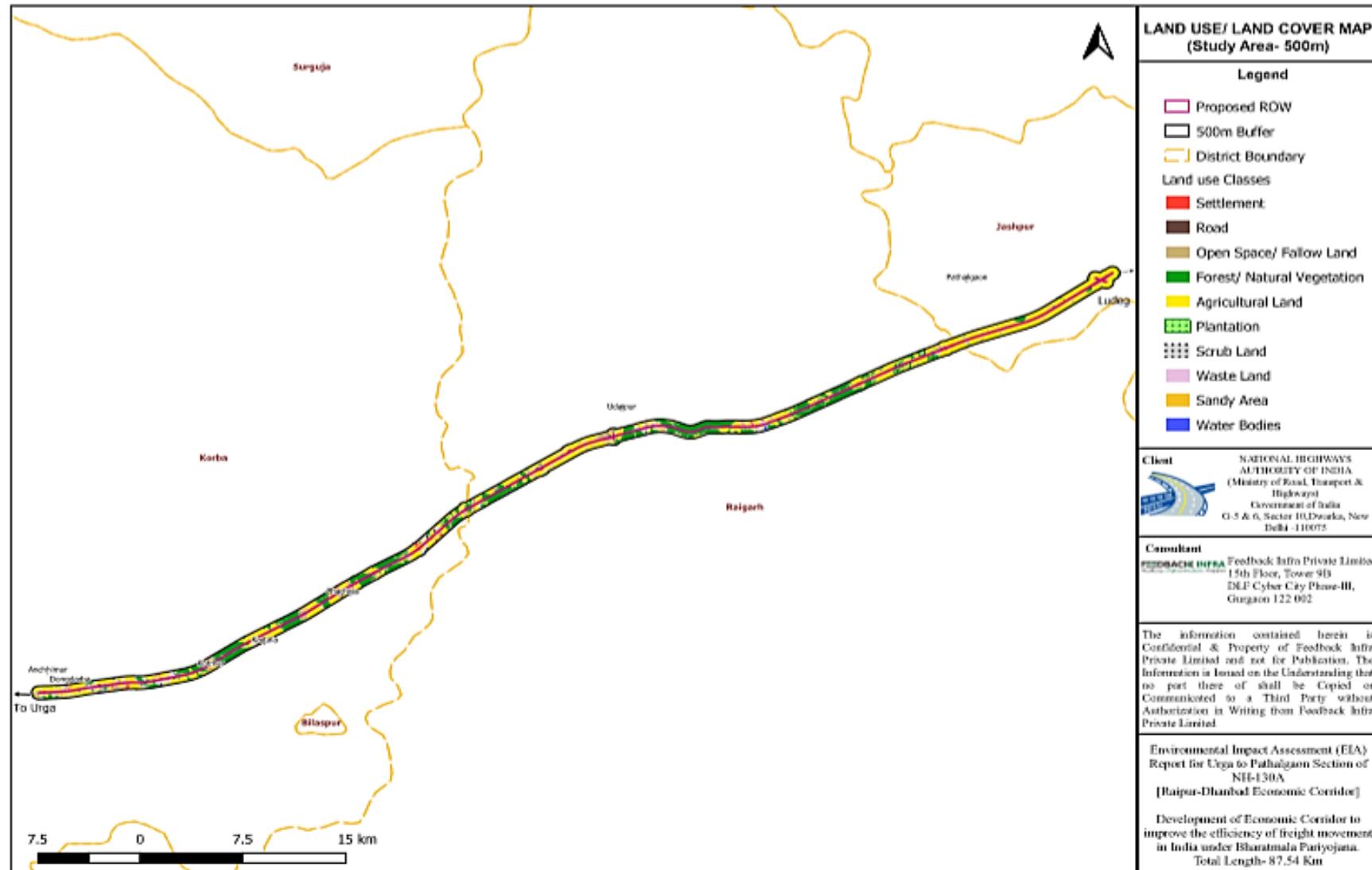


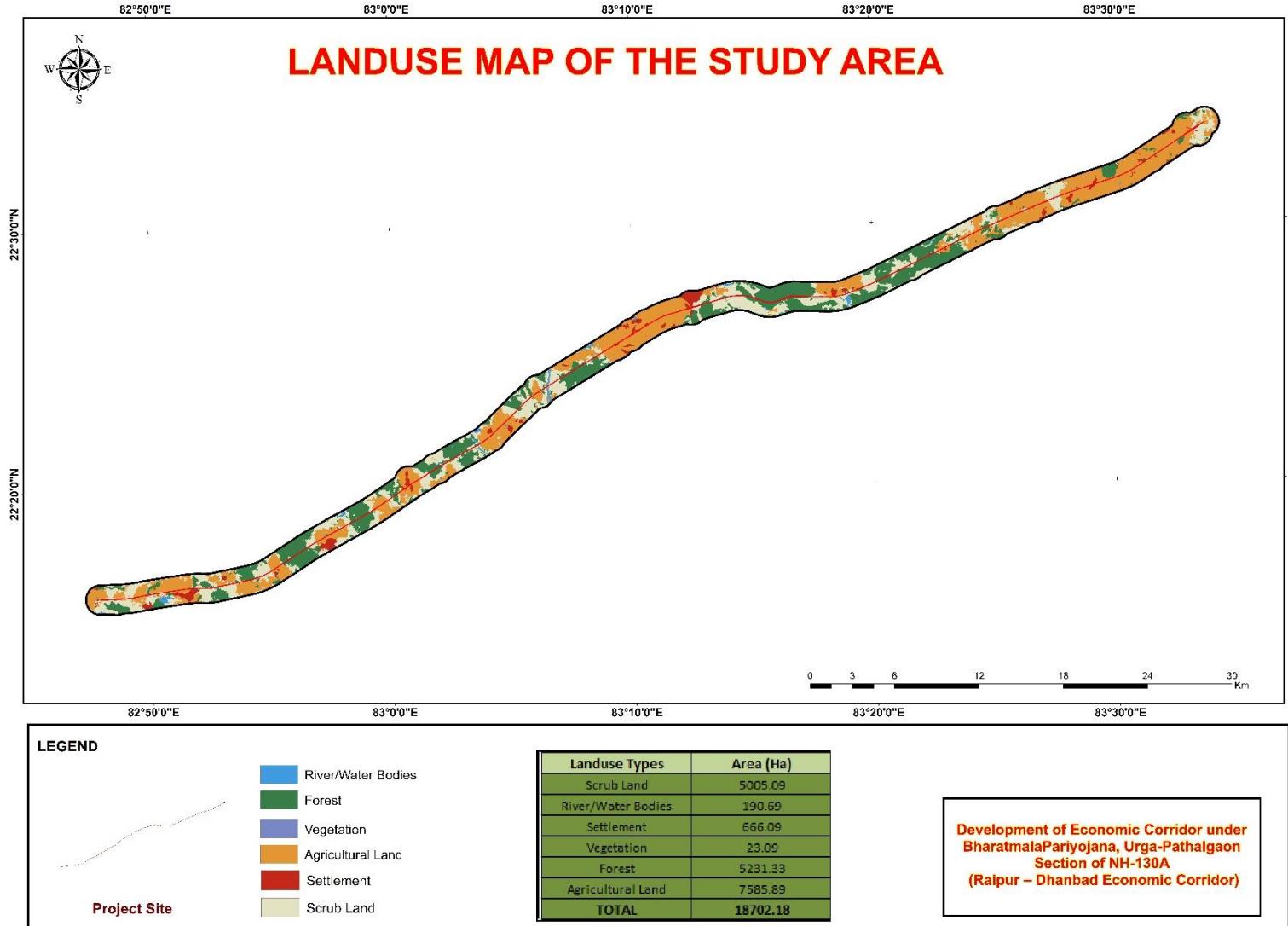
FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-4: Land Use/Land Cover map of 500 m buffer zone of the Project stretch



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)
Figure 4-5: Land Use/Land Cover map of 1 km buffer zone of the Project stretch


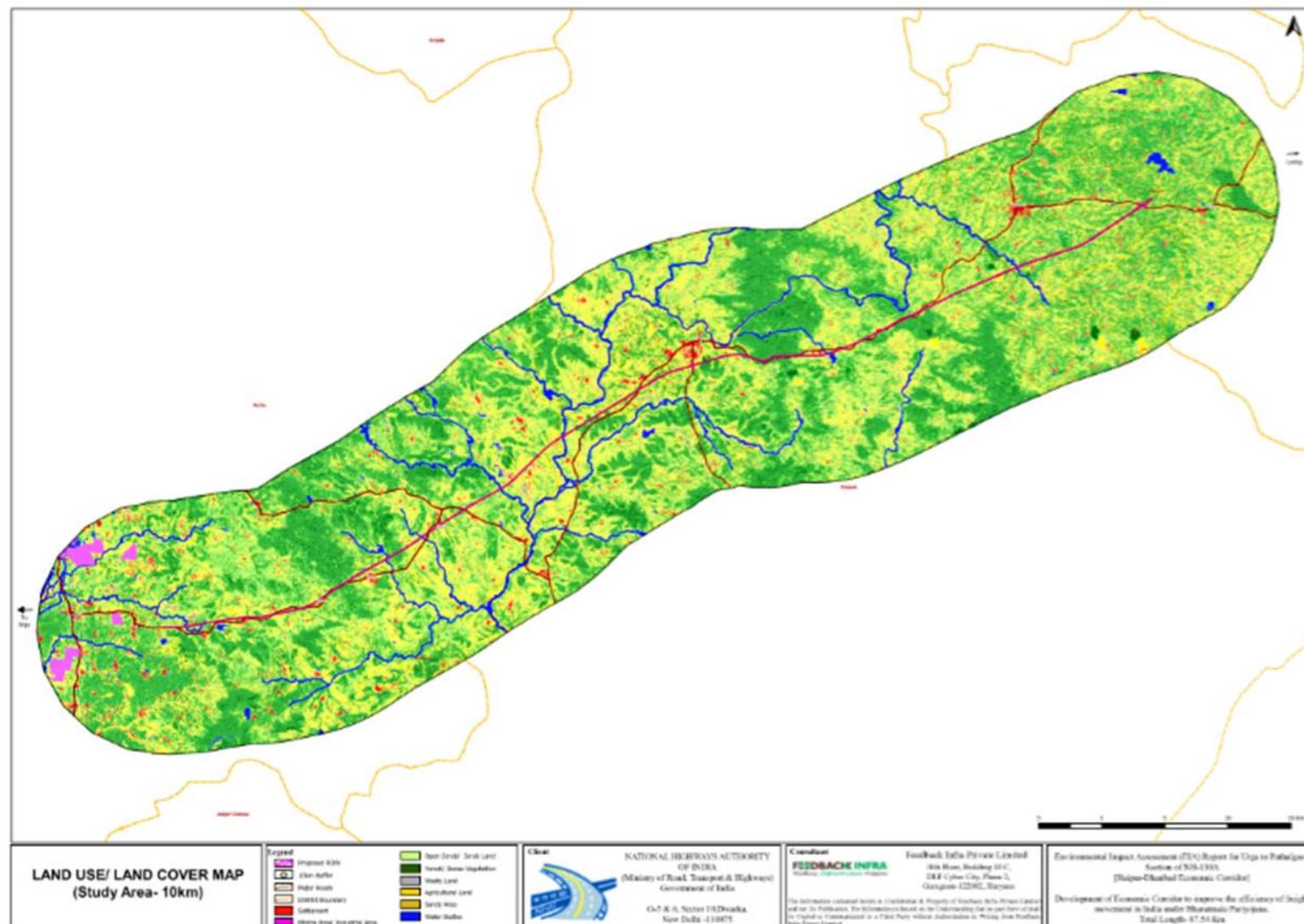


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-6: Land Use/Land Cover map of 10 km buffer zone of the Project stretch





FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Details of Land Use/Land Cover observed in 500 m buffer zone and 10 km study area of the Project stretch are given in **Tables below** and percentage classification is presented in **Figure 4.5** and **4.6** as below.

Table 4-1: Land Use/Land Cover Map of 500 m Buffer Zone of the Project Stretch

S. No.	LU/LC Class (500m Buffer)	Area in Ha.
1	Settlement	194.18
2	Roads	96.10
3	Open Space/ Fallow Land	526.52
4	Forest/ Natural Vegetation	3,057.68
5	Agricultural Land	4,787.77
6	Plantation	34.99
7	Scrub Land	592.45
8	Waste Land	53.75
9	Sandy Area	18.54
10	Water Bodies	73.26
Total		9,435.24

Figure 4-7: Land Use classification of 500 m buffer zone of the Project stretch

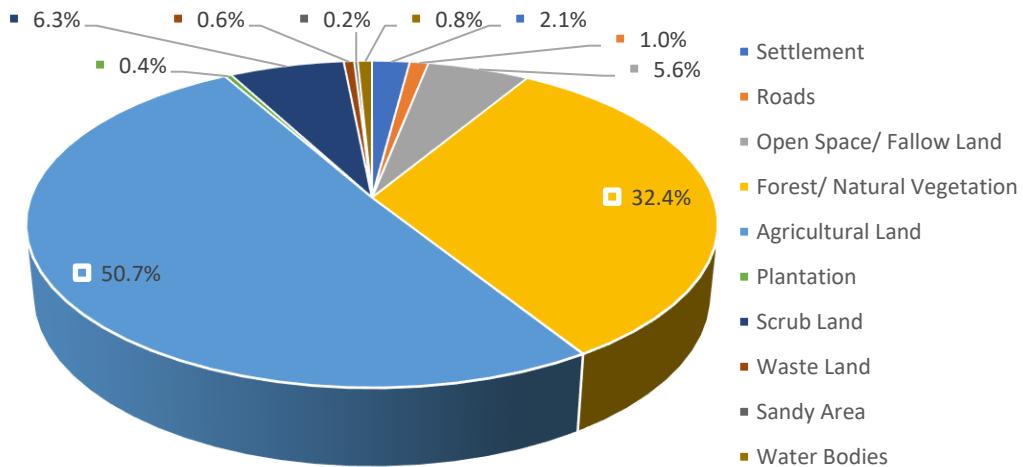
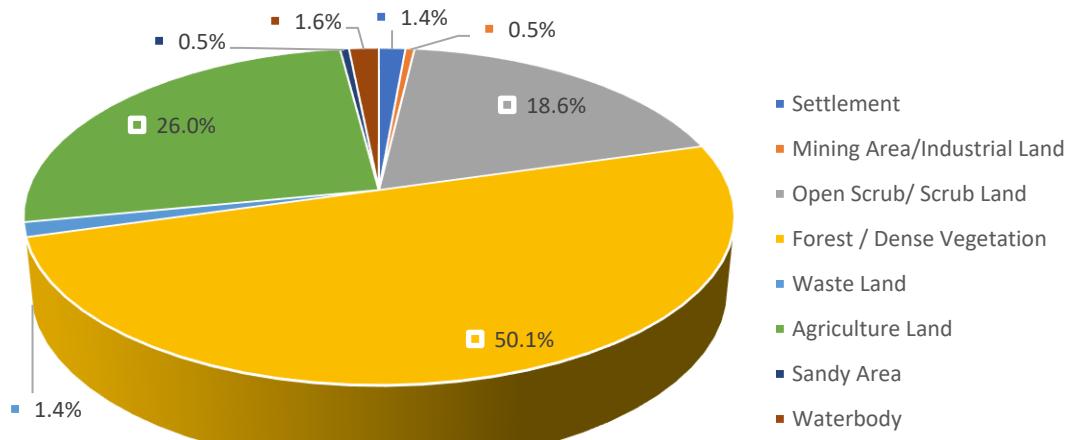


Table 4-2: Land Use/Land Cover Map of 10 km Buffer Zone of the Project stretch

S. No.	LU/LC Class (10km Buffer)	Area in Ha.
1	Settlement	2,895.09
2	Mining Area/Industrial Land	986.68
3	Open Scrub/ Scrub Land	38,564.68
4	Forest / Dense Vegetation	1,03,524.54
5	Waste Land	2861.79
6	Agriculture Land	53,740.57
7	Sandy Area	981.31
8	Waterbody	3,260.14
Total		2,06,814.81

Figure 4-8: Land Use classification of 10 km buffer zone of the Project stretch



The above data indicates that most of the land use in 500 m buffer of the Project is covered by agriculture land with 50.7% followed by area cover with natural vegetation including forest while, in 10 km buffer, forest is the major land cover.

4.4.4 Drainage

The major Rivers flowing in Chhattisgarh State are, Mahanadi, Godavari, and Bramhani. The Project stretch falls in the watershed of River Mahanadi and its tributaries Seonath, Hasdeo, Mand and Arpa which flow through and drain Raipur, Durg, Rajnandgaon, Bilaspur, Raigarh, Korba and Surguja districts. Of all these Rivers Mand is the main river that transverse from North-east direction of the Project and flow towards West direction meeting Mahanadi in state of Maharashtra. Most of the Rivers are perennial in nature. In general, the drainage patterns are Dendritic, Parallel and Angular types.

The proposed alignment crosses Major Rivers/canals at the following locations –

- Pansari Nala at 82+560.
- Kortimasara Nala at 89+165.
- Dhawan Nala at 92+520.
- Chuiya Nadi at 99+825.
- Maand River at 106+375.
- Chikatwani Nala at 120+470.
- Bharari Nala at 145+500.

4.4.5 Climatology

The proposed alignment area is endowed with sub-tropical monsoon climate with three distinct seasons i.e., summer, monsoon, and winter. As per Köppen-Geiger system the region is classified as "Aw", which is Tropical savanna climate or Tropical wet and dry climate indicating dry winters. The summer extends from March to mid-June. The southwest monsoon starts from June and continues till middle of September. Winter season spreads from October and lasts till end of February.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Indian Meteorological Dept. is operating 2 nos. of observatories in near vicinity of proposed highway alignment i.e., Korba and Ambikapur. Considering proximity of Korba observatory, data of Korba station has been considered for the study.

30 years (1981-2010) long-term climatological data was collected and analysed for assessment of prevailing meteorological scenario of the Project region. The details of long-term climatological conditions are given in Table below.

With an average of 35.2 °C, May is the warmest month. December is the coldest month, with temperatures averaging 12.6 °C. The Project area receives an average rainfall of 118.34 mm. The driest month is November with average monthly rainfall of 1 mm. Most of the precipitation here falls in August, averaging 463 mm. Rainfall is the major source of ground water recharge in the area and receives maximum (nearly 85%) rainfall during the southwest monsoon season. The winter rainfall is meagre (10 - 15%).

Table 4-3: Long-term (1981-2000) Climatological Conditions at IMD Observatory at Korba

Parameter	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sep	Oct	Nov	Dec
Avg. Temperature (°C)	19.8	22.5	26.8	31.7	35.2	32.7	27.9	27.5	27.7	26	21.9	19.8
Min. Temperature (°C)	12.9	15.1	19.2	24.2	28.2	27.4	24.7	24.6	24.3	21.2	15.2	12.6
Max. Temperature (°C)	26.7	30	34.5	39.2	42.3	38	31.1	30.5	31.1	30.9	28.6	27
Precipitation / Rainfall (mm)	9	12	26	9	8	178	399	463	260	53	1	2

Figure 4-9: Windrose Diagrams (Pathalgaon & Kotmer)



Pathalgaon

Kotmer

Source- <https://www.meteoblue.com/en/weather/forecast/modelclimate>

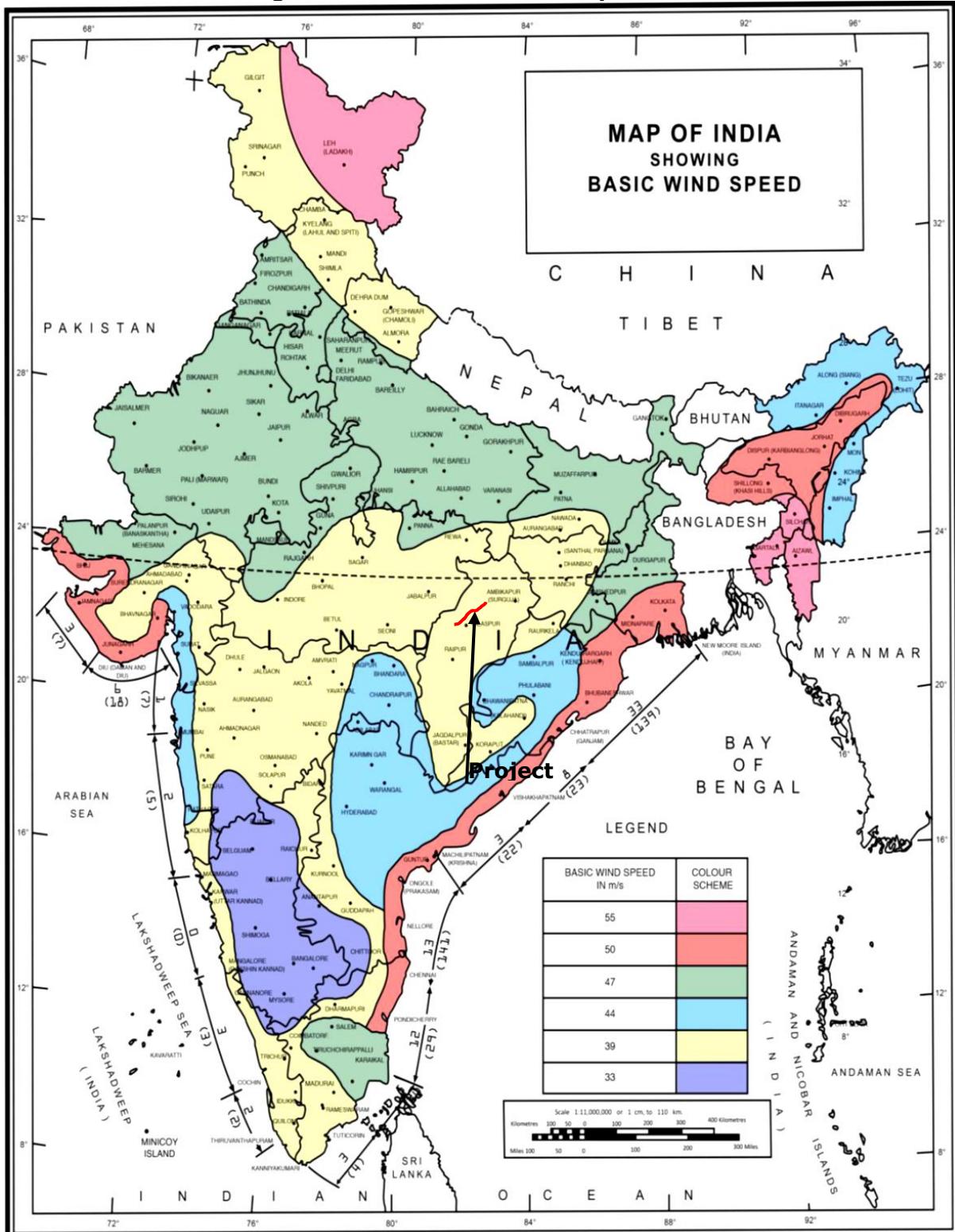
The wind-rose diagram of the Project area given as **Figure 4.8** at Pathalgaon and Kotmer shows that the wind blows mainly from the North-to-North-west direction. The Wind Hazard Map of India shows that the Project area lies in Low Damage Risk Zone with a wind velocity of V<40 m/s. The Wind Hazard Map is shown in **Figure 4.9**.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-10: Wind Hazard Map of India

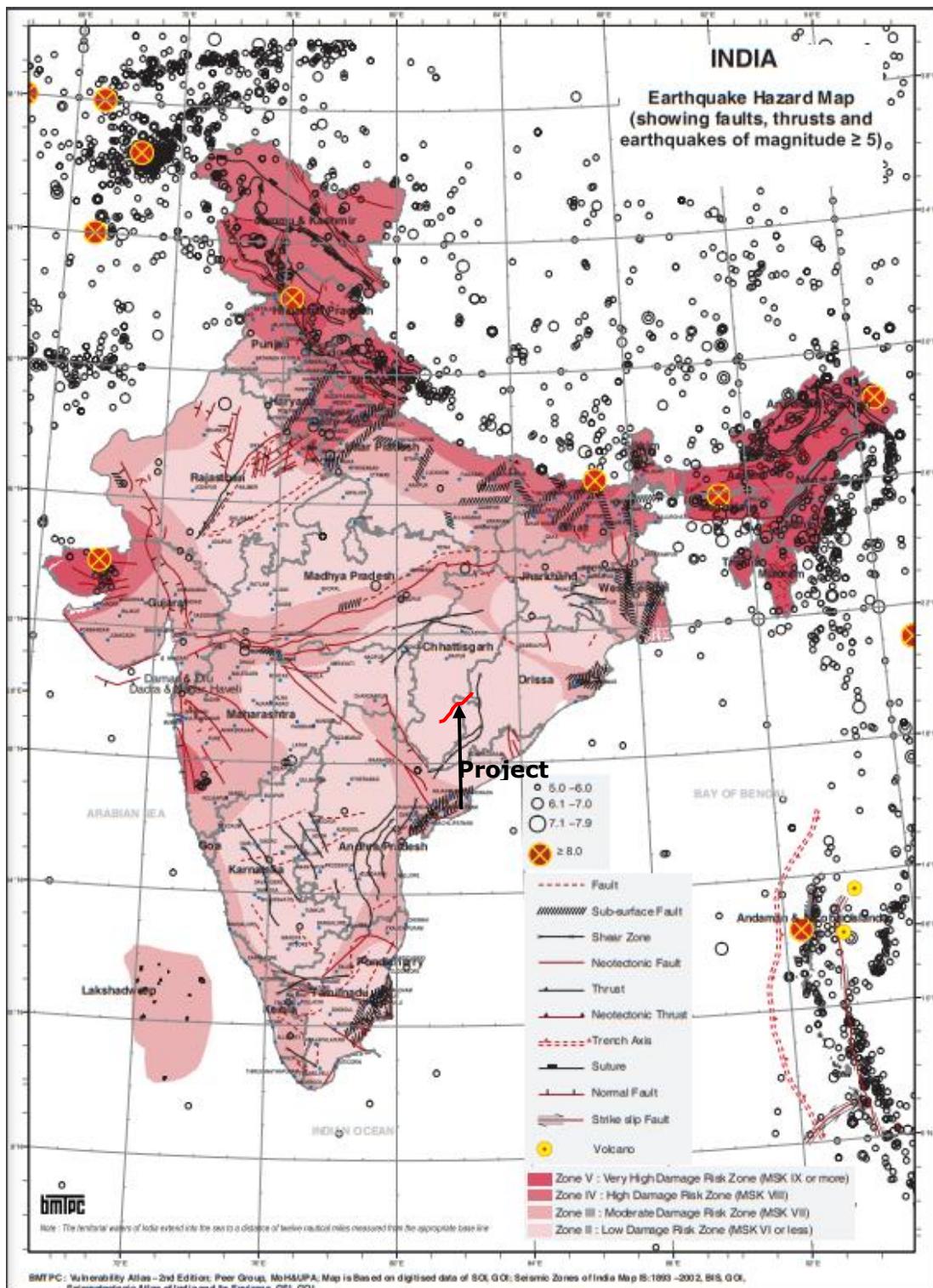


URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

4.4.6 Seismicity

As per seismic zoning map of India, project district falls under Seismic Zone II and III, which is a moderate risk zone. Efforts will be made to design the structure according to the intensity of the zone. The seismic zoning map of India is shown in **Figure 4.10**.

Figure 4-11: Seismic Map of India





FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

4.4.7 Soil Quality

To study the soil quality of the region, sampling locations were selected to assess the existing soil conditions in and around the Project area representing various land use conditions. The physical and chemical concentrations were determined.

Soil samples were collected at eight locations as tabulated in **Table below**. The sampling locations were identified with the following objectives:

- To determine the baseline soil characteristics of the study area and
- To determine the impact of proposed project on soil characteristics

The Soil samples were collected from three different depths viz., 30cm, 60cm, and 100cm below the surface. The samples were analyzed for physical and chemical characteristics. The samples have been analyzed as per the established scientific methods for physio-chemical parameters.

Table 4-4: Soil Quality (SQ) Monitoring Stations/Location

S. No.	Location Code	Location Name	Geo- Coordinate
1	UPSQ -1	Dongdarha	N 22° 16' 4.3" E 82° 49' 5.4"
2	UPSQ-2	Nonbirra	N 22° 16' 16.0" E 82° 51' 42.6"
3	UPSQ-3	Kartala	N 22° 18' 7.2" E 82° 57' 29.5"
4	UPSQ- 4	Chachiya	N 22° 20' 29.6" E 83° 00' 44.4"
5	UPSQ-5	Bayasi	N 22° 32' 06.9" E 83° 09' 32.0"
6	UPSQ-6	Tildega	N 22° 32' 25.0" E 83° 26' 59.9"
7	UPSQ-7	Pathalgaon Chetwani Colony	N 22° 32' 58.9" E 83° 28' 12.7"
8	UPSQ-8	Kumekela	N 22° 37' 27.4" E 83° 29' 21.4"

Source: Primary Survey by Haryana Test House and Consultancy Services

The summary of soil quality analysis results for the Project stretch is presented in below **Table**. The results are compared with standard classification as given. The monitoring photos of the same are enclosed as **Annexure 4.1**.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**Table 4-5: Soil Test Result**

S. NO.	Parameter	Unit	Standards	SQ-1	SQ-2	SQ-3	SQ-4	SQ-5	SQ-6	SQ-7	SQ-8
1	pH (1:2.5 Soil Suspension)	--	IS 2720 (Part 26):1987	7.73	8.06	7.89	7.70	7.34	7.42	7.88	7.51
2	Moisture Content	% wt./ wt.	IS 2720(Part 2):1973	4.67	4.46	5.79	4.55	2.45	3.05	3.08	3.01
3	Electrical conductivity (1:2.5 Soil Suspension)	µmhos/cm	IS 2720 (Part 26):1987	208	187	151	168	137	133	99	118
4	Organic Matter	% wt./ wt.	IS 2720 (Part 22) :1972	2.96	2.18	2.32	2.31	2.78	2.64	1.66	1.68
5	Texture Classification	--	IS 2720(Part 4):1985	Clay Soil	Clay Soil	Clay Soil	Clay Soil	Silty Clay	Silty Clay	Silty Clay	Silty Clay
a	Sand	% wt./ wt.	IS 2720(Part 4):1985	27.00	28.00	26.0	30	24	24.0	20	21
b	Clay	% wt./ wt.	IS 2720(Part 4):1985	54.00	49.00	38.0	31	32	33.0	32	34
c	Silt	% wt./ wt.	IS 2720(Part 4):1985	32.00	31.00	48.0	46	54	54.0	56	53
6	Bulk Density	gm/cc	IS 2720	1.64	1.55	1.288	1.35	1.68	1.66	1.58	1.52
7	Porosity	% wt./ wt.	IS 2720	70.0	64.0	58.0	59	56.0	54.0	54.0	52.0
8	Available Nitrogen	% wt./ wt.	IS 7874(Part-1) :1975	0.12	0.10	0.11	0.12	0.30	0.21	0.32	0.36
9	Available Potassium	% wt./ wt.	IS 7874	0.24	0.18	0.13	0.19	0.23	0.13	0.22	0.24
10	Available Phosphorous	% wt./ wt.	IS 7874	0.10	0.08	0.022	0.022	0.031	0.027	0.018	0.028
11	Lead as Pb	mg/kg	EPA 3050 B	BDL (<1.0)	17.98	19.71	16.86				
12	Iron as Fe	mg/kg	EPA 3050 B	5154.04	4898.24	9439.81	9528.12	34234.64	66155.41	21957.09	21835.66
13	Calcium (as CaO)	% wt./ wt.	EPA 3050 B	2.04	1.65	0.98	0.99	0.84	0.68	0.69	0.94
14	Magnesium (as MgO)	% wt./ wt.	EPA 3050 B	1.04	0.95	1.10	1.20	1.25	1.40	1.20	1.24

Source: Primary Survey by Haryana Test House and Consultancy Services



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 4-6: Soil Test Result Standard Classification

Parameters	Very Low	Low	Moderate	High	Very High
pH	<4, very Strongly Acidic	4-5, Strongly Acidic	5-8, Ideal for Plant Growth	8-9 Strongly Basic	>9 Very Strongly Basic
Electrical conductivity ($\mu\text{S}/\text{cm}$)	<2000, Non saline	2000-4000 Saline	4000-8000 Moderately Saline	8000-16000 Highly Saline	>16000 Extremely Saline
Total Nitrogen (%)	<0.05 Very Low	0.05-0.15 Low	0.15-0.25 Moderate	0.25-0.5 High	>0.5 Very High
Total Phosphorous (mg/kg)	<5 Very Low	5-10 Low	10-30 Moderate	30-60 High	>60 Very High
Sodium (mg/kg)	-	<200 non-Sodic	200-500 Moderate	>500 Sodic	-
Potassium (mg/kg)	-	<150 Low	150-250 Moderate	250-800 High	>800 Very High
Calcium (mg/kg)	-	<1000 Low	1000-2000 Moderate	>2000 High	-
Magnesium (mg/kg)	<40 Very Low	40-100 Low	100-300 Moderate	>300 High	-
% Organic Matter	0.5-1.0 Very Low	1.0-2.0 Low	2.0-3.0 Moderate	3.0-5.0 High	>5 Very High

OBSERVATIONS

It has been observed that the pH of the soil ranges from 7.34 to 8.06. Conductivity of the soil ranges from 99 to 208 $\mu\text{S} / \text{cm}$. Since the EC value is less than 4000 $\mu\text{S}/\text{cm}$, the soil is saline in nature. Texture of the soil sample is found to be as Silty to Silty Clay in nature.

4.4.8 Ambient Air Quality

The prime objective of baseline air monitoring is to evaluate the existing air quality of the Project area. A network of eight ambient air quality sampling locations along the Greenfield Connectivity has been selected for assessment of the existing status of air environment within the study zone. The selection of monitoring locations has been distributed throughout the study area to get representative baseline of any variation in land use as well as road geometrics and traffic conditions across the proposed alignment including the baseline at sensitive receptors along the Project. The design of monitoring network in the air quality surveillance programme has been based on the following considerations:

- Topography / Terrain of the study area
- Human Settlements
- Health status
- Accessibility of monitoring site
- Resource Availability
- Representativeness of the region for establishing baseline status



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Representativeness with respect to likely impact areas

Ambient air quality monitoring was carried out at a frequency of two days per week at each location for three months. The baseline data of air environment was generated for the parameters namely Particulate Matter size less than 10 µm (PM10), Particulate Matter size less than 2.5 µm (PM2.5), Sulphur dioxide (SO₂), Nitrogen dioxide (NO₂) and Carbon Monoxide (CO). The sampling locations of ambient air monitoring stations are presented in below Table below.

Table 4-7: Ambient Air Quality (AAQ) Monitoring Stations/Location

S.N.	Location Code	Geo- Coordinate	Sampler height from ground level	Distance from the road centerline
1	UPAQ -1 Dongdarha	N 22° 16' 4.3" E 82° 49' 5.4"	1.5 meter	70.0 meter
2	UPAQ-2 Nonbirra	N 22° 16' 16.0" E 82° 51' 42.6"	2.5 meter	50.0 meter
3	UPAQ-3 Kartala	N 22° 18' 7.2" E 82° 57' 29.5"	1.5 meter	300.0 meter
4	UPAQ- 4 Chachiya	N 22° 20' 29.6" E 83° 00' 44.4"	2.0 meter	30.0 meter
5	UPAQ-5 Bayasi	N 22° 32' 06.9" E 83° 09' 32.0"	1.5 meter	50.0 meter
6	UPAQ-6 Tildega	N 22° 32' 25.0" E 83° 26' 59.9"	1.5 meter	300.0 meter
7	UPAQ-7 Pathalgaon Chetwani Colony	N 22° 32' 58.9" E 83° 28' 12.7"	2.0 meter	100.0 meter
8	UPAQ-8 Kumekela	N 22° 37' 27.4" E 83° 29' 21.4"	1.5 meter	50.0 meter

Source: Primary Survey by Haryana Test House and Consultancy Services

The summary of ambient air quality results for the Project stretch is presented in below **Table below**. The results indicate that all air quality parameters are within the NAAQS specified standards prescribed by Central Pollution Control Board (CPCB) for "Rural, Residential and other areas". The monitoring photos of the same are enclosed as **Annexure 4.1**.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**Table 4-8: Results of Ambient Air Quality Monitoring**

S. N.	Sample Code	PM10 ($\mu\text{g}/\text{m}^3$)			PM 2.5 ($\mu\text{g}/\text{m}^3$)			SO ₂ ($\mu\text{g}/\text{m}^3$)			NOx ($\mu\text{g}/\text{m}^3$)			CO (mg/m^3)		
		Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average	Min	Max	Average
1	AQ1	67.1	88.9	75.0	37.5	50.5	42.3	12.8	21.8	17.3	16.9	36.5	24.9	<1.14	<1.14	<1.14
2	AQ2	66.8	84.3	73.9	35.6	47.6	41.1	8.9	23.7	17.5	21.8	33.6	28.4	<1.14	<1.14	<1.14
3	AQ3	64.9	83.4	72.5	35.7	50.4	41.8	9.6	27.6	17.4	22.8	38.8	29.1	<1.14	<1.14	<1.14
4	AQ4	64.5	82.4	70.9	32.9	45.8	38.4	12.8	23.7	17.6	15.6	36.7	26.9	<1.14	<1.14	<1.14
5	AQ5	65.7	83.8	72.1	33.8	44.8	39.2	11.8	25.6	17.3	20.4	34.8	26.9	<1.14	<1.14	<1.14
6	AQ6	64.9	83.9	71.7	31.7	48.9	39.9	12.8	22.7	17.5	21.5	36.5	27.8	<1.14	<1.14	<1.14
7	AQ7	66.9	88.6	75.6	35.8	50.7	41.3	12.8	21.5	16.6	22.8	32.7	27.3	<1.14	<1.14	<1.14
8	AQ8	67.3	83.8	73.6	35.8	46.8	41.9	12.8	21.7	16.6	22.6	32.6	26.9	<1.14	<1.14	<1.14
NAAQS Limit		100			60			80			80			02		

Source: Primary Survey by Haryana Test House and Consultancy Services

OBSERVATIONS

PM₁₀: The maximum and minimum concentrations for PM₁₀ were recorded as 88.9 $\mu\text{g}/\text{m}^3$ and 64.5 $\mu\text{g}/\text{m}^3$ respectively. The maximum concentration was recorded at the Dongdarha, and the minimum concentration was recorded at Chachiya. The average concentrations were ranged between 70.9 – 75.6 $\mu\text{g}/\text{m}^3$.

PM_{2.5}: The maximum and minimum concentrations for PM_{2.5} were recorded as 50.7 $\mu\text{g}/\text{m}^3$ and 31.7 $\mu\text{g}/\text{m}^3$ respectively. The maximum concentration was recorded at the Pathalgaon Chetwani Colony and the minimum concentration was recorded at Tildega. The average values were observed to be in the range of 39.2 – 42.3 $\mu\text{g}/\text{m}^3$.

SO₂: The maximum and minimum SO₂ concentrations were recorded as 27.6 $\mu\text{g}/\text{m}^3$ and 8.9 $\mu\text{g}/\text{m}^3$. The maximum concentration was recorded at the Kartala, and the minimum concentration was recorded at Nonbirra. The average values were observed to be in the range of 16.6 – 17.6 $\mu\text{g}/\text{m}^3$.

NO_x as NO₂: The maximum and minimum NO₂ concentrations were recorded as 36.7 $\mu\text{g}/\text{m}^3$ and 15.6 $\mu\text{g}/\text{m}^3$, both the readings were recorded at Chachiya. The average values were observed to be in the range of 24.9 – 29.1 $\mu\text{g}/\text{m}^3$.

CO: The maximum and minimum CO concentrations all locations were recorded less than <1.14 mg/m³.

The overall concentrations of PM₁₀, PM_{2.5}, SO₂, NO₂ and CO were observed to be well within the standards prescribed by Central Pollution Control Board (CPCB) for Industrial, Rural, Residential and Other areas.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

4.4.9 Ambient Noise Quality

Noise is an important environmental attribute in all road projects because vehicular traffic is a major source of noise pollution. Noise Monitoring has been conducted in the study area to assess the background noise levels in different zones viz., Residential, Industrial, Commercial and Silence zones. The main objective of noise monitoring in the study area is to establish the baseline noise levels and assess the impact of the total noise expected to be generated in the surrounding areas by implementing the proposed project.

A preliminary reconnaissance survey was undertaken to identify the major noise generating sources in the area. Locations for noise monitoring along the corridor are identified to cover the various land use present along the corridor. The noise monitoring has been conducted at eight locations in the study area. The location of noise monitoring stations is given below in Table below.

The sound level meter SL-1352 of HTC instruments was used for measuring the Sound Pressure Level (SPL), the Maximum Sound Pressure Level (max) and the Minimum Sound Pressure Level (min) by switching on the corresponding functional modes. Sound Pressure Level (SPL) measurements were taken at the specified locations, with the minimum of 4 readings per minute for 15 min in an hour for 24 hours.

The day noise levels were recorded between 6 am to 10 pm and night noise levels were recorded between 10 pm and 6 am at all locations.

Table 4-9: Ambient Noise Quality Monitoring Stations/Location

S. No.	Location Code	Geo- Coordinate	Category	Distance from the road
1	UPNQ -1 Dongdarha	N 22° 16' 04.3" E 82° 49' 05.4"	Residential Area	10.0 meter
2	UPNQ-2 Nonbirra	N 22° 16' 16.0" E 82° 51' 42.6"		10.0 meter
3	UPNQ-3 Kartala	N 22° 18' 7.2" E 82° 57' 29.5"		20.0 meter
4	UPNQ- 4 Chachiya	N 22° 20' 29.6" E 83° 00' 44.4"		20.0 meter
5	UPNQ-5 Bayasi	N 22° 32' 06.9" E 83° 09' 32.0"		20.0 meter
6	UPNQ-6 Tildega	N 22° 32' 25.0" E 83° 26' 59.9"		20.0 meter
7	UPNQ-7 Pathalgaon Chetwani Colony	N 22° 32' 58.9" E 83° 28' 12.7"		10.0 meter
8	UPNQ-8 Kumekela	N 22° 37' 27.4" E 83° 29' 21.4"		20.0 meter

Source: Primary Survey by Haryana Test House and Consultancy Services

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

The computed ambient noise level for all the sampling locations both day and night are presented in below **Tables** and compared to the standards specified by CPCB as given.

Table 4-10: Results of Ambient Noise Quality Monitoring

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
Location Name: UPNQ -1 (Dongdarha)												
Day Time (06:00AM - 10:00PM)												
06:00 - 07:00	53.5	50.3	51.9	45.5	53.5	49.7	53.5	51.1	47.6	45.5	53.5	51.5
07:00 - 08:00	53.2	49.9	51.4	45.4	53.2	51.5	53.2	51.5	47.7	45.4	53.2	51.4
08:00 - 09:00	52.1	52.6	52.2	49.4	52.1	48.1	52.4	52.1	48.8	48.1	52.6	51.4
09:00 - 10:00	48.2	44.3	46.1	40.6	48.2	39.2	48.2	45.2	39.9	39.2	48.2	45.6
10:00 - 11:00	48.5	45.5	46.3	41	48.5	46.7	48.5	46.5	43.3	41	48.5	46.7
11:00 - 12:00	48.3	45.5	47.7	39.4	48.3	45.4	48.3	46.6	42.4	39.4	48.3	46.6
12:00 - 01:00	48.1	46.1	46.9	38.4	47.5	48.1	48.1	47.2	42.3	38.4	48.1	46.7
01:00 - 02:00	52.7	46.8	45.2	38.5	46.6	39.5	49.8	45.9	39	38.5	52.7	47.4
02:00 - 03:00	52.4	47.4	46.4	41	48.5	41	50.5	46.9	41	41	52.4	47.9
03:00 - 04:00	52.2	49.7	47.2	39.9	48.3	39.4	51	47.8	39.7	39.4	52.2	48.2
04:00 - 05:00	48.1	45.1	47.5	39.1	48.1	38.4	48.1	46.3	38.8	38.4	48.1	45.9
05:00 - 06:00	49.1	45.8	47.7	41	49.1	38.5	49.1	46.8	39.8	38.5	49.1	46.7
06:00 - 07:00	51.5	48	51.1	42.3	51.5	41	51.5	49.6	41.7	41	51.5	49.2
07:00 - 08:00	50.5	47.1	50.2	41	50.5	39.9	50.5	48.7	40.5	39.9	50.5	48.3
08:00 - 09:00	50.1	46.4	49.7	40.7	50.1	39.1	50.1	48.1	39.9	39.1	50.1	47.8
09:00 - 10:00	49.7	46.6	49.3	40.4	49.7	42.1	49.7	48	41.3	40.4	49.7	47.6
Night-time (10:00PM - 06:00AM)												
10:00 - 11:00	41.2	38.9	41.2	40	39.2	35.4	41.2	39.6	37.2	35.4	41.2	39.7
11:00 - 12:00	38.1	36.1	37.6	33.5	37	36.9	37.9	37	34.8	33.5	38.1	36.8
12:00 - 01:00	42.5	38.1	35.9	34.9	42.5	38	42.5	38.1	35.4	34.9	42.5	39.6
01:00 - 02:00	41.6	37.4	36.6	37	41.6	34.9	41.6	37.2	35.8	34.9	41.6	38.9
02:00 - 03:00	41.9	38.3	35.3	36.9	41.9	35.4	41.9	37.6	35.4	35.3	41.9	39.2

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
03:00 - 04:00	43.4	37.8	36.8	37	43.4	36.1	43.4	37.4	36.5	36.1	43.4	40.3
04:00 - 05:00	44.8	38.6	31.9	34.5	44.8	37	44.8	37.8	33.2	31.9	44.8	41.1
05:00 - 06:00	42.6	41.1	32.9	37.8	47.6	35.9	45.1	39.5	34.4	32.9	47.6	42.2

Sampling Location: Urga - UPNQ-2 (Nonbirra)**Day Time (06:00AM - 10:00PM)**

06:00 - 07:00	49.8	39.4	49.6	42.2	38.8	45.6	49.7	43.9	39.1	38.8	49.8	46.3
07:00 - 08:00	54.6	51.1	52.9	51.3	53	50.5	53.8	52.1	50.8	50.5	54.6	52.5
08:00 - 09:00	47.7	41	49.1	47.8	41.5	50.2	49.7	47.8	41.3	41	50.2	47.4
09:00 - 10:00	45.2	39.4	47.1	44.2	39.7	46.9	47	44.7	39.6	39.4	47.1	44.7
10:00 - 11:00	48.4	40.9	49.4	47.8	41.8	49.6	49.5	48.1	41.4	40.9	49.6	47.5
11:00 - 12:00	45.1	37.4	46	43.1	37.4	45	45.6	44.1	37.4	37.4	46	43.5
12:00 - 01:00	46.5	38.2	47.1	46.9	38.1	47.3	47.2	46.7	38.2	38.1	47.3	45.5
01:00 - 02:00	47.3	39	47.9	46.5	38	47.1	47.6	46.8	38.5	38	47.9	45.8
02:00 - 03:00	46.3	39.1	47.4	47.6	38.3	47.8	47.7	46.9	38.7	38.3	47.8	45.8
03:00 - 04:00	45.8	37.9	46.6	46.7	38.2	47.3	47	46.2	38.1	37.9	47.3	45.2
04:00 - 05:00	47.1	39.3	48	46	38.5	47	47.6	46.5	38.9	38.5	48	45.6
05:00 - 06:00	46.1	39.1	47.3	43.3	39	46.1	46.7	44.7	39.1	39	47.3	44.6
06:00 - 07:00	51.6	48.1	50.5	48	41.5	49.5	51.1	48.8	44.8	41.5	51.6	49.1
07:00 - 08:00	52.9	51.5	52.8	45.6	38.1	46.6	52.9	49.1	41.9	38.1	52.9	50.1
08:00 - 09:00	46.5	40.2	48.1	45.9	38.1	46.8	47.5	46.2	39.2	38.1	48.1	45.5
09:00 - 10:00	44.8	38.9	46.6	46.8	38.5	47.4	47.1	45.7	38.7	38.5	47.4	45.1

Night-time (10:00PM - 06:00AM)

10:00 - 11:00	39.1	38.3	37.3	37.7	40.6	41.3	41	38.7	34.9	37.3	41.3	38.6
11:00 - 12:00	43.7	38.2	37.4	38.5	39.5	37.1	41.6	38.4	34.9	37.1	43.7	39.3
12:00 - 01:00	41.8	40.7	39.8	38.1	37.6	34.6	41.3	39	34.8	34.6	41.8	39.1
01:00 - 02:00	41.7	38.7	40.1	38.4	35.9	37.2	40.9	38.6	34.8	35.9	41.7	38.6
02:00 - 03:00	39.1	35.6	38.8	43.1	34.9	39.7	41.4	39	34.2	34.9	43.1	38.5
03:00 - 04:00	37.1	37.5	39.1	39.3	33.8	35.4	39.2	37.3	33.9	33.8	39.3	37

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
04:00 - 05:00	38.6	39	34.9	34.9	38.2	37.9	38.8	38.1	34	34.9	39	36.7
05:00 - 06:00	38.9	33.9	37.6	33.8	36.9	39.4	39.2	37.3	33.9	33.8	39.4	35.9

Sampling Location: Urga – UPNQ-3 (Kartala)**Day Time (06:00AM - 10:00PM)**

06:00 - 07:00	49.8	54	52	49.8	50.1	52.9	53.5	51.1	49.8	49.8	54	51.8
07:00 - 08:00	49.1	53.2	50.9	49.1	49.1	49.7	52.1	49.4	49.1	49.1	53.2	50.5
08:00 - 09:00	49.3	54.1	52.2	50.1	49.3	54.1	54.1	51.2	49.3	49.3	54.1	52
09:00 - 10:00	48.1	51.2	54.7	52.7	52.8	50.4	53.8	52	49.3	48.1	54.7	52.1
10:00 - 11:00	49.1	51.8	50.5	49.5	49.1	50.3	51.2	49.9	49.1	49.1	51.8	50.2
11:00 - 12:00	50.1	53.8	52.1	50.1	51.5	52.1	53	51.8	50.1	50.1	53.8	51.8
12:00 - 01:00	47	53.4	53.3	50.8	48.4	51.3	53.4	51.1	47.7	47	53.4	51.3
01:00 - 02:00	47.1	52.9	53.4	47.2	51.1	52.3	53.2	51.7	47.2	47.1	53.4	51.3
02:00 - 03:00	49	51.4	50.5	49.7	50.8	51.4	51.4	50.7	49.4	49	51.4	50.6
03:00 - 04:00	49.3	54.9	52.2	50.3	51.1	53.3	54.1	51.7	49.8	49.3	54.9	52.3
04:00 - 05:00	49.6	50.6	53.8	49.6	50.7	50	52.3	50.3	49.6	49.6	53.8	51
05:00 - 06:00	47.1	53.2	51	51.4	50.7	47.1	52.3	50.9	47.1	47.1	53.2	50.6
06:00 - 07:00	46.7	52.6	50.9	52.6	52.6	46.7	52.6	51.8	46.7	46.7	52.6	51
07:00 - 08:00	47.1	51.4	49.5	51.1	49.9	47.1	51.3	49.7	47.1	47.1	51.4	49.7
08:00 - 09:00	42.9	57.2	51.7	52.3	47.1	47	54.8	49.4	45	42.9	57.2	52.1
09:00 - 10:00	42.4	51.4	51.8	54.1	48.9	46.2	53	50.2	44.3	42.4	54.1	50.6

Night-time (10:00PM - 06:00AM)

10:00 - 11:00	40.1	38.9	41.2	43.1	39.2	35.4	42.2	39.7	37.2	35.4	43.1	40.2
11:00 - 12:00	42	40.5	37.6	42.9	37	36.9	42.5	39.1	37	36.9	42.9	40.2
12:00 - 01:00	43.4	38.1	35.9	40.5	42.5	38	43	39.3	37	35.9	43.4	40.5
01:00 - 02:00	41	37.4	36.6	41.4	41.6	34.9	41.5	39.2	35.8	34.9	41.6	39.5
02:00 - 03:00	42.9	38.3	35.3	42.7	41.9	35.4	42.8	40.1	35.4	35.3	42.9	40.5
03:00 - 04:00	41.7	37.8	36.8	40.5	43.4	36.1	42.6	39.2	36.5	36.1	43.4	40.2
04:00 - 05:00	40.9	38.6	38.9	44	44.8	37	44.4	39.9	37.8	37	44.8	41.6

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
05:00 - 06:00	42.8	41.1	37.6	42.8	47.6	35.9	45.2	42	36.8	35.9	47.6	42.9
Sampling Location: UPNQ- 4 (Chachiya)												
Day Time (06:00AM - 10:00PM)												
06:00 - 07:00	49.8	39.4	41.5	42.2	38.8	39	46	40.4	38.9	38.8	49.8	44
07:00 - 08:00	54.6	51.1	42.8	55.3	53	46.1	55	52.1	44.5	42.8	55.3	52.3
08:00 - 09:00	47.7	41	43.4	47.8	41.5	41.2	47.8	42.5	41.1	41	47.8	44.8
09:00 - 10:00	45.2	39.4	41.9	44.2	39.7	39.5	44.7	40.8	39.5	39.4	45.2	42.3
10:00 - 11:00	48.4	40.9	42.7	47.8	41.8	41.3	48.1	42.3	41.1	40.9	48.4	45
11:00 - 12:00	45.1	37.4	41.6	43.1	37.4	37.4	44.1	39.5	37.4	37.4	45.1	41.4
12:00 - 01:00	46.5	38.2	46.8	46.9	38.1	38.1	46.9	42.4	38.1	38.1	46.9	44.3
01:00 - 02:00	47.3	39	47.6	46.5	38	38.4	47.5	42.8	38.2	38	47.6	44.7
02:00 - 03:00	46.3	39.1	42.8	47.6	38.3	38.6	47	41	38.5	38.3	47.6	43.7
03:00 - 04:00	45.8	37.9	43.1	46.7	38.2	38.2	46.3	40.7	38	37.9	46.7	43.2
04:00 - 05:00	47.1	39.3	49	46	38.5	38.8	48.1	42.7	38.7	38.5	49	45.1
05:00 - 06:00	46.1	39.1	51.2	43.3	39	39.3	48.7	41.2	39	39	51.2	45.6
06:00 - 07:00	57.6	48.1	50	48.3	41.5	44.1	53.8	48	42.8	41.5	57.6	51.5
07:00 - 08:00	52.9	51.5	50.7	45.6	38.1	41.1	52.2	48.2	39.6	38.1	52.9	49.3
08:00 - 09:00	46.5	40.2	51.9	45.9	38.1	38.9	49.2	43.1	38.5	38.1	51.9	46.4
09:00 - 10:00	44.8	38.9	52	46.8	38.5	38.7	49.4	41.9	38.6	38.5	52	46.3
Night-time (10:00PM - 06:00AM)												
10:00 - 11:00	38.3	40	42.1	37.6	41.2	35.7	41.7	39.2	35.1	35.7	42.1	39.7
11:00 - 12:00	38.2	33.5	35.4	38.1	37.9	35.3	38.2	36.7	34.9	33.5	38.2	36.7
12:00 - 01:00	37.6	34.9	37.8	38.9	39.3	36.2	39.1	37.7	34.8	34.9	39.3	37.7
01:00 - 02:00	38.7	37	33.9	37.6	38.2	35.1	38.5	37.3	34.6	33.9	38.7	37.1
02:00 - 03:00	35.6	36.9	34	34.9	35.9	35.4	36.4	35.5	34.4	34	36.9	35.5
03:00 - 04:00	37.5	37	37.6	35.4	41	35.6	39.3	37.3	34.6	35.4	41	37.8
04:00 - 05:00	39	34.5	39.2	36.1	39.5	36.9	39.4	38	34.4	34.5	39.5	37.9
05:00 - 06:00	33.9	37.8	40	39	41.1	36.6	40.6	38.4	33.9	33.9	41.1	38.6

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
Sampling Location: UPNQ-5 (Bayasi)												
Day Time (06:00AM - 10:00PM)												
06:00 - 07:00	46.4	43.2	42.2	51.9	50.8	50.3	51.4	48.4	42.7	42.2	51.9	48.9
07:00 - 08:00	45.6	46	50.5	51.4	42.3	49.9	51	48	44	42.3	51.4	48.7
08:00 - 09:00	43.1	43.9	47.8	50.2	44	52.6	51.4	45.9	43.5	43.1	52.6	48.4
09:00 - 10:00	39.4	47	44.2	46.1	43.9	44.3	46.6	44.3	41.7	39.4	47	44.7
10:00 - 11:00	39.6	50.7	47.8	46.3	43.8	45.5	49.3	45.9	41.7	39.6	50.7	46.8
11:00 - 12:00	38.3	50.3	43.1	47.7	45	45.5	49	45.3	40.7	38.3	50.3	46.4
12:00 - 01:00	37.6	50.2	46.9	46.9	47.2	46.1	48.7	46.9	41.9	37.6	50.2	47
01:00 - 02:00	39.6	47.7	46.5	45.2	52.7	46.8	50.2	46.7	42.4	39.6	52.7	48
02:00 - 03:00	38	47.2	47.6	46.4	52.4	47.4	50	47.3	42.2	38	52.4	48.1
03:00 - 04:00	39.3	46.6	46.7	47.2	53.2	49.7	51.5	47	43	39.3	53.2	48.8
04:00 - 05:00	38.8	46.5	46	47.5	47.2	45.1	47.4	46.3	42	38.8	47.5	45.9
05:00 - 06:00	38.9	47	43.3	47.7	47.6	45.8	47.7	46.4	41.1	38.9	47.7	45.9
06:00 - 07:00	49.3	50.5	48	51.1	48	48	50.8	48.7	48	48	51.1	49.3
07:00 - 08:00	50.1	47.1	45.6	50.2	47.8	47.1	50.2	47.5	46.4	45.6	50.2	48.3
08:00 - 09:00	47.9	46.3	45.9	49.7	46	46.4	48.8	46.4	46	45.9	49.7	47.3
09:00 - 10:00	51.1	48.4	46.8	49.3	47.7	46.6	50.2	48.1	46.7	46.6	51.1	48.6
Night-time (10:00PM - 06:00AM)												
10:00 - 11:00	38.9	40	38.7	39.7	38.9		39.9	38.9	37	34.8	40	38.8
11:00 - 12:00	36.1	33.5	38.4	36.2	36.1	34.7	37.3	36.1	36.9	33.5	38.4	36.1
12:00 - 01:00	38.1	34.9	39	37.7	38.1	35.5	38.6	37.9	37.6	34.9	39	37.5
01:00 - 02:00	37.4	37	38.6	37.1	37.4	34.5	38	37.3	37.6	34.5	38.6	37.2
02:00 - 03:00	38.3	36.9	39	35.5	38.3	34.9	38.7	37.6	38	34.9	39	37.4
03:00 - 04:00	37.8	37	37.3	37.8	37.8	35	37.8	37.6	38	35	37.8	37.2
04:00 - 05:00	38.6	34.5	38.1	37.9	38.6	36.1	38.6	38	38.9	34.5	38.6	37.5
05:00 - 06:00	41.1	37.8	37.3	38.6	41.1	35.7	41.1	38.2	41.1	35.7	41.1	39
Sampling Location: UPNQ-6 (Tildega)												

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
Day Time (06:00AM - 10:00PM)												
06:00 - 07:00	44	39.4	47.3	39.1	46.3	44	46.8	44	39.3	39.1	47.3	44.4
07:00 - 08:00	52.3	51.1	50.9	52.1	51.1	43.9	52.2	51.1	47.4	43.9	52.3	50.9
08:00 - 09:00	44.8	41	45.7	41.3	47.4	46.1	46.8	45.3	41.2	41	47.4	45
09:00 - 10:00	42.3	39.4	47.1	39.6	44.7	39.4	45.9	41	39.4	39.4	47.1	43.2
10:00 - 11:00	45	40.9	46.5	41.4	47.5	41.8	47	43.4	41.2	40.9	47.5	44.6
11:00 - 12:00	41.4	37.4	45.9	37.4	43.5	40.3	44.7	40.9	37.4	37.4	45.9	42.1
12:00 - 01:00	44.3	38.2	45.8	38.2	45.5	39.7	45.7	42	38.2	38.2	45.8	43.1
01:00 - 02:00	44.7	39	46.9	38.5	45.8	38.7	46.4	41.9	38.6	38.5	46.9	43.6
02:00 - 03:00	43.7	39.1	46.1	38.7	45.9	41	46	42.4	38.9	38.7	46.1	43.4
03:00 - 04:00	43.2	37.9	45.9	38.1	45.2	39.5	45.6	41.4	38	37.9	45.9	42.8
04:00 - 05:00	45.1	39.3	45.7	38.9	45.6	38.5	45.7	42.2	38.7	38.5	45.7	43.3
05:00 - 06:00	45.6	39.1	46.3	39.1	44.6	38.9	46	41.9	39	38.9	46.3	43.4
06:00 - 07:00	51.5	48.1	49.6	44.8	53.7	41.2	52.6	48.9	43	41.2	53.7	49.8
07:00 - 08:00	49.3	51.5	48.4	41.9	52.3	40.1	51.9	48.9	41	40.1	52.3	49.1
08:00 - 09:00	46.4	40.2	46.9	39.2	45.5	39.4	46.7	42.9	39.3	39.2	46.9	44.1
09:00 - 10:00	46.3	38.9	47.4	38.7	45.1	40.7	46.9	42.9	38.8	38.7	47.4	44.2
Night-time (10:00PM - 06:00AM)												
10:00 - 11:00	37.5	36.3	37.5	38.9	34.5	36.8	38.2	37.2	35.4	34.5	38.9	37.1
11:00 - 12:00	37	35.7	35.6	39.4	34.6	35.4	38.2	35.7	35	34.6	39.4	36.6
12:00 - 01:00	38.2	36.6	36.1	40.1	35.5	37.8	39.2	37.2	35.8	35.5	40.1	37.7
01:00 - 02:00	37	35.5	34.2	38.6	34.4	33.9	37.8	35	34.1	33.9	38.6	36
02:00 - 03:00	36.9	35.8	34.5	37.6	34.7	34	37.3	35.3	34.3	34	37.6	35.8
03:00 - 04:00	37.4	36	35.7	37.1	34.7	37.6	37.5	36.6	35.2	34.7	37.6	36.5
04:00 - 05:00	38.2	37.1	38.2	39.3	35.9	39.2	39.3	38.2	36.5	35.9	39.3	38.1
05:00 - 06:00	37.8	36.7	35.4	40.2	35.3	40	40.1	37.3	35.4	35.3	40.2	38
Sampling Location: UPNQ-7 (Pathalgaon Chetwani Colony)												
Day Time (06:00AM - 10:00PM)												

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
06:00 - 07:00	48.9	44	49.9	46.3	50.3	50.3	50.3	49.4	45.2	44	50.3	48.8
07:00 - 08:00	50.5	52.3	53.9	50.1	49.9	50.1	53.1	50.3	50	49.9	53.9	51.4
08:00 - 09:00	50.3	44.8	46.9	47.4	52.6	52.6	52.6	48.9	45.9	44.8	52.6	50
09:00 - 10:00	44.7	42.3	46.2	44.7	44.3	46.2	46.2	44.7	43.3	42.3	46.2	44.9
10:00 - 11:00	48.9	45	50.4	47.5	45.5	50.4	50.4	48.2	45.3	45	50.4	48.5
11:00 - 12:00	46.4	41.4	47	43.5	45.5	47	47	46	42.5	41.4	47	45.6
12:00 - 01:00	47	44.3	46.8	45.5	46.1	47	47	46.5	44.9	44.3	47	46.2
01:00 - 02:00	48	44.7	45.9	45.8	46.8	48	48	46.4	45.3	44.7	48	46.7
02:00 - 03:00	48.1	43.7	45.2	45.9	47.4	48.1	48.1	46.7	44.5	43.7	48.1	46.7
03:00 - 04:00	50.4	43.2	45.4	45.2	49.7	50.4	50.4	47.6	44.2	43.2	50.4	48.3
04:00 - 05:00	45.9	45.1	44.8	45.6	45.1	45.9	45.9	45.4	45	44.8	45.9	45.4
05:00 - 06:00	45.9	45.6	45.3	44.6	45.8	45.9	45.9	45.7	45	44.6	45.9	45.5
06:00 - 07:00	49.3	51.5	48.8	53.7	48	53.7	53.7	50.4	48.4	48	53.7	51.4
07:00 - 08:00	53.2	49.3	53.2	52.3	47.1	53.2	53.2	52.8	48.2	47.1	53.2	51.9
08:00 - 09:00	47.3	46.4	46.5	45.5	46.4	47.3	47.3	46.5	46	45.5	47.3	46.6
09:00 - 10:00	52	46.3	51.6	45.1	46.6	52	52	49.1	45.7	45.1	52	49.9
Night-time (10:00PM - 06:00AM)												
10:00 - 11:00	36.7	39.7	38.4	39.7	38.9	37	39.7	38.7	36.9	36.7	39.7	38.6
11:00 - 12:00	36.1	39.4	37.4	36.2	36.1	36.9	38.4	36.6	36.1	36.1	39.4	37.2
12:00 - 01:00	37.6	40.1	38.4	37.7	37.9	37.6	39.3	37.8	37.6	37.6	40.1	38.3
01:00 - 02:00	36	38.6	37.6	37.1	37.3	37.6	38.1	37.5	36.6	36	38.6	37.4
02:00 - 03:00	35.5	39	37.4	35.5	37.6	38	38.5	37.5	35.5	35.5	39	37.4
03:00 - 04:00	36.5	38	37.5	37.8	37.6	38	38	37.7	37	36.5	38	37.6
04:00 - 05:00	37.9	39.3	38.4	37.9	38	38.9	39.1	38.2	37.9	37.9	39.3	38.4
05:00 - 06:00	37.3	41.1	39.1	38.6	38.2	41.1	41.1	38.9	37.8	37.3	41.1	39.5
Sampling Location: UPNQ-8 (Kumekela)												
Day Time (06:00AM - 10:00PM)												
06:00 - 07:00	48.1	40.3	43.2	40.3	54.3	49.9	52.1	45.7	40.3	40.3	54.3	49

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Reading Hour No.	R1	R2	R3	R4	R5	R6	L10	L50	L90	L Min.	L Max.	Leq
07:00 - 08:00	50.4	49.8	46	45.6	59.7	53.9	56.8	50.1	45.8	45.6	59.7	53.9
08:00 - 09:00	48.7	40.5	43.9	40.5	50.2	46.9	49.5	45.4	40.5	40.5	50.2	46.6
09:00 - 10:00	48.3	40	47	39.4	48.3	46.2	48.3	46.6	39.7	39.4	48.3	46.1
10:00 - 11:00	53.8	46.1	54.7	39.6	54.7	50.4	54.7	52.1	42.9	39.6	54.7	52.2
11:00 - 12:00	49.7	41.4	50.3	38.3	50.3	47	50.3	48.4	39.9	38.3	50.3	48
12:00 - 01:00	48.9	43.5	50.2	37.6	50.2	46.8	50.2	47.9	40.6	37.6	50.2	47.8
01:00 - 02:00	47.3	38.5	47.7	38.5	47.8	45.9	47.8	46.6	38.5	38.5	47.8	45.8
02:00 - 03:00	45.8	39.1	47.2	38	47.2	45.2	47.2	45.5	38.6	38	47.2	45
03:00 - 04:00	45.1	38.6	46.6	38.6	48	45.4	47.3	45.3	38.6	38.6	48	45
04:00 - 05:00	45.9	37.6	46.5	37.6	46.8	44.8	46.7	45.4	37.6	37.6	46.8	44.6
05:00 - 06:00	46.3	38.1	47	38.1	47.3	45.3	47.2	45.8	38.1	38.1	47.3	45.1
06:00 - 07:00	49.8	41.6	50.5	41.6	51.2	48.8	50.9	49.3	41.6	41.6	51.2	48.7
07:00 - 08:00	46.3	38.3	47.1	38.3	51.5	53.2	52.4	46.7	38.3	38.3	53.2	48.8
08:00 - 09:00	43.6	39.1	46.3	39.1	48.8	46.5	47.7	45	39.1	39.1	48.8	45.3
09:00 - 10:00	46.5	40.7	48.4	40.7	58.1	51.6	54.9	47.5	40.7	40.7	58.1	51.9
Night-time (10:00PM - 06:00AM)												
10:00 - 11:00	40.1	39.2	40	39.7	37.8	34.9	40.1	39.5	36.4	34.9	40.1	38.9
11:00 - 12:00	41.5	37.6	41.1	39.6	37.8	35.2	41.3	38.7	36.4	35.2	41.5	39.3
12:00 - 01:00	39.2	40.1	40	39.7	37.8	34.9	40.1	39.5	36.4	34.9	40.1	38.9
01:00 - 02:00	37.6	38.1	38.1	37.9	37.8	33.1	38.1	37.9	35.4	33.1	38.1	37.4
02:00 - 03:00	38.9	41.3	41.1	40.1	38.2	35.5	41.2	39.5	36.9	35.5	41.3	39.6
03:00 - 04:00	37.8	40.7	40.4	39.3	38.2	34.7	40.6	38.8	36.3	34.7	40.7	38.9
04:00 - 05:00	38.2	39.9	39.7	39.1	38.7	34.4	39.8	38.9	36.3	34.4	39.9	38.7
05:00 - 06:00	40.1	38.2	39.9	39.2	39.3	34.5	40	39.3	36.4	34.5	40.1	38.9

Source: Primary Survey by Haryana Test House and Consultancy Services



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 4-11: Ambient Noise Standards (CPCB)

Ambient Noise Standards	Leq day [dB (A)]	Leq night [dB (A)]
Industrial Area	75	70
Commercial Area	65	55
Residential Area	55	45
Silence Zone	50	40

OBSERVATION

The results indicate that all Noise level values during daytime and night-time were found to be within prescribed limits as per CPCB Guidelines. The monitoring photos are enclosed as **Annexure 4.1.**

4.4.10 Water Quality

Selected water quality parameters of the Ground water resources within the Project area have been studied for assessing the water environment. Water samples were examined for Physico-chemical, Heavy metals and Bacteriological parameters to assess the effect of industrial, vehicular, and other activities on ground or surface water. Eight (08) Ground Water and six (06) surface water samples were collected to establish baseline water quality of the study area. The water sampling locations are listed in the **Tables below**.

Table 4-12: Ground Water Monitoring Stations/Location

S. No.	Location Code	Location Name	Geo- Coordinate	Source	Distance from road
1	UPGW-1	Dongdarha	N 22° 16' 04.3" E 82° 49' 05.4"	Borewell	30.0 meter
2	UPGW-2	Nonbirra	N 22° 16' 16.0" E 82° 51' 42.6"	Borewell	40.0 meter
3	UPGW-3	Kartala	N 22° 18' 07.2" E 82° 57' 29.5"	Borewell	15.0 meter
4	UPGW-4	Chachiya	N 22° 20' 29.6" E 83° 00' 44.4"	Borewell	20.0 meter
5	UPGW-5	Bayasi	N 22° 32' 06.9" E 83° 09' 32.0"	Borewell	30.0 meter
6	UPGW-6	Tildega	N 22° 32' 25.0" E 83° 26' 59.9"	Borewell	40.0 meter
7	UPGW-7	Pathalgaon Chetwani Colony	N 22° 32' 58.9" E 83° 28' 12.7"	Borewell	15.0 meter
8	UPGW-8	Kumekela	N 22° 37' 27.4" E 83° 29' 21.4"	Borewell	20.0 meter

Source: Primary Survey by Haryana Test House and Consultancy Services

Table 4-13: Surface Water Monitoring Stations/Location

S. No.	Location Code	Location Name	Geo- Coordinate	Source	Distance from road
1	UPSW-1	Dongdarha	N 22° 16.2' 44" E 82° 50' 1.01"	Pond	50.0 meter
2	UPSW-2	Srimar	N 22° 16' 14.8" E 82° 52' 39.4"	Pond	60.0 meter
3	UPSW-3	Champa	N 22° 19' 29.5" E 83° 00' 1.55"	Pond	15.0 meter
4	UPSW-4	Katkona	N 22° 21' 42.1" E 83° 03' 32.2"	Pond	30.0 meter
5	UPSW-5	Khadgaon	N 22° 23' 42.6" E 83° 06' 27.1"	Pond	40.0 meter
6	UPSW-6	Dharmakaya	N 22° 27' 26.4" E 83° 13' 40.0"	Pond	20.0 meter

Source: Primary Survey by Haryana Test House and Consultancy Services



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

SAMPLING AND ANALYSIS TECHNIQUES

Samples for chemical analysis were collected in polyethylene carboys. Samples collected for metal content were acidified with 1 ml HNO₃. Samples for bacteriological analysis were collected in sterilized bottles. The samples were analyzed as per the procedures specified in IS: 10500 methods and 'Standard Methods for the Examination of Water and Wastewater' published by American Public Health Association (APHA).

The analysis results for the water samples are given in the tables below. The analyzed results are compared with the Acceptable and permissible limit standards (absence of Alternative source) as per IS: 10500:2012 and 2296:2012.

Table 4-14: Ground Water Monitoring Results

S. No . .	Parameters	Unit	Procedure	UPGW	UPGW	UPGW	UPGW	UPGW	UPGW	UPGW	UPGW	Standard as per IS 10500:2012	
				1	2	3	4	5	6	7	8	AL	PL
1	Colour	Hazen	IS 3025 (P-4): 1983	1.0	1.0	1.0	2.0	1.0	1.0	1.0	1.0	5 max.	15 max.
2	Odour	--	IS 3025 (P-5): 1983	Agreeable								Agreeable	
3	pH	--	IS 3025 (P-11): 1983	6.48	5.94	5.9	6.28	6.05	6.71	7.32	7.01	6.5 – 8.5	NR
4	Temp.	°C	IS 3025 (P-9): 1984	21.4	21.2	20.1	19.9	20.1	20.2	20.4	21.0	\$	\$
5	Turbidity	NTU	IS 3025 (P-10)-1984	<1	1	<1	9	10	<1	<1	<1	1 max.	5 max.
6	Conductivity	µS/cm	IS 3025 (P-14): 1984	329	132	149	90	94	436	987	529	\$	\$
7	Total Solids	mg/l	IS 3025 (P-15):1984	21	86	100	64	90	288	612	328	\$	\$
8	TDS	mg/l	IS 3025 (P-16):1984	212	86	98	58	58	286	612	328	500 max.	2000 max.
9	TSS	mg/l	IS 3025 (P-17):1984	BDL (DL 1.0)	BDL (DL 1.0)	2	6	32	2	BDL (DL 1.0)	BDL (DL 1.0)	\$	\$
10	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (P-21):1983	70	32	38	20	24	155	430	250	200 max.	600 max.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No .	Parameters	Unit	Procedure	UPGW	Standard as per IS 10500:2012								
				1	2	3	4	5	6	7	8	AL	PL
11	Total Alkalinity (as CaCO ₃)	mg/l	IS 3025 (P-23): 1986	55	20	22	20	14	100	320	250	200 max.	600 max.
12	Chloride (as Cl)	mg/l	IS 3025 (P-32): 1988	38.99	11.3	14.18	1134	11.34	60.26	85.08	21.27	250 max.	1000 max.
13	Fluoride (as F)	mg/l	IS 3025 (P-60): 2008	0.06	BDL (DL 0.02)	BDL (DL 0.02)	BDL (DL 0.02)	0.041	0.21	0.38	0.13	1.0 max.	1.5 max.
14	Sulphate (as SO ₄)	mg/l	IS 3025 (P-24): 1986	26.2	BDL (DL 1.0)	BDL (DL 1.0)	BDL (DL 01)	6.74	14.88	97.6	4.16	200 max.	400 max.
15	Phosphate (as PO ₄)	mg/l	IS 3025 (P-31): 1988	BDL (DL 0.2)	BDL (DL 0.2)	BDL (DL 0.2)	BDL (DL 1.0)	\$	\$				
16	Nitrate (as NO ₃)	mg/l	IS 3025 (P-34): 1988	12.5	25.14	29.0	11.6	6.99	12.2	1.5	2.74	45 max.	NR
17	Nitrite (as NO ₂)	mg/l	IS 3025 (P-34): 1988	BDL (DL 0.01)	\$	\$							
18	Sodium (as Na)	mg/l	IS 3025 (P-45): 1993	24.17	7.02	6.06	5.27	7.98	28.42	58.94	9.6	\$	\$
19	Iron (as Fe)	mg/l	IS 3025 (P-53): 2003	0.03	BDL (DL 0.02)	BDL (DL 0.02)	0.461	0.406	BDL (DL 0.02)	BDL (DL 0.02)	BDL (DL 0.02)	1.0 max.	NR
20	Potassium (as K)	mg/l	IS 3025 (P-45): 1993	22.54	8.36	8.92	8.94	5.38	2.34	2.13	2.27	\$	\$
21	Lead (as Pb)	mg/l	IS 3025 (P-47): 1994	BDL (DL 0.005)	0.01 max.	NR							
22	Zinc (as Zn)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.02)	0.329	0.03	0.162	0.162	BDL (DL 0.02)	BDL (DL 0.02)	0.029	5 max.	15 max.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No .	Parameters	Unit	Procedure	UPGW	Standard as per IS 10500:2012								
				1	2	3	4	5	6	7	8	AL	PL
23	Total Chromium (as Cr)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.005)	0.05 max.	NR							
24	Copper (as Cu)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.05)	BDL (DL 0.05)	BDL (DL 0.05)	BDL (DL 0.05)	0.009	0.005	BDL (DL 0.05)	BDL (DL 0.05)	0.05 max.	1.5 max.
25	Calcium (as Ca)	mg/l	IS 3025 (P-40): 1991	12.02	5.61	6.41	4.008	3.2	48.09	144.2	92.3	75 max.	200 max.
26	Magnesium (as Mg)	mg/l	IS 3025 (P-46): 1994	9.72	4.37	5.35	2.43	4.01	8.46	16.9	4.68	30 max.	100 max.
27	Manganese (as Mn)	mg/l	IS 3025 (P-59): 2006	BDL (DL 0.005)	0.128	0.053	0.115	0.1155	BDL (DL 0.005)	BDL (DL 0.005)	0.018	0.1 max.	0.3 max.
28	Total Arsenic (as As)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.005)	0.01 max.	NR							
29	Dissolved Oxygen	mg/l	IS 3025 (P-38): 1989	7.9	7.6	7.8	7.8	7.6	7.9	7.5	7.6	\$	\$
30	COD	mg/l	IS 3025 (P-58): 2006	BDL (DL 0.5)	BDL (DL 0.5)	4	BDL (DL 0.5)	\$	\$				
31	BOD at 27°C for 3 days	mg/l	IS 3025 (P-44): 1993	BDL (DL 5.0)	\$	\$							
32	Total Coliforms	MPN/ 100ml	IS 1622: 1981	Absent	Absent/ 100ml								
33	Faecal Coliforms		IS 1622: 1981	Absent	Absent/ 100ml								

Source: Primary Survey by Haryana Test House and Consultancy Services, AL- Acceptable Limits, PL- Permissible Limits, NR- No Relaxation, \$- Not Specified.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 4-15: Surface Water Monitoring Results

S. No.	Parameters	Unit	Procedure	UPSW 1	UPSW 2	UPSW 3	UPSW 4	UPSW 5	UPSW 6	CPCB Standards	
										IS 2296	Class
1	Colour	Hazen	IS 3025 (P-4): 1983	1	1	1	1	5	2	300	\$
2	Odour	--	IS 3025 (P-5): 1983			Agreeable				\$	\$
3	pH	--	IS 3025 (P-11): 1983	7.41	7.44	7.52	7.6	7.72	7.52	8.5	Class A
4	Temperature	°C	IS 3025 (P-9): 1984	19.9	19.9	20.1	20	20.8	20.6	\$	\$
5	Turbidity	NTU	IS 3025 (P-10)-1984	8	16	12	28	20	12	\$	\$
6	Conductivity	µS/cm	IS 3025 (P-14): 1984	276	312	320	302	342	308	\$	\$
7	Total Solids	mg/l	IS 3025 (P-15): 1984	193	214	216	204	214	234	\$	\$
8	TDS	mg/l	IS 3025 (P-16): 1984	188	212	208	192	208	224	\$	\$
9	TSS	mg/l	IS 3025 (P-17): 1984	5	2	8	12	6	10	\$	\$
10	Total Hardness (as CaCO ₃)	mg/l	IS 3025 (P-21): 1983	65	85	100	175	130	110	\$	\$
11	Total Alkalinity (as CaCO ₃)	mg/l	IS 3025 (P-23): 1986	60	110	160	115	135	175	\$	\$
12	Chloride (as Cl)	mg/l	IS 3025 (P-32): 1988	42.54	24.8	17.72	24.81	21.27	14.18	\$	\$
13	Fluoride (as F)	mg/l	IS 3025 (P-60): 2008	0.27	0.38	0.43	0.4	0.26	0.38	1.5	\$
14	Sulphate (as SO ₄)	mg/l	IS 3025 (P-24): 1986	14.7	7.34	3.6	7.24	7.73	7.42	\$	\$
15	Phosphate (as PO ₄)	mg/l	IS 3025 (P-31): 1988	0.07	0.12	0.07	0.07	0.07	0.07	\$	\$
16	Nitrate (as NO ₃)	mg/l	IS 3025 (P-34): 1988	2.6	6.82	3.72	6.9	4.96	3.3	\$	\$
17	Nitrite (as NO ₂)	mg/l	IS 3025 (P-34): 1988	BDL (DL 0.01)	\$	\$					
18	Sodium (as Na)	mg/l	IS 3025 (P-45): 1993	23.52	29.51	31.67	26.32	18.29	20.75	\$	\$
19	Iron (as Fe)	mg/l	IS 3025 (P-53): 2003	BDL (DL 0.02)	0.084	0.102	0.142	0.046	0.09	\$	\$
20	Potassium (as K)	mg/l	IS 3025 (P-45): 1993	11.24	12.6	2.93	11.7	7.17	1.33	\$	\$
21	Lead (as Pb)	mg/l	IS 3025 (P-47): 1994	BDL (DL 0.005)	\$	\$					

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Parameters	Unit	Procedure	UPSW 1	UPSW 2	UPSW 3	UPSW 4	UPSW 5	UPSW 6	CPCB Standards	
										IS 2296	Class
22	Zinc (as Zn)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.02)	\$	\$					
23	Total Chromium (as Cr)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.005)	0.05	\$					
24	Copper (as Cu)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.05)	\$	\$					
25	Calcium (as Ca)	mg/l	IS 3025 (P-40): 1991	12.02	26.05	30.06	30.06	38	30.06	\$	\$
26	Magnesium (as Mg)	mg/l	IS 3025 (P-46): 1994	8.5	4.83	20.66	24.31	8.52	8.48	\$	\$
27	Manganese (as Mn)	mg/l	IS 3025 (P-59): 2006	BDL (DL 0.005)	0.031	BDL (DL 0.005)	0.053	BDL (DL 0.005)	BDL (DL 0.005)	\$	\$
28	Total Arsenic (as As)	mg/l	IS 3025 (P-2): 2004	BDL (DL 0.005)	0.2	\$					
29	Dissolved Oxygen	mg/l	IS 3025 (P-38): 1989	7.6	7.4	7.9	7.8	7.6	7.7	5	Class A
30	COD	mg/l	IS 3025 (P-58): 2006	8	20	8	12	BDL (DL 0.5)	BDL (DL 0.5)	\$	\$
31	BOD at 27°C for 3 days	mg/l	IS 3025 (P-44): 1993	BDL (DL 5.0)	3	Class A					
32	Total Coliforms	MPN/100ml	IS 1622: 1981	Absent	Absent	Absent	Absent	Absent	Absent	500	Class A
33	Faecal Coliforms		IS 1622: 1981	Absent	Absent	Absent	Absent	Absent	Absent	500	Class A

Source: Primary Survey by Haryana Test House and Consultancy Services, AL- Acceptable Limits, PL- Permissible Limits, NR- No Relaxation, \$- Not Specified.

OBSERVATION**GROUND WATER**

The pH value of the collected ground water in the study area found to be in the range from 5.9 to 7.34 and conductivity observed in the range 90 µS/cm to 987 µS/cm. TDS values were observed to be in range from 58 mg/L to 612 mg/ L. Total alkalinity is found to be the range from 14.0 mg/L to 320 mg/L and Total Hardness ranges from 20.0 to 430 mg/L. The values of Chloride, Fluoride, Nitrate and Sulphate etc, were observed within permissible limit. Most of the metals are observed to be within the detection limit while, total Coliforms were absent.



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

SURFACE WATER

The pH value of the collected ground water in the study area found to be in the range from 7.14 to 7.72 and conductivity observed in the range 276 $\mu\text{S}/\text{cm}$ to 342 $\mu\text{S}/\text{cm}$. TDS values were observed to be in range from 188 mg/L to 224 mg/ L. Total alkalinity is found to be the range from 60 mg/L to 175 mg/L and Total Hardness ranges from 60.0 to 130 mg/L. The values of Chloride, Fluoride, Nitrate and Sulphate etc, were observed within permissible limit. Most of the metals are observed to be within the detection limit while, total Coliforms were absent. The monitoring photos are enclosed as **Annexure 4.1**.

4.5 Biological Environment

The ecological study reflects the potential of a regional ecosystem and its biological components. The biological study is essential to understand the impact of any developmental project on the existing flora and fauna of the study area.

The main objective of the present ecological study / survey is aimed to find out the baseline status of flora and fauna (terrestrial and aquatic ecosystem) of the study area before the start of developmental works for the proposed 4 lanes Urga-Pathalgaon Highway project in Chhattisgarh under the Bharat Mala Pariyojana.

4.5.1 Description of Study Area

The proposed 4 lane Urga-Pathalgaon Highway is a greenfield project and will be developed from the Urga village of Korba district to Turua Ama village of Pathalgaon block of Jashpur district under Bharat Mala Pariyojana. The project is a part of Raipur-Dhanbad Economic Corridor. The total length of the proposed highway is 87.535 km. Major land use along the project corridor is agricultural and forest. For the developmental activities in the forest areas, the forest proposal has been prepared after consultation with the authority concerned for Forest Clearance under the FC Act section 2, 1980. The proposed project area (Korba, Raigarh, and Jashpur districts) falls under Seismic Zone-II & III.

4.5.2 Description of Eco-sensitive Zones in Study Area

There are no National parks, Wildlife Sanctuary, Biosphere Reserves, Wildlife corridors, Tiger/Elephant reserves (existing as well as proposed), within 10 km from the present alignment of the expressway development project (Fig.3). Other areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value are doesn't exist in the core and buffer zone of the present project except some Protected Forests.

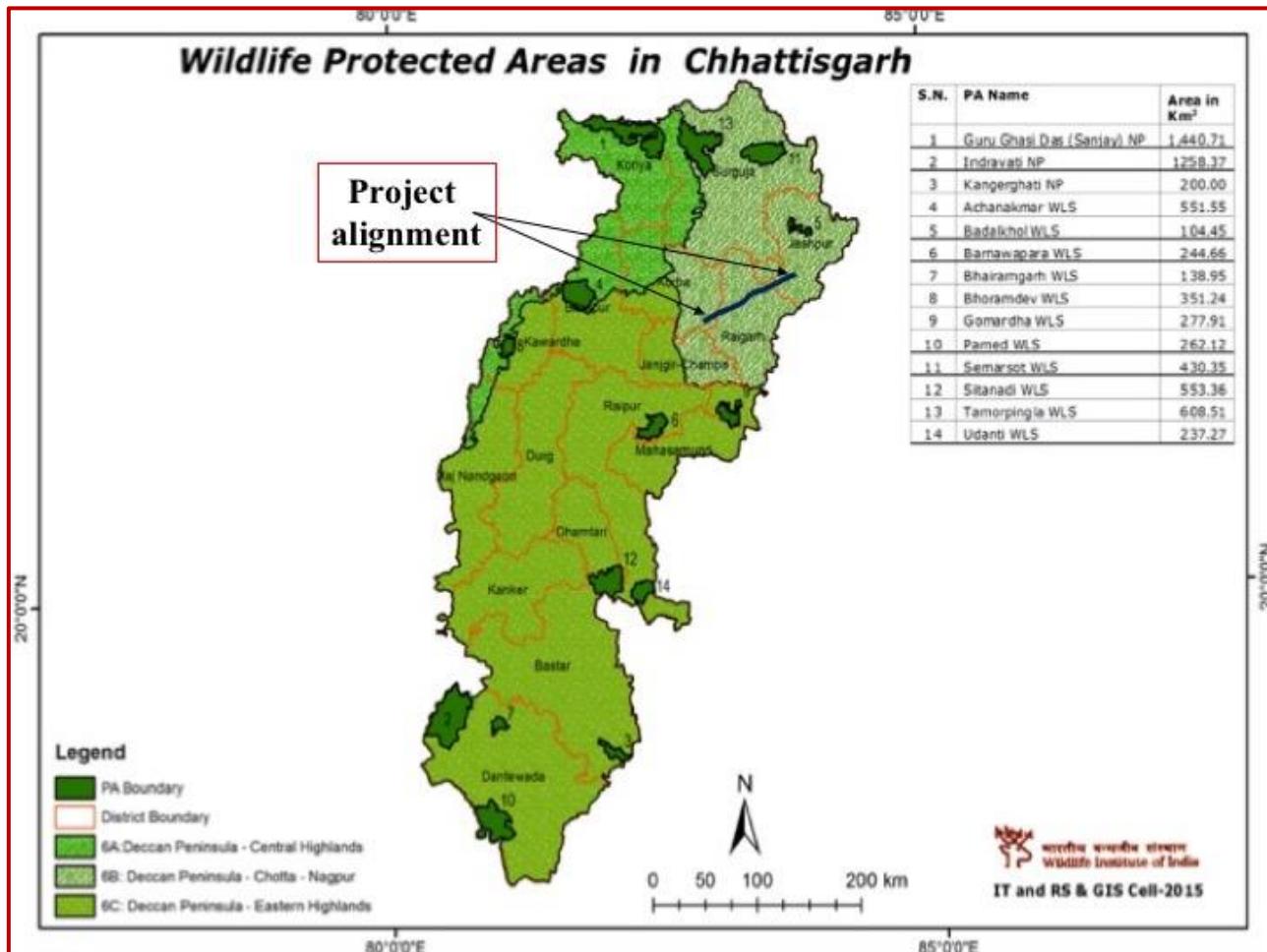
On the other hand, the proposed alignment will cross over several riverine channels in the study area and to maintain the natural hydrology and for the protection of all forms of biota found there in all the water bodies adequate structure across the drainage shall be constructed.

Forest Status: The state of Chhattisgarh has several Reserved, Protected and Unclassed Forest area of 59,772 km², which is nearly 44.21 percent of its geographical area. The study area has also several forests patches and different forest ranges. Total land required for the Highway project is 513.0486 Ha. which comprises 169.023 ha of Forest land and 344.0256 ha of non-forest land.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-12: Eco sensitive Zone Map of Study Area



Source: India State of Forest Report 2019

4.5.2.1 Elephant and Tiger Movement in the Project area

Elephant: The study area does not have any declared permanent elephant habitat (*Elephas maximus indicus*), but their displacement has been evident several times throughout the year in several villages. The present highway project will restrict elephant movement within the study area to some extent. However, groups of elephants may cross the area through the animal passage points or canals for their feeding, etc. Frequent movements of elephant groups have been observed by the locals in the Jashpur district. Although the proposed alignment does not pass through any designated wildlife protected areas, however, the proposed highway traverses through the Elephant Corridor, connecting the forests of Raigarh, Dharamjaigarh, and Korba with Jashpur. Therefore, a few sections of project study area are reported as an elephant-affected zone, and at some places there is heavy movement of elephants.

Tiger: During the present survey, no tiger individual was observed near the alignment within 1 km of the buffer area. **As per Public Consultation, the movement of tigers has not been seen in recent years in the study area.**

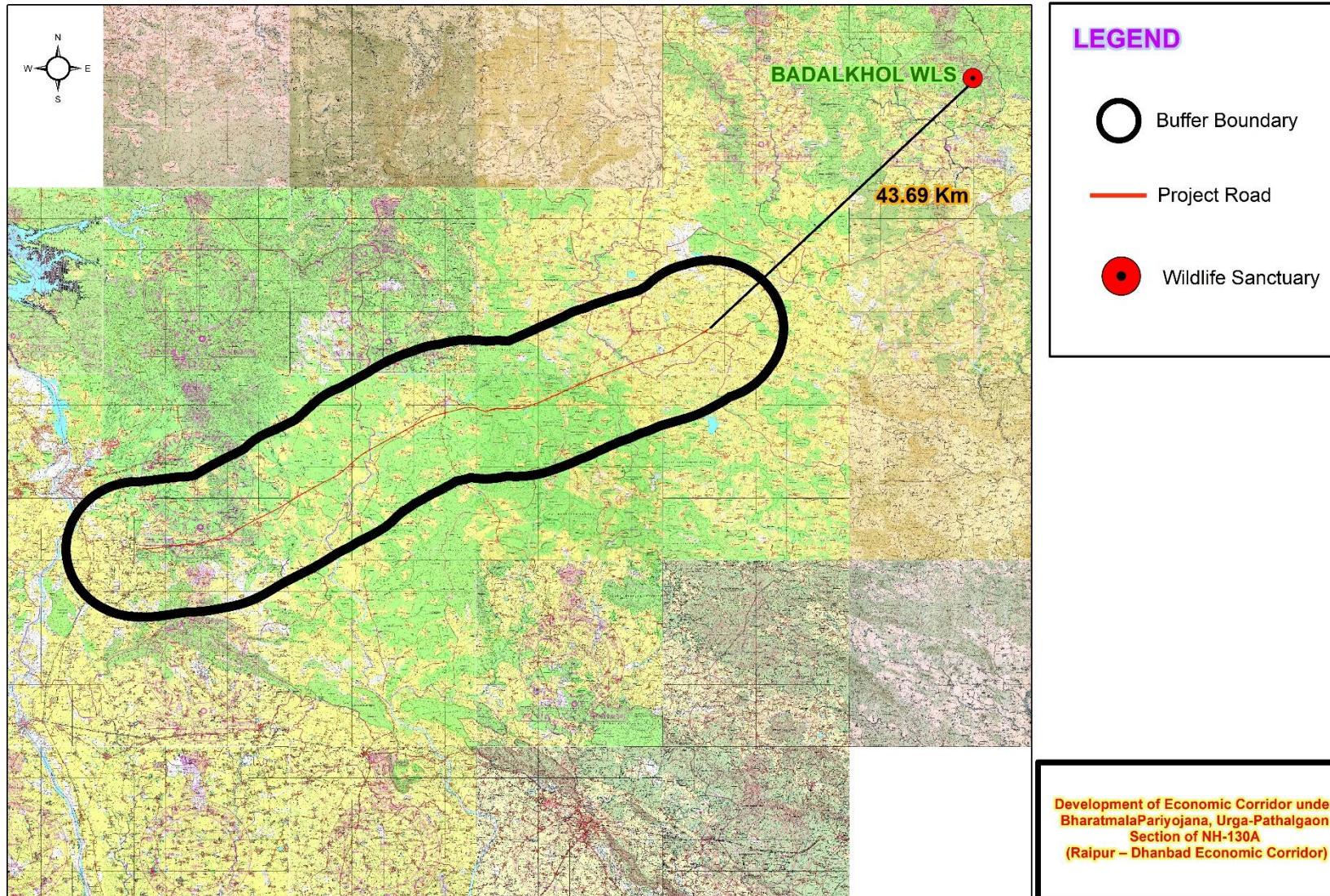


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-13: Project site on toposheet with 10km buffer zone & Distance from Wildlife Sanctuary





URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

4.5.2.2 Drainage / Water Bodies of the Study Area

The proposed project area is in the southern part of the Mahanadi River basin. Only the Maand River is perennial, and the rest of the riverine streams are seasonal. In the study area, the alignment of the highway will cross over the Pansari Nala, Kortimasara Nala, Dhawan Nala, Chuiya Nadi, Maand River, Chikatwani Nala, and Bharari Nala at different locations in the Korba, Raigarh, and Jashpur districts of Chhattisgarh.

Most of these riverine systems are seasonal and only flow during the monsoon period. Apart from these, some seasonal (monsoon-fed) riverine channels and streams are also present in the study area. A few ponds are also recorded nearby the village settlements, mainly used for fish farming, cattle feeding, irrigation purposes, etc.

4.5.3 Scope & Objective of Study

The study aims in identifying existing biodiversity, assessment of potential impacts on flora and fauna and to suggest relevant compensatory and mitigatory measures to protect/conserve biodiversity in the likely impacted area due to the various project activities. Following activities were covered under the present study:

- Survey of terrestrial & aquatic flora & fauna for core & buffer zone separately.
- Details of endemic species found in the study area and their IUCN status, Schedule status (as per WPA, 1972).
- Survey of the study area in terms of features like breeding & spawning grounds, habitats, flight paths, and the migratory path of the animals.
- Survey of flora covering types e.g., agriculture crop, commercial crop, plantation, natural vegetation/forest type, grass land. The endangered & endemic species of flora & fauna beside any other flora if present are also to be identified.
- The survey has been covering total listing of the faunal population. The survey has also covered endangered, endemic, migratory & detail of aquatic fauna.
- The assessment of potential damage to terrestrial & aquatic flora and fauna. The impact should be categorized as primary & secondary, temporary, and long term, unavoidable & risk transboundary impacts, possible irreversible change.

4.5.4 Methodology of Data Collection

A primary field survey was carried out within a 1 km radius of the proposed alignment during the Winter period. Both terrestrial and aquatic ecosystems have been studied to understand the biological environment. Secondary data were collected from authentic sources like the Forests Department, Fisheries Department, Agriculture Department of Korba, Raigarh, and Jashpur districts of Chhattisgarh, and available published literature.

4.5.4.1 Floral (Aquatic & Terrestrial)

For the collection of data for aquatic flora, the methodology prescribed in the standard book of Adoni (1985), NEERI (1998), and APHA (2015) has been adopted. A total of 09 sampling points were selected for the collection of samples for the study of aquatic flora.

On the other hand, for the terrestrial data, community analysis was carried out during the summer season. For the collection of terrestrial data, a total of 07 sampling points were selected. In every study site, quadrates of 10m X 10m (100 sq.m.) size were randomly laid to study tree species.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

The circumference of all the adult individuals [(≥ 30 cm circumference at breast height (CBH)] was measured with Freeman's tape. The study of communities was carried out by using qualitative characteristics, and quantitative characteristics. Qualitative characteristic mainly involved presence/absence of the species, genera, and family. This showed the community structures, composition and other characteristic can be readily described by visual observation without actual measurements.

4.5.4.2 Faunal (Aquatic & Terrestrial)

For the collection of data for aquatic fauna, the methodology prescribed in the standard book of Adoni (1985), NEERI (1998), and APHA (2015) has been adopted. A total of 09 sampling points were selected for the collection of samples for the study of aquatic fauna.

On the other hand, for the terrestrial data an extensive field survey was conducted at 07 different locations in the study area. During the survey, the Line Transect method was used for the study of mammals and Transact & Patch sampling were used for Amphibians, visual encountered methods was used for reptiles and butterflies. The presence of wildlife was also confirmed from the animal calls, footmarks, excreta, and from the local inhabitants depending on the animal sightings and the frequency of their visits in the project area which was later confirmed from the different government offices like the forest department or wildlife department, etc.

Observations of birds were made during a walk-through in the chosen transect for sighting birds. The number of birds observed in each sampling location was listed. Birds were noted and identified with the help of binocular and standard field identification guides.

4.5.4.3 Sampling Sites

A total of 07 sites (TS-1 to TS-07) were selected for the terrestrial vegetation, avian fauna, and other terrestrial animals like reptiles, mammals, etc. Also, for the collection of samples and data of aquatic flora and fauna, 09 separate sites (AS-1 to AS-09) were selected at different locations of the study area.

Table 4-16: Sampling Locations Identified for Biological Environment

S. No.	Location Name	Zone	Latitude	Longitude
1	Dongdarha village - Road Site	Core and Buffer	22°15'53.83"N	82°48'19.52"E
2	Kotmer village - Forest Site	Core and Buffer	22°17'35.81"N	82°56'3.31"E
3	Katkona village - Forest Site	Core and Buffer	22°21'37.17"N	83° 3'24.88"E
4	Bhandarimuda village - Forest Site	Core and Buffer	22°27'0.64"N	83°15'42.71"E
5	Rairuma khurd village - Forest Site	Core and Buffer	22°29'8.49"N	83°23'17.60"E
6	Gala village - Adjacent to the Forest	Core and Buffer	22°31'35.43"N	83°29'59.17"E
7	Turua Amla village - Rural Area	Core and Buffer	22°33'33.49"N	83°33'35.79"E

Sampling Stations for Aquatic Flora and Fauna

1	River Site-near Dongdarha village	Core and Buffer	22°15'56.16"N	82°48'54.56"E
2	River Site-Salihabhata village	Core and Buffer	22°16'3.44"N	82°49'47.03"E
3	Damgadi Pound-Sakdukala village	Core and Buffer	22°16'17.58"N	82°52'35.72"E
4	River Site-Kotmer village	Core and Buffer	22°16'36.40"N	82°54'1.87"E
5	River Site-Kartala	Core and Buffer	22°18'43.40"N	82°58'12.11"E
6	River Site-Katkona village	Core and Buffer	22°21'40.90"N	83° 3'32.65"E
7	Maand River-Khadgaon village	Core and Buffer	22°23'54.09"N	83° 6'27.99"E



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

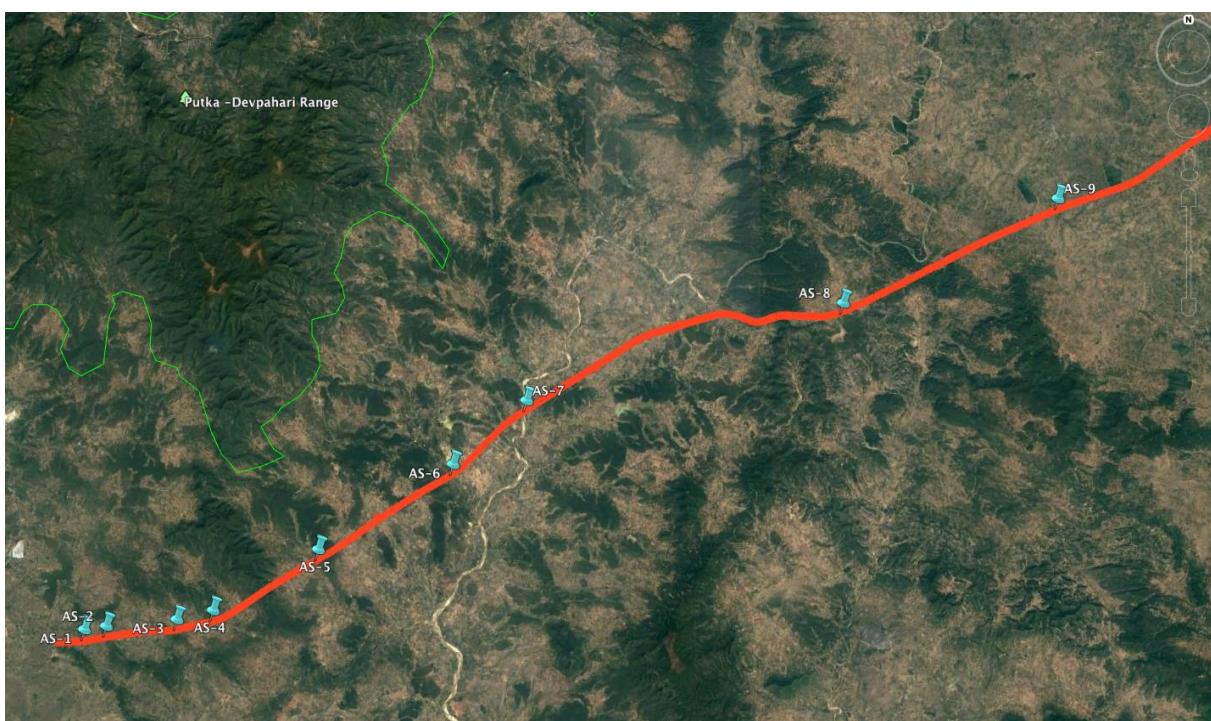
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Location Name	Zone	Latitude	Longitude
8	Sisringa Dam, Sisringa	Core and Buffer	22°27'14.86"N	83°19'0.14"E
9	River Site-Sivanpara village	Core and Buffer	22°30'50.13"N	83°27'29.71"E

Figure 4-14: Location of Sampling Sites of Terrestrial Flora & Fauna



Figure 4-15: Location of Sampling Sites of Aquatic Flora & Fauna





URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

4.5.5 Flora of the Study Area

Maximum part of the core and buffer zone of the study area forest land in comparison to the agricultural land. The proposed highway will pass through the different protected forests of Chhattisgarh. The forests of the study area have major floral composition in comparison to the agricultural land where scattered vegetation pattern have been recorded. Approximately 169.023 Ha of forest land must be acquired and will be diverted for the various developmental activities to develop the highway. The forest proposal shall be prepared after consultation with concerned forest department for Forestry Clearance under section 2, 1980. The alignment will require cutting of many trees for the development of the highway. If necessary, cutting of the trees will be done as per guidelines of MoEF & CC and respective state forest department. In the rural areas, most of the trees falling along the alignment are the part of agro forestry, however, natural vegetation presence in the forest areas. Against the cutting of the trees, compensatory plantation will be done along the expressway, on government land, nearby the villages, etc. Most of the trees will be relocated/ translocated.

Forest Types in the Study Area

As per the Champion and Seth classification of forest types (1968), the forests in Chhattisgarh belong to two Type Groups i.e., Tropical Moist Deciduous Forests and Tropical Dry Deciduous. The State's two main tree species are Sal (*Shorea robusta*) and Teak (*Tectona grandis*). Composition wise, there are four important formations: Teak forests, Sal forests, miscellaneous forests, and Bamboo forests. The chief NTFPs (non-timber forest produce) of the State are Tendu leaves (*Diospyros melanoxylon*), Sal seeds (*Shorea robusta*), Harra (*Terminalia chebula*), Gum, and Chironji (*Buchanania lanza*). Other major species are Bija (*Pterocarpus marsupium*), Saja (*Terminalia tomentosa*), Dhavdha (*Anogeissus latifolia*), Mahua (*Madhuca indica*), and bamboo (*Dendrocalamus strictus*) etc.

Apart from the above, common species grown near villages are mostly edible or useful plants. The most dominant tree species in the study area are *Aegle marmelos* (Bel), *Azadirachta indica* (Neem), *Buchnamia Lanza* (Piar), *Emblica officinalis* (Amla), *Dalbergia sissoo* (Sisam), *Ficus bengalensis* (Bargad), *Musa paradisiaca* (Kela), *Syzygiumcumini* (Jamun), *Cassia siamea* (Kasod/Siris), *Mangifera indica* (Aam) and in case of shrubs *Antigonum leptopus*, *Ricinus communis*, *Lantana camara*, *Jatropha gossipifolia* and *Cassia auriculata* etc. Details of the forest in Korba, Raigarh, and Jashpur districts of Chhattisgarh are given in Table 4.17.

Table 4-17: List of forest (sq.km) in Study Area (India State of Forest Report-2021)

District	Geographical Area	Very dense forest	Mod. Dense forest	Open forest	Total	% of GA	Change	Scrub
Korba	6,598	203	2,313.62	877.08	3,393.70	51.44	3.7	92.03
Raigarh	7,086	237.96	1,591.03	791.34	2,620.33	36.98	9.33	25.18
Jashpur	5,838	225.36	1,316.71	573.7	2,115.77	36.24	-15.23	21

Source: India State of Forest Report-2021

4.5.5.1 Flora of Core Zone (Terrestrial)

Vegetation details of the core zone were collected from 07 selected sites of the study area. Due to the presence of several Protected Forests in the study area, the flora of the core and buffer



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

zone were similar at all the sites. However, the density of the floral species was different at the all the selected locations. On the other hand, the flora of the buffer zone comprises mostly agroforestry i.e., fruits bearing plants, herbs, climbers, etc. The details of the vegetation recorded from the core zone are given in Table 3 along with the vegetation details of the buffer zone.

AGRICULTURAL VEGETATION/ COMMERCIAL VEGETATION OF THE CORE ZONE

Details of the agricultural vegetation and commercial crops were collected from the buffer zone of the 07 selected sites, and the details are given in table 4.18.

Table 4-18: List of Seasonal Crops in the Study Area

Family Name	Botanical Name	Local/Trade Name
Poaceae	<i>Zey mays</i>	Makkha/Maize
	<i>Triticum aestivum</i>	Wheat
	<i>Oryza sativa</i>	Paddy
Fabacea	<i>Cicer arietinum</i>	Channa
Apiaceae	<i>Coriander sativum</i>	Dhaniya
Amaranthacea	<i>Abelmoschus esculentus</i>	Bhendi
Cucurbitaceae	<i>Mamordica charanta</i>	Karela
	<i>Capsicum annum</i>	Mirchi
	<i>Lycopersicon lycopersicum</i>	Tomato
Solanaceae	<i>Solanum melongena</i>	Brinjal
	<i>Capsicum annum</i>	Mirchi
	<i>Solanum tuberosum</i>	Potato
Amaryllidaceae	<i>Allium cepa</i>	Onian
Fabacea	<i>Cajanus cajan</i>	Pigeon pea
Caricaceae	<i>Carica papaya</i>	Papaya
Malvacea	<i>Okra</i>	Ladyfinger/ Bhindi
Cucurbitacea	<i>Lagenaria siceraria</i>	Bottle gourd/ Lauki

Source: Present Survey Data Supported by Agriculture Department of Chhattisgarh.

4.5.5.2 Aquatic Flora of Core zone (Phytoplankton/ Macrophytes).

Vegetation details of the core zone were collected from 09selected sites of the study area. Details of phytoplankton and macro-phytic vegetation of the core and buffer zone are given in tables 4.19, 4.20 & Figure 4.16 & 4.17. The aquatic vegetation recorded from the core zone was like the aquatic vegetation of the buffer zone also. So, the same information is applicable for the core and buffer zone. None of the aquatic vegetation were under REET category in the study area.

Table 4-19: List of Aquatic Macro-phytic vegetation of Core and Buffer Zone

S. No.	Name of the Taxa	Family Name	IUCN Status	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9
1	<i>Azolla pinnata</i>	Salviniaceae	LC	+			+			+	+	+
2	<i>Cyperus alopecuroides</i>	Cyperaceae	LC	+		+		+		+	+	
3	<i>Cyperus difformis</i>	Cyperaceae	LC	+	+	+	+	+	+	+	+	+
4	<i>Eichhornia crassipes</i>	Pontederiaceae	LC							+		

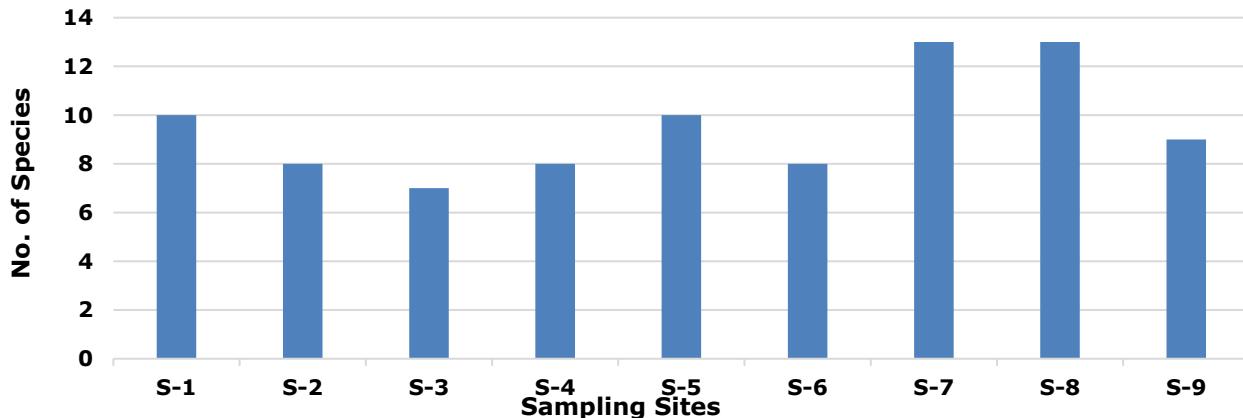


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of the Taxa	Family Name	IUCN Status	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9
5	<i>Hydrilla verticillata</i>	Hydrocharitaceae	LC	+	+		+		+	+	+	+
6	<i>Ipomea aquatica</i>	Convolvulaceae	LC	+	+	+	+	+	+	+	+	+
7	<i>Ipomea carnea</i>	Convolvulaceae	LC					+			+	+
8	<i>Lemna minor</i>	Araceae	LC	+	+	+	+	+	+	+	+	+
9	<i>Ludwigia parviflora</i>	Onagraceae	LC	+	+	+	+	+	+	+	+	+
10	<i>Nelumbo sp.</i>	Nelumbonaceae	LC						+	+	+	
11	<i>Nymphoides aquatica</i>	Menyanthaceae	LC	+			+	+		+		
12	<i>Phragmites karka</i>	Poaceae	LC	+		+		+				+
13	<i>Pistia stratiotes</i>	Araceae	LC		+				+	+	+	
14	<i>Polygonum glabrum</i>	Polygonaceae	LC	+	+	+	+	+	+	+	+	+
17	<i>Typha latifolia</i>	Typhaceae	LC								+	
16	<i>Typha orientalis</i>	Typhaceae	LC		+				+		+	+
Total No. of Species				10	8	7	8	10	8	13	13	9

Figure 4-16: Qualitative list of Aquatic Macro-phytic vegetation of Core and Buffer Zone



Phytoplankton: A total of 44 phytoplankton species were collected from 09 selected sites of the study area. Maximum diversity of phytoplankton was recorded at site 07 from Maand river. Details of Phytoplankton species are given in table 4.20 & figure 4.17.

Table 4-20: List of Phytoplankton in Different Water Bodies of Study Area

S. N.	Taxonomic Details	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
	Chlorophyceae										NA	NA
1	<i>Ankistrodesmus</i> sp.		+	+	+	+	+	+	+		NA	NA
2	<i>Ankistrodesmus falcatus</i>	+	+		+	+	+	+		+	NA	NA
3	<i>Arthrodesmus</i> sp.	+		+	+		+	+	+		NA	NA



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. N.	Taxonomic Details	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
4	<i>Chlorella vulgaris</i>	+		+	+	+		+	+	+	NA	NA
5	<i>Closterium quadratulum</i>		+			+	+	+	+		NA	NA
6	<i>Cosmarium formii</i>	+		+	+			+	+	+	NA	NA
7	<i>Gonium sp.</i>		+		+	+	+			+	NA	NA
8	<i>Oocystis crassa</i>	+			+			+	+		NA	NA
9	<i>Pediastrum simplex</i>	+		+	+				+	+	NA	NA
10	<i>Spirogyra sp.</i>	+	+		+	+	+	+	+		NA	NA
11	<i>Tetraedron trigonum</i>		+	+						+	NA	NA
12	<i>Ulothrix zonata</i>	+	+		+	+		+		+	NA	NA
13	<i>Volvox sp.</i>	+			+	+	+		+	+	NA	NA
14	<i>Zygnema sp.</i>	+	+	+	+			+	+	+	NA	NA
	Total	10	8	7	12	8	7	10	10	9		
	Cyanophyceae										NA	NA
1	<i>Anabaena sp.</i>	+	+	+	+	+	+		+		NA	NA
2	<i>Anabaena flosaque</i>	+	+		+		+	+		+	NA	NA
3	<i>Anacystis sp.</i>		+	+		+		+	+	+	NA	NA
4	<i>Aphanocapsa sp.</i>	+			+	+	+	+	+		NA	NA
5	<i>Chroococcus sp.</i>		+	+			+	+	+	+	NA	NA
6	<i>Gloeocapsa sp.</i>	+			+	+		+			NA	NA
7	<i>Merismopedia sp.</i>	+		+				+	+		NA	NA
8	<i>Merismopedia tenuissima</i>	+	+	+	+	+	+	+	+	+	NA	NA
9	<i>Microcystis aeruginosa</i>		+	+	+				+	+	NA	NA
10	<i>Nostoc sp.</i>	+	+			+	+	+	+		NA	NA
11	<i>Oscillatoria subbrevis</i>	+		+	+	+	+	+		+	NA	NA
12	<i>Spirulina laxissima</i>		+		+		+		+	+	NA	NA
	Total	8	8	7	8	7	8	9	9	7		
	Bacillariophyceae										NA	NA
1	<i>Achnanthes sp.</i>	+	+		+		+	+			NA	NA
2	<i>Amphora ovalis</i>	+	+	+	+	+	+	+	+	+	NA	NA
3	<i>Cyclotella sp.</i>	+				+		+	+	+	NA	NA
4	<i>Cymbella affinis</i>		+	+	+		+	+	+		NA	NA
5	<i>Eunotia major</i>	+		+		+		+	+	+	NA	NA
6	<i>Fragillaria pinnata</i>		+	+	+	+		+	+		NA	NA
7	<i>Gomphonema sp.</i>	+			+		+	+	+	+	NA	NA
8	<i>Gomphonema lanceolatum</i>		+	+				+		+	NA	NA
9	<i>Melosira granulata</i>	+	+	+		+	+	+	+	+	NA	NA



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

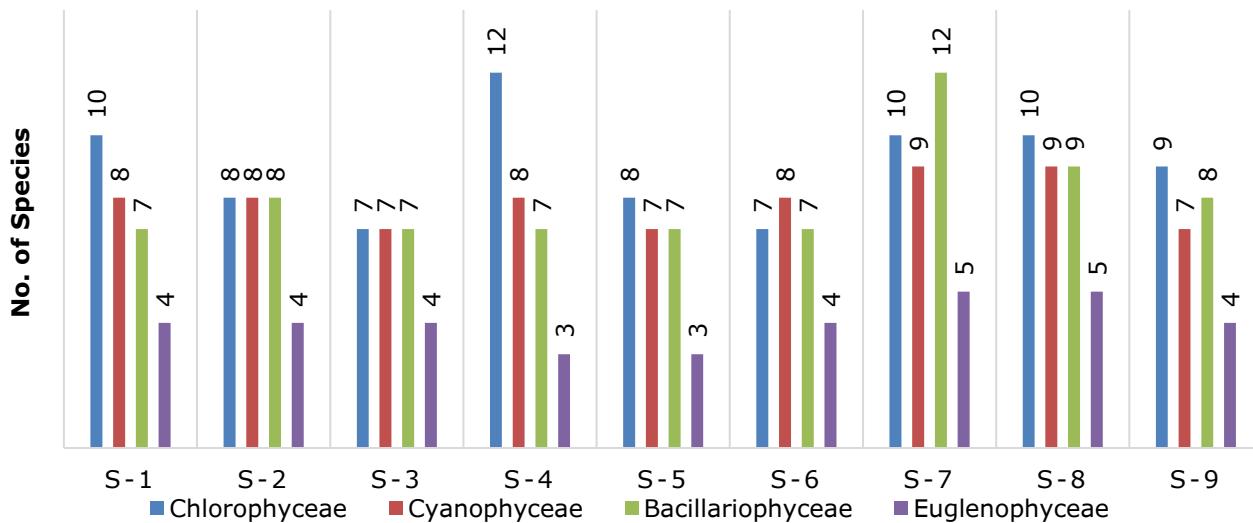
S. N.	Taxonomic Details	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
10	<i>Navicula subrhyncocephala</i>		+		+	+		+	+		NA	NA
11	<i>Nitzschia palea</i>	+		+			+	+		+	NA	NA
12	<i>Synedra ulna</i>		+		+	+	+	+	+	+	NA	NA
	Total	7	8	7	7	7	7	12	9	8		
	Euglenophyceae										NA	NA
1	<i>Euglena acus</i>	+	+	+	+		+	+	+	+	NA	NA
2	<i>Euglena sp.</i>		+			+			+	+	NA	NA
3	<i>Euglepha sp.</i>	+		+	+		+	+	+		NA	NA
4	<i>Phacus sp.</i>		+			+	+	+	+	+	NA	NA
5	<i>Phacus caudatus</i>	+		+	+	+	+	+			NA	NA
6	<i>Trachelomonas sp.</i>	+	+	+				+	+	+	NA	NA
	Total	4	4	4	3	3	4	5	5	4		

Source: Primary Survey data of P&M Solution, Noida.

Table 4-21: Site wise Qualitative list of Phytoplankton in Study Area

Class	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9
Chlorophyceae	10	8	7	12	8	7	10	10	9
Cyanophyceae	8	8	7	8	7	8	9	9	7
Bacillariophyceae	7	8	7	7	7	7	12	9	8
Euglenophyceae	4	4	4	3	3	4	5	5	4
Total	29	28	25	30	25	26	36	33	28

Figure 4-17: Site wise qualitative list of Phytoplankton in Study Area



4.5.5.3 Flora of Buffer Zone

TERRESTRIAL FLORA OF BUFFER ZONE: During the present survey, a total of 68 species of trees, 26 species of shrubs/herbs, 10 species of Grass, and 13 species of Climbers were recorded from the core and buffer zone of the present study area. The below-mentioned vegetation details have been collected from the Core as well as Buffer zone of the present study area. All the details



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

have been furnished based on the field survey (07sampling points) and data supported by the Department of Forest, Chhattisgarh. The maximum floral diversity was recorded at sites 2, 3, 4 and 5, whereas at others sampling sites scattered vegetation was observed.

Table 4-22: List of Trees, Shrubs, Herbs and Grasses in Study Area

S. No.	Botanical Name	Common/ Hindi Name	Name of family	Core Zone	Buffer Zone
Trees					
1	<i>Acacia auriculiformis</i>	Austrelian babul	Fabaceae	+	+
2	<i>Acacia catechu</i>	Khair	Fabaceae	+	+
3	<i>Acacia leucophloea</i>	Safed babul	Mimosaceae	+	+
4	<i>Acacia nilotica</i>	Desi babool	Fabaceae	+	+
5	<i>Adina cordifolia</i>	Karam	Rubiaceae	+	+
6	<i>Aegle marmelos</i>	Bel	Rutaceae	+	+
7	<i>Ailanthus excels</i>	Adusa	Simaroubaceae	+	+
8	<i>Albizia procera</i>	Safed Siris	Mimosaceae	+	+
9	<i>Albizzia amara</i>	Siris	Mimosoideae	+	+
10	<i>Albizzia lebbeck</i>	Sirish	Mimosaceae	+	+
11	<i>Alstonia scholaris</i>	Saptaparni	Apocynaceae		+
12	<i>Annona squamosa</i>	Sharifa / Sitaphal	Annonaceae	+	+
13	<i>Anogeissus latifolia</i>	Dhaura,	Combretaceae	+	+
14	<i>Anthocephalus cadamba</i>	Kadamb	Rubiaceae	+	+
15	<i>Artocarpus heterophyllus</i>	Kathal	Moraceae	+	+
16	<i>Artocarpus lacucha</i>	Badahar/Dohu	Moraceae	+	+
17	<i>Artocarpus heterophyllus</i>	Jack fruit	Moraceae	+	+
18	<i>Azadirachta indica</i>	Neem	Meliaceae	+	+
19	<i>Bauhinia racemosa</i>	Apta	Leguminosae	+	+
20	<i>Bauhinia variegata</i>	Kachnar	Leguminosae	+	+
21	<i>Bergera koenigii</i>	Kadipatta	Rutaceae	+	+
22	<i>Bombax ceiba</i>	Semal	Malvaceae	+	+
23	<i>Bombax malabaricum</i>	Semal tree	Malvaceae	+	+
24	<i>Borassus flabellifer</i>	Nariyal	Palmae	+	+
25	<i>Buchnamia Lanzan</i>	Piar	Anacardiaceae	+	+
26	<i>Butea monosperma</i>	Palas	Leguminosae	+	+
27	<i>Carica papaya</i>	Papita	Caricaceae	+	+
28	<i>Cascabela thevetia</i>	Pila Kaner	Apocynaceae	+	+
29	<i>Cassia fistula</i>	Amaltas	Caesalpiniaceae	+	+
30	<i>Cassia siamea</i>	Chakundi/Kassod	Caesalpiniaceae	+	+
31	<i>Dalbergia latifolia</i>	Kala-shisham	Fabaceae	+	+
32	<i>Dalbergia sissoo</i>	Sissoo	Fabaceae	+	+
33	<i>Delonix regia</i>	Gulmohar	Caesalpiniaceae	+	+
34	<i>Diospyros melanoxylon</i>	Tendu	Ebenaceae	+	+
35	<i>Dypsis lutescens</i>	Areca palm	Arecaceae	+	+
36	<i>Eucalyptus citriodora</i>	Safeda / Neelgiri	Myrtaceae	+	+
37	<i>Eucalyptus globules</i>	Nilgiri	Myrtaceae	+	+



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Botanical Name	Common/ Hindi Name	Name of family	Core Zone	Buffer Zone
38	<i>Ficus benghalensis</i>	Bargad	Moraceae	+	+
39	<i>Ficus benjamina</i>	Pakar	Moraceae	+	+
40	<i>Ficus elastica</i>	Rubber Plant	Moraceae	+	+
41	<i>Ficus racemosa</i>	Gular	Moraceae	+	+
42	<i>Ficus religiosa</i>	Pipal	Moraceae	+	+
43	<i>Gmelina arborea</i>	Gamhar	Verbenaceae	+	+
44	<i>Hibiscus rosa-sinensis</i>	Gurhal / Urhul	Malvaceae	+	+
45	<i>Lagerstroemia parviflom</i>	Sidha	Lythraceae	+	+
46	<i>Lagerstroemia speciosa</i>	Jarul	Lythraceae	+	+
47	<i>Madhuca longifolia</i>	Mohua tree	Sapotaceae	+	+
48	<i>Magnifera indica</i>	Aam	Anacardiaceae	+	+
49	<i>Melia azedarach</i>	Bukkam Neem	Meliaceae	+	+
50	<i>Monoon longifolium</i>	Ashok Tree	Annonaceae	+	+
51	<i>Moringa oleifera</i>	Sahjan/Munga	Moringaceae	+	+
52	<i>Musa paradisiacial</i>	Banana	Musaceae	+	+
53	<i>Nerium oleander</i>	Kaner	Apocynaceae	+	+
54	<i>Nyctanthes arbor-tristis</i>	Harshingar	Oleaceae	+	+
55	<i>Phoenix sylvestris</i>	Date palm	Arecaceae	+	+
56	<i>Phyllanthus emblica</i>	Amla	Phyllanthaceae	+	+
57	<i>Pisidium guava</i>	Guava	Myrtaceae	+	+
58	<i>Pongamia pinnata</i>	Karanj	Fabaceae	+	+
59	<i>Prosopis cineraria</i>	Shami Tree	Mimosaceae	+	+
60	<i>Prosopis juliflora</i>	Vilayati babool	Fabaceae	+	+
61	<i>Pterocarpus marsupium</i>	Bija	Leguminosae	+	+
62	<i>Punica granatum</i>	Anar	Lythraceae	+	+
63	<i>Sarracca indica</i>	Ashok	Annonaceae	+	+
64	<i>Schleichera oleosa</i>	Kusum	Sapindaceae	+	+
65	<i>Shorea robusta</i>	Sal	Depterocarpaceae	+	+
66	<i>Syzygium cumini</i>	Jamun	Myrtaceae	+	+
67	<i>Tabernaemontana divaricata</i>	Chandani	Apocynaceae	+	+
68	<i>Tectona grandis</i>	Sagwan	Verbenaceae	+	+
69	<i>Terminalia arjuna</i>	Arjun	Combretaceae	+	+
70	<i>Terminalia belerica</i>	Bahera	Combretaceae	+	+
71	<i>Terminalia chebula</i>	Harra / Harad	Combretaceae	+	+
72	<i>Terminalia tomentosa</i>	Asan Tree	Combretaceae	+	+
73	<i>Zizyphus jujube</i>	Ber	Rhamnaceae	+	+
74	<i>Zyziphus mauritiana</i>	Ber	Rhamnaceae	+	+
Shrub & Herbs					
1	<i>Acanthospermum hispidum</i>	Kanti	Asteraceae	+	+
2	<i>Acheranthis aspera</i>	Aghada	Amaranthaceae	+	+
3	<i>Argemone mexicana</i>	Pila dhtura	Papaveraceae	+	+
4	<i>Bambusa arundinacea</i>	Katang bamboo	Poaceae	+	+



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Botanical Name	Common/ Hindi Name	Name of family	Core Zone	Buffer Zone
5	<i>Dendrocalamus strictus</i>	Bamboo	Poaceae	+	+
6	<i>Baugainvillia glabra</i>	Paper flower	Nyctaginaceae	+	+
7	<i>Calotropis procera</i>	Aakra	Asclepiadaceae	+	+
8	<i>Cassia auriculata</i>	Tarwar	Fabaceae	+	+
9	<i>Cassia tora</i>	Tarota /Takla	Caesalpiniaceae	+	+
10	<i>Chenopodium album</i>	Manure weed	Amaranthaceae	+	+
11	<i>Cleome viscosa</i>	Pivali tilval	Cleomaceae	+	+
12	<i>Dalura metel</i>	Dhotra	Solanaceae	+	+
13	<i>Echinops echinatus</i>	Unthkantali	Asteraceae	+	+
14	<i>Ervatamia divaricata</i>	Chandani	Apocynaceae	+	+
15	<i>Euphorbia hirta</i>	Mothi dudhi	Euphorbiaceae	+	+
16	<i>Ipomoea carnea</i>	Besharam	Convolvulaceae	+	+
17	<i>Jatropha gossipifolia</i>	Cotton-leaf	Euphorbiaceae	+	+
18	<i>Lantana camara</i>	Ghaneri	Verbenaceae	+	+
19	<i>Mimosa pudica</i>	Chui Mui	Mimosaceae	+	+
20	<i>Ocimum sanctum</i>	Tulsi	Labiatae	+	+
21	<i>Parthenium hysterophorus</i>	Gajar grass	Asteraceae	+	+
22	<i>Ricinus communis</i>	Arand	Euphorbiaceae	+	+
23	<i>Ricinus communis</i>	Castor oil plant	Euphorbiaceae	+	+
24	<i>Solanum surattense</i>	Bhuringani	Solanaceae	+	+
25	<i>Tridax procumbens</i>	Kambarmodi	Asteraceae	+	+
26	<i>Xanthium strumarium</i>	Chota Dhatura	Asteraceae	+	+

Grasses

1	<i>Apluda mutica</i>	Mauntian grass	Poaceae	+	+
2	<i>Apluda mutica</i>	Banjura grass	Poaceae	+	+
3	<i>Commelina benghalensis</i>	Bokna	Commelinaceae	+	+
4	<i>Cynodon dactylon</i>	Doob	Poaceae	+	+
5	<i>Cyperus rotundus</i>	Motha	Cyperaceae	+	+
6	<i>dactyloctenium aegyptium</i>	Crow foot grass	Poaceae	+	+
7	<i>Digitaria ternate</i>	--	Graminae	+	+
8	<i>Kyllinga tenuifolia</i>	--	Cyperaceae	+	+
9	<i>Pennisetum purpureum</i>	Elephant grass	Poaceae	+	+
10	<i>Saccharum spontaneum</i>	Kans	Poaceae	+	+

Climbers

1	<i>Abrus precatorius</i>	Gunga	Fabaceae	+	+
2	<i>Antigonon leptopus</i>	Anantalata	Polygonaceae	+	+
3	<i>Bougainvillea glabra</i>	Booganel	Nyctaginaceae	+	+
4	<i>Celastrus paniculata</i>	Kujari	Celastraceae		+
5	<i>Cissampelos pareira</i>	Khariya lata	Menispermaceae	+	+
6	<i>Clitoria ternatea</i>	Aprajita,	Fabaceae	+	+
7	<i>Coccinia grandis</i>	Jungli Kundru	Cucurbitaceae	+	+
8	<i>Combretum indicum</i>	Madhu Malati	Combretaceae	+	+
9	<i>Cuscuta reflexa</i>	Amarbel	Convolvulaceae	+	+



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Botanical Name	Common/ Hindi Name	Name of family	Core Zone	Buffer Zone
10	<i>Hemidesmus indicus</i>	Anantamul	Apocynaceae		+
11	<i>Ipomoea cairica</i>	Neeli Bel	Convolvulaceae	+	+
12	<i>Tilospora cordifolia</i>	Giloy	Menispermaceae	+	+
13	<i>Zizyphus oenoplia</i>	Makor	Rhamnaceae	+	+

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh

AQUATIC FLORA OF BUFFER ZONE (PHYTOPLANKTON/ MACROPHYTES/ AQUATIC WEEDS)

Macrophytes: The diversity of aquatic macrophytes was similar in both core and buffer zone. The details of the phytoplankton and macro-phytic vegetation of the buffer zone are given in above tables.

AGRICULTURAL VEGETATION/ COMMERCIAL VEGETATION OF THE BUFFER ZONE

The variety of cropping patterns was similar in core and buffer zone in the study area. The vegetation details of the buffer zone were collected from 07 selected sites and the details are given in table 4.18.

4.5.6 Faunal Diversity of the Study Area

Proposed alignment passing through the forest land and the rural agricultural land in Korba, Raigarh and Jashpur districts of Chhattisgarh. Due to presence of different forest, present study area has variety of wildlife animals. Many mammals, reptiles, avian fauna are found in this region of Chhattisgarh state. At some places, highway will pass adjacent to some villages in the study area. Apart from the Protected Forests, the rest of the study area is devoid of any major natural forest, so, wildlife animals are rarely found in the rural areas. But the occasional presence of Elephants, Leopard, and Black bears and Chinkara has been observed in the study area. On the other hand, only some moving domesticated animals were observed within the project area. The assessment of the faunal population was done based on the primary survey as well as secondary data collected from different government offices like the forest department, wildlife department, etc. The presence of wildlife was also confirmed by the local inhabitants depending on the animal sightings and the frequency of their visits to the project area especially in and around the Protected Forest. During the present study period, many local bird's species are noticed in the buffer zone of the study area. Few bird habitats have been observed in the core zone and buffer zone. It is recommended to the client and workers to take care of the birds and their habitat before cleaning of sites, cutting and translocating the trees in the forest areas.

4.5.6.1 Fauna of the Core Zone

Table 4-23: List of Mammals/Reptiles/Amphibians/Birds recorded from the Core Zone

S. No.	Common Name	Scientific Name	Family	WPA 1972 Schedule	IUCN status
Mammals					
1	<i>Bandicota bengalensis</i>	Bandicoot Rat	Sciuridae	IV	LC
2	<i>Boselaphus tragocamelus</i>	Nilgai	Bovidae	III	LC
4	<i>Canis aurius</i>	Jackal	Pteropodidae	V	LC
5	<i>Cervus unicolor</i>	Sambar Deer	Cervidae	III	VU



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Common Name	Scientific Name	Family	WPA 1972 Schedule	IUCN status
6	<i>Cuon alpinus</i>	Indian Wild Dog/Dhole	Canidae	II	EN
7	<i>Felis chaus</i>	Jungle cat	Soricidae	IV	LC
8	<i>Funambulus palmarum</i>	Three-striped Squirrel	Suidae	III	LC
9	<i>Funambulus pennanti</i>	Five striped palm squirrel	Hyaenidae	III	LC
10	<i>Gazella gazella bennetti</i>	Indian Gazella (Chinkara)	Bovidae	I	LC
11	<i>Herpestes edwardsi</i>	Indian Grey Mongoose	Canidae	II	LC
12	<i>Hyaena hyaena</i>	Stripped hyena	Leporidae	V	LC
13	<i>Macaca mulatta</i>	Rhesus Macaque (Bandar)	Cercopithecidae	II	LC
14	<i>Manis crassicaudata</i>	Indian Pangolin	Manidae	I	EN
15	<i>Mus booduga</i>	Indian Field Mouse	Sciuridae	IV	LC
16	<i>Presbytis entellus</i>	Common langur	Cercopithecidae	II	LC
17	<i>Pteropus giganteus</i>	Indian Flying Fox	Pteropodidae	V	LC
18	<i>Rattus rattus</i>	Common House Rat	Muridae	V	LC
19	<i>Suncus murinus</i>	Grey musk Shrew	Muridae	V	LC
20	<i>Vulpes bengalensis</i>	Indian fox	Felidae	II	LC

Reptiles and Amphibians

1	<i>Bufo melanostictus</i>	Common toad	Bufonidae	IV	LC
2	<i>Bungarus caeruleus</i>	Krait	Elapidae	IV	NE
3	<i>Calotes versicolor</i>	Garden lizard	Agamidae	IV	NE
4	<i>Euphlyctis hexadactyla</i>	Common frog	Dicroglossidae	IV	LC
5	<i>Eutropis carinata</i>	Common skink	Scincidae	IV	LC
6	<i>Hemidactylus flaviviridis</i>	House Gecko	Gekkonidae	--	NE
7	<i>Naja naja</i>	Cobra	Elapidae	II	LC
8	<i>Ptyas mucosa</i>	Rat Snake	Colubridae	II	NE
9	<i>Rana temporaria</i>	Common frog	Ranidae	IV	LC
10	<i>Testudo graeca</i>	Common Tortoise	Testudinidae	IV	VU
11	<i>Varanus bengalensis</i>	India monitor lizard	Varanidae	I	LC

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh, Note: LC: Least Concern, VU: Vulnerable. NT: Near Threatened, EN: Endangered; NE: Not Evaluated.

Avian Fauna of the Core Zone: The avian fauna of the core and buffer zone were similar as listed in table 4.26. So, similar information is applicable for core and buffer zones.

Butterflies of the Core Zone: the details of the butterflies found in the core of the study area are listed in table 4.24.

Table 4-24: Butterflies observed in the Core Zone

S. No.	Common Name	Scientific Name	Family	IUCN Status
1.	Plain Tiger	<i>Danaus chrysippus</i>	Nymphalidae	LC
2.	Common emigrant	<i>Catopsilia pomona</i>	Pieridae	LC
3.	Common crow	<i>Euploea core</i>	Nymphalidae	LC
4.	Small grass yellow	<i>Eurema brigitta</i>	Pieridae	LC

Sources: Primary Survey data and the data supported by Department of Forest, Chhattisgarh



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

AQUATIC FAUNA OF CORE ZONE: All the aquatic fauna recorded from the core zone were also recorded from the buffer zone and most of the sampling sites are the same for the core and buffer zone. So, the list of aquatic fauna of the core zone is merged with the details of the buffer zone and is given in table 4.28, 4.29 & 4.30.

4.5.6.2 Fauna of Buffer zone

To prepare a detailed report on the status of faunal biodiversity of the present study area of Korba, Raigarh and Jashpur district (1 km buffer) and to assess the impacts due to digging/ leveling of alignment route/ construction of bridge/ operational activity which evolves suitable mitigation measures to protect & conserve the biodiversity following components were studied:- terrestrial biodiversity, wildlife survey (diversity), habitat study (feeding, breeding, roosting areas), distribution of birds, rare & endangered species of the study area.

The fauna of the study area (Core and Buffer zone) varies upon the local topography and different types of habitats. The fauna of the study area has been categorized into two categories based on their habitat, i.e. (i) Aquatic fauna and (ii) Terrestrial fauna.

During the present survey, there are some seasonal, perennial, and private water bodies observed along with the proposed alignment, which will also be affected due to the present project activities. The alignment of the expressway will pass over some seasonal and perennial streams.

Terrestrial Fauna of Buffer zone (Mammals/Reptiles/Amphibians/Birds/ Insects etc.)

Chhattisgarh state is endowed with rich flora and fauna and has always been rich in biodiversity. A major part of the study area lies under forest and rural agricultural fields However, due to the presence of maximum protected forests in the study area, some wild animals like Wild boar, Jackal, Wild cat, Mongoose, Common monitor lizard are found nearby all the selected sites. According to the local inhabitants few Elephants group have been seen occasionally in the study area, but during the field survey these animals were not recorded. Apart from these, Peafowl (Mor) have been recorded at the maximum number of selected sites in the study area. A list of the animals of the study area has been prepared based on a field survey, inquire from the local people and with help of secondary data of respective forest departments. The animals thus recorded were cross-checked with the Wildlife (Protection) Act, 1972 for their schedule status.

Mammals and Reptiles/ Amphibians

The domesticated animals like Goat (*Capra aegagrus*); Buffalo (*Bubalus bubalis*); Cow (*Bos primigenius*); Horse (*Equus caballus*); Ass (*Equus hemionus*) and Dog (*Canis lupus familiaris*) were observed moving in different parts of the study area, especially nearby villages. Other mammals and reptiles found in the study area are listed in the table below.

Table 4-25: List of Mammals, Reptiles and Amphibians recorded from the Buffer Zone

S. No.	Scientific Name	Common Name	Family	WPA 1972 Schedule	IUCN Status
Mammals					
1	<i>Axis axis</i>	Spotted Deer /Chital	Cervidae	III	LC
2	<i>Bandicota bengalensis</i>	Bandicoot Rat	Sciuridae	IV	LC
3	<i>Boselaphus tragocamelus</i>	Nilgai	Bovidae	III	LC
5	<i>Canis aurius</i>	Jackal	Pteropodidae	V	LC
6	<i>Cervus unicolor</i>	Sambar Deer	Cervidae	III	VU



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Scientific Name	Common Name	Family	WPA 1972 Schedule	IUCN Status
7	<i>Cuon alpinus</i>	Indian Wild Dog/Dhole	Canidae	II	EN
8	<i>Elephas maximus indicus</i>	Indian elephant	Elephantidae	I	EN
9	<i>Felis chaus</i>	Jungle cat	Soricidae	IV	LC
10	<i>Funambulus palmarum</i>	Three-striped Squirrel	Suidae	III	LC
11	<i>Funambulus pennanti</i>	Five striped palm squirrel	Hyaenidae	III	LC
12	<i>Gazella gazella bennetti</i>	Indian Gazella (Chinkara)	Bovidae	I	LC
13	<i>Herpestes edwardsi</i>	Indian Grey Mongoose	Canidae	II	LC
14	<i>Hyaena hyaena</i>	Stripped hyena	Leporidae	V	LC
15	<i>Lepus nigricollis</i>	Indian Hare	Canidae	II	LC
16	<i>Macaca mulatta</i>	Rhesus Macaque (Bandar)	Cercopithecidae	II	LC
17	<i>Manis crassicaudata</i>	Indian Pangolin	Manidae	I	EN
18	<i>Melursus ursinus</i>	Sloth bear / Bhalu	Ursidae	I	VU
19	<i>Mus booduga</i>	Indian Field Mouse	Sciuridae	IV	LC
20	<i>Panthera pardus fusca</i>	Leopard/ Tendua	Felidae	I	VU
21	<i>Presbytis entellus</i>	Common langur	Cercopithecidae	II	LC
22	<i>Pteropus giganteus</i>	Indian Flying Fox	Pteropodidae	V	LC
23	<i>Rattus rattus</i>	Common House Rat	Muridae	V	LC
24	<i>Rousettus leschenaultia</i>	Indian Fulvous Fruit-Bat	Muridae	V	LC
25	<i>Suncus murinus</i>	Grey musk Shrew	Muridae	V	LC
26	<i>Sus scrofa</i>	Wild Boar	Canidae	III	LC
27	<i>Vulpes bengalensis</i>	Indian fox	Felidae	II	LC

Reptiles and Amphibians

1	<i>Bufo melanostictus</i>	Common toad	Bufonidae	IV	LC
2	<i>Bungarus caeruleus</i>	Krait	Elapidae	IV	NE
3	<i>Calotes versicolor</i>	Garden lizard	Agamidae	IV	NE
4	<i>Crotolus sp.</i>	Pit viper	Viperidae	II	LC
5	<i>Enhydris enhydris</i>	Smooth water snake	Homalopsidae	IV	LC
6	<i>Euphylyctis hexadactyla</i>	Common frog	Dicroididae	IV	LC
7	<i>Eutropis carinata</i>	Common skink	Scincidae	IV	LC
8	<i>Hemidactylus flaviviridis</i>	House Gecko	Gekkonidae	--	NE
9	<i>Naja naja</i>	Cobra	Elapidae	II	LC
10	<i>Ophiophagus hannah</i>	King cobra	Elapidae	II	LC
11	<i>Ptyas mucosa</i>	Rat Snake	Colubridae	II	NE
12	<i>Python molurus</i>	Indian python / Azgar	Pythonidae	I	LC
13	<i>Rana temporaria</i>	Common frog	Ranidae	IV	LC
14	<i>Testudo graeca</i>	Common Tortoise	Testudinidae	IV	VU
15	<i>Varanus bengalensis</i>	India monitor lizard	Varanidae	I	LC

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh, Note: LC: Least Concern, VU: Vulnerable. NT: Near Threatened, EN: Endangered; NE: Not Evaluated.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Avian Fauna: Many avian fauna are found in different forests rage as well as rural areas of Chhattisgarh. But it is possible to enlist here all the species. During the field survey of study areas in Korba, Raigarh and Jashpur district, a total of 52 avian species were observed from the different locations of the study area. There are possibilities to have more avian species in the study area due to the presence of forests and suitable habitat in the Chhattisgarh. Among avian fauna, three (2) Schedule-I species were recorded in the study area. The details of the avian species are listed in the table below.

Table 4-26: Avian Fauna observed from the study area (Core and Buffer Zone)

S. No.	Scientific Name	Common Name	Family	WPA 1972 Schedule	IUCN Status
1	<i>Acridotheres tristis</i>	Myna	Sturnidae	IV	LC
2	<i>Acridotheres tristis</i>	Common myna	Sturnidae	IV	LC
3	<i>Alcedo atthis</i>	Small blue kingfisher	Alcedinidae	IV	LC
4	<i>Amandava amandava</i>	Red munia	Estrildidae	IV	LC
5	<i>Amaurornis phoenicurus</i>	White-breasted waterhen	Rallidae	IV	LC
6	<i>Ardea cinerea</i>	Grey heron	Ardeidae	IV	LC
7	<i>Ardea purpurea</i>	Purple heron	Ardeidae	IV	LC
8	<i>Ardeola grayii</i>	Indian pond heron	Ardeidae	IV	LC
9	<i>Athene brama</i>	Spotted Owllet	Strigidae	IV	LC
10	<i>Bubulcus ibis</i>	Cattle egret	Ardeidae	IV	LC
11	<i>Butorides striatus</i>	Striated heron	Ardeidae	IV	LC
12	<i>Casmerodius albus</i>	Great egret	Ardeidae	IV	LC
13	<i>Centropus sinensis</i>	Crow pheasant	Cuculidae	IV	LC
14	<i>Ceryle rudis</i>	Pied kingfisher	Alcedinidae	IV	LC
15	<i>Charadrius dubius</i>	Little ringed plover	Charadriidae	IV	LC
16	<i>Ciconia episcopus</i>	White-necked stork	Ciconiidae	IV	VU
17	<i>Cinnyris asiaticus</i>	Purple Sunbird	Psittaculidae	IV	LC
18	<i>Columba livia</i>	Pigeon	Columbidae	IV	LC
19	<i>Corvus macrorhynchos</i>	Jungle crow	Corvidae	IV	LC
20	<i>Corvus splendens</i>	Crow	Corvidae	V	LC
21	<i>Dendrocygna icolour</i>	Fulvous whistling duck	Anatidae	IV	LC
22	<i>Dicrurus adsimilis</i>	Black drango	Dicruridae	IV	LC
23	<i>Egretta alba</i>	Larger egret	Ardeidae	IV	LC
24	<i>Egretta garzetta</i>	Little egret	Ardeidae	IV	LC
25	<i>Francolinus pondicerianus</i>	Titar	Phasianidae	IV	LC
26	<i>Gallinule chloropus</i>	Common moorhen	Rallidae	IV	LC
27	<i>Gyps indicus</i>	Indian Vulture/Gidh	Accipitridae	I	CR
28	<i>Gallus gallus</i>	Jungle hen	Phasianidae	IV	LC
29	<i>Halcyon smyrnensis</i>	White-throated kingfisher	Alcedinidae	IV	LC
30	<i>Milvus migrans</i>	Black Kite	Accipitridae	IV	LC



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Scientific Name	Common Name	Family	WPA 1972 Schedule	IUCN Status
31	<i>Nycticorax nycticorax</i>	Black-crowned night heron	Ardeidae	IV	LC
32	<i>Passer domesticus</i>	House sparrow	Passeridae	IV	LC
33	<i>Pavo cristatus</i>	Peafowl / Mor	Phasianidae	I	LC
34	<i>Pelecanus onocrotalus</i>	Great white pelican	Pelecanidae	IV	LC
35	<i>Phalacrocorax carbo</i>	Great cormorant	Phalacrocoracidae	IV	LC
36	<i>Phalacrocorax niger</i>	Little cormorant	Phalacrocoracidae	IV	LC
37	<i>Pluvialis fulva</i>	Pacific golden plover	Charadriidae	IV	LC
38	<i>Pseudibis papillosa</i>	Red-naped ibis	Threskiornithidae	IV	LC
39	<i>Psittacula krameri</i>	Rose ringed Parakeet	Psittacidae	IV	LC
40	<i>Pycnonotus cafer</i>	Red-vented bulbul	Pycnonotidae	IV	LC
41	<i>Sarkidiornis melanotos</i>	Knob-billed duck	Anatidae	IV	LC
42	<i>Saxicoloides fulicatus</i>	Indian robin	Psittaculidae	IV	LC
43	<i>Spilopelia senegalensis</i>	Little brown dove	Columbidae	IV	LC
44	<i>Sturnia pagodarum</i>	Brahminy Starling	Sturnidae	IV	LC
45	<i>Sturnus contra</i>	Asian pied starling	Sturnidae	IV	LC
46	<i>Tachybaptus ruficollis</i>	Little grebe	Podicipitidae	IV	LC
47	<i>Tadorna ferruginea</i>	Ruddy shelduck	Anatidae	IV	LC
48	<i>Tringa tetanus</i>	Common redshank	Charadriidae	IV	LC
49	<i>Turdoides caudata</i>	Common babbler	Leiothrichidae	IV	LC
50	<i>Upupa epops</i>	Common hoopoe	Upupidae	IV	LC
51	<i>Vanellus indicus</i>	Red-wattled lapwing	Charadriidae	IV	LC

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh, IUCN Status =LC: Least Concern, VU: Vulnerable. CR: Critically endangered.

Butterflies: As per the locals, several butterflies' species are found in the study area. However, species encountered during the present survey has been listed below. None of the butterfly's species belongs to the REET category.

Table 4-27: Butterflies observed from the Buffer Zone

S. No.	Common Name	Scientific Name	Family	IUCN Status
1.	Plain Tiger	<i>Danaus chrysippus</i>	Nymphalidae	LC
2.	Common emigrant	<i>Catopsilia pomona</i>	Pieridae	LC
3.	Scarlet dragonfly	<i>Crocothemis erythraea</i>	Libellulidae	LC
4.	Sunflower	<i>Chlosyne lacinia</i>	Nymphalidae	LC
5.	Stripped Tiger	<i>Danaus genutia</i>	Nymphalidae	LC
6.	Common crow	<i>Euploea core</i>	Nymphalidae	LC
7.	Blue tiger	<i>Tirumala limniace</i>	Nymphalidae	LC
8.	Small grass yellow	<i>Eurema brigitta</i>	Pieridae	LC

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh

Aquatic Fauna of Buffer Zone: Aquatic fauna is referred to as any form of an animal that has adapted to living in the aquatic environments such as rivers, lakes, ponds, dams, streams, etc.). Few other seasonal water bodies like village ponds, streams, and irrigation canals are also present in the study area. In general, faunal account of any water bodies can be divided into following



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

categories, i.e., (i) zooplankton, (ii) Macro-invertebrates/Insects/Benthos (iii) Fishes (iv) Amphibians/ Reptiles/ etc. Details of Zooplankton; Macro-invertebrates/ insects/ benthos; Amphibians/ Reptiles and Fishes recorded from the different water bodies situated in the buffer zone of the present project in the Korba, Raigarh and Jashpur district are given in table 4.18, 4.29 & 4.30.

Zooplankton: Zooplankton is commonly found in all types of aquatic habitats. These are recognized as secondary producers and considered as one of the best tools for the environmental monitoring program. During the present study period, a total of 47 zooplankton species was recorded and identified comprising of class Protozoa (10 species), Rotifera (13 species), Cladocera (12 species), Copepoda (8 species), and Ostracoda (4 species). The zooplankton diversity of different habitats and their details are given in the table below.

Table 4-28: Zooplankton in Water Bodies of Buffer Zone

S. No.	Name of the Taxa	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
Protozoa												
1	<i>Arcella</i> sp.		+	+		+	+	+	+	+	NA	NA
2	<i>Arcella discooides</i>	+		+	+	+		+	+	+	NA	NA
3	<i>Arcella vulgaris</i>		+		+		+	+			NA	NA
4	<i>Centropyxis</i> sp.			+		+			+	+	NA	NA
5	<i>Centropyxis ecornis</i>	+	+		+		+	+	+		NA	NA
6	<i>Difflugia</i> sp.		+	+	+	+		+	+	+	NA	NA
7	<i>Difflugia cuminata</i>	+					+	+	+		NA	NA
8	<i>Euglypha</i> sp.	+	+		+	+		+		+	NA	NA
9	<i>Metopus</i> sp.	+	+		+	+	+		+	+	NA	NA
10	<i>Opercularia</i> sp.			+				+			NA	NA
	Total	5	6	5	6	6	5	8	7	6		
Rotifera												
1	<i>Anuraeopsis fissa</i>	+	+		+		+	+	+		NA	NA
2	<i>Asplanchna brightwelli</i>		+	+		+	+	+	+	+	NA	NA
3	<i>Brachionus</i> sp.	+	+	+					+		NA	NA
4	<i>Brachionus angularis</i>				+	+	+	+	+	+	NA	NA
5	<i>Brachionus forficula</i>	+		+	+			+	+	+	NA	NA
6	<i>Cephelodella gibba</i>			+			+		+		NA	NA
7	<i>Filinia</i> sp.	+			+	+	+	+		+	NA	NA
8	<i>Keratella</i> sp.	+	+			+		+	+		NA	NA
9	<i>Keratella Tropica</i>		+				+	+			NA	NA
10	<i>Lecane</i> sp.	+		+	+	+		+	+	+	NA	NA
11	<i>Polyarthra vulgaris</i>			+	+				+		NA	NA
12	<i>Testudinella patina</i>		+				+	+		+	NA	NA
13	<i>Trichocerca</i> sp.	+		+	+	+		+	+	+	NA	NA
	Total	7	6	7	7	6	7	10	10	7		
Cladocera												
1	<i>Alona</i> sp.	+					+	+	+	+	NA	NA



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of the Taxa	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
2	<i>Alona intermediate</i>	+		+	+	+	+		+	+	NA	NA
3	<i>Bosmina sp.</i>		+					+	+		NA	NA
4	<i>Bosmina longirostris</i>	+		+	+		+	+			NA	NA
5	<i>Ceriodaphnia sp.</i>		+		+	+			+	+	NA	NA
6	<i>Chydorus sphaericus</i>	+		+		+	+	+	+		NA	NA
7	<i>Daphnia sp.</i>		+		+	+		+	+	+	NA	NA
8	<i>Daphnia pulex</i>		+	+	+		+	+	+		NA	NA
9	<i>Diaphnosoma excisum</i>	+				+	+	+		+	NA	NA
10	<i>Leydigia sp.</i>	+		+	+	+	+		+	+	NA	NA
11	<i>Moina daphnia</i>		+		+			+			NA	NA
12	<i>Simocephalus sp.</i>	+	+	+		+		+	+	+	NA	NA
Total		7	6	6	7	7	7	9	9	7		
Copepoda												
1	<i>Cyclops sp.</i>		+		+		+	+	+	+	NA	NA
2	<i>Diaptomus sp.</i>	+	+	+		+		+			NA	NA
3	<i>Eucyclops sp.</i>	+			+			+	+	+	NA	NA
4	<i>Heleodiaptomus viduus</i>					+	+	+	+	+	NA	NA
5	<i>Mesocyclops sp.</i>		+	+	+		+	+			NA	NA
6	<i>Nauplius larvae</i>	+	+	+	+			+	+	+	NA	NA
7	<i>Thermocyclops sp.</i>			+			+				NA	NA
8	<i>Thermocyclops crassus</i>	+			+	+	+	+	+		NA	NA
Total		4	4	4	5	3	5	7	5	4		
Ostracoda												
1	<i>Cyprinotus sp.</i>		+					+	+	+	NA	NA
2	<i>Cypris sp.</i>	+		+	+	+	+		+		NA	NA
3	<i>Stenocypris sp.</i>	+	+	+	+		+	+		+	NA	NA
4	<i>Stenocypris malcolmsoni</i>	+	+	+	+	+	+	+	+	+	NA	NA
Total		3	3	3	3	2	3	3	3	3		

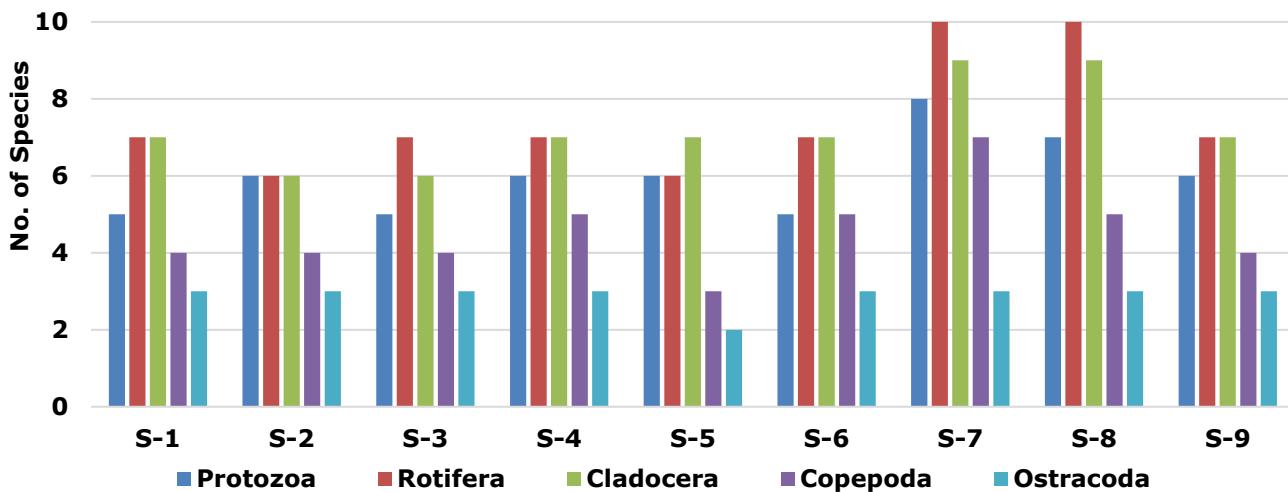
Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-18: Site wise qualitative variation in Zooplankton species in the study area
12



Macro-invertebrates (Insects/Benthos): Macro-invertebrates are commonly found in all types of aquatic habitats such as streams, rivers, wetlands, lakes, and ponds. The term macro-invertebrate is used for those animals that have no backbone and can be seen with the naked eye. These animals generally include insects, crustaceans, molluscs, and annelids. They are significant within the food chain as larger animals such as fish and birds rely on them as a food source. Various macro-invertebrate species were collected and identified from the present study area and listed in the table below.

Table 4-29: Macro-invertebrates in the study area

S. No.	Taxonomic details	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
Insecta												
1	<i>Amphiops</i> sp.				+			+			NA	NE
2	<i>Baetis nymph</i>	+			+	+	+	+	+		NA	NE
3	<i>Caenid mayfly</i>			+		+	+	+		+	NA	NE
4	<i>Chironomus plumosus</i>	+	+		+		+	+	+		NA	NE
5	<i>Chironomus</i> sp.			+		+			+	+	NA	NE
6	<i>Dragon flies nymphs</i>	+	+	+	+	+		+	+	+	NA	NE
7	<i>Ephydria larvae</i>	+				+	+	+		+	NA	NE
8	<i>Hirudineria glossophonia</i>			+	+			+	+	+	NA	NE
9	<i>Hydropsyche</i> sp.				+			+	+		NA	NE
10	<i>Limnodrillus hoffmeisteri</i>	+	+	+			+				NA	NE
11	<i>Mayflies nymphs</i>		+	+	+	+		+	+	+	NA	NE
12	<i>Mosquitos larvae</i>	+		+	+		+	+	+		NA	NE
13	<i>Ranatra elongata</i>	+	+		+	+		+	+	+	NA	NE
14	<i>Stone flies nymphs</i>			+		+	+		+	+	NA	NE



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

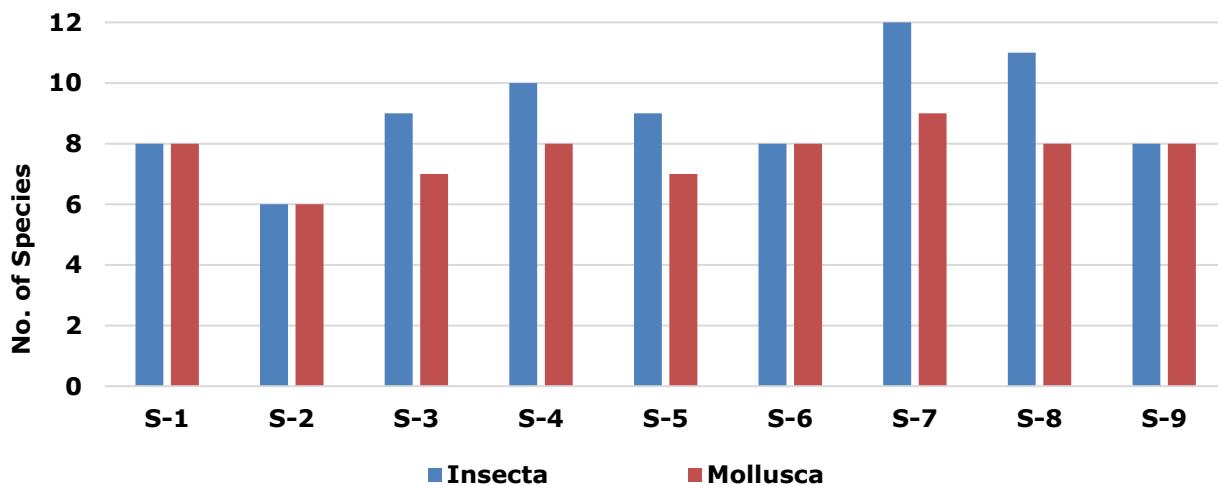
S. No.	Taxonomic details	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	WPA 1972 Schedule	IUCN Status
15	<i>Tubifex tubifex</i>	+	+	+	+	+	+	+	+		NA	NE
	Total	8	6	9	10	9	8	12	11	8		
Mollusca												
1	<i>Bellamya bengalensis</i>	+	+	+	+	+	+	+	+	+	NA	NE
2	<i>Corbicula fluminalis</i>	+					+		+		NA	NE
3	<i>Corbicula sp.</i>	+	+	+		+	+	+	+	+	NA	NE
4	<i>Gyraulus sp.</i>	+	+	+	+			+		+	NA	NE
5	<i>Indoplhorbis exustus</i>					+	+	+	+	+	NA	NE
6	<i>Lymnaea sp.</i>	+	+	+	+	+		+	+	+	NA	NE
7	<i>Melanoides lineatus</i>			+			+	+			NA	NE
8	<i>Pila globosa</i> (apple snail)	+		+	+	+	+		+		NA	NE
9	<i>Pisidium clarkeanum</i>	+			+	+	+	+			NA	NE
10	<i>Thira sp.</i>		+		+			+	+	+	NA	NE
11	<i>Thira tuberculata</i>			+	+		+			+	NA	NE
12	<i>Unio tigrinus</i>	+	+		+	+		+	+	+	NA	NE
	Total	8	6	7	8	7	8	9	8	8		

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh, IUCN Status

=LC: Least Concern, VU: Vulnerable. CR: Critically endangered.

Figure 4-19: Site wise qualitative variation in macro-invertebrates in the study area

14



Amphibians: Amphibians and reptiles are commonly found at places along the margin of aquatic and terrestrial systems. The presence of water bodies like rivers, streams, etc. in the study area provide shelter to many amphibian species. Some of the commonly reported amphibian species in the present study areas are *Bufo melanostictus* (common Indian toad), *Euphlyctis cyanophlyctis* (Indian skipper frog), and *Hoplobatrachus tigerinus* (Indian bullfrog). None of the Amphibians and reptiles have been observed under the Rare, Endangered, and threatened category.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Fishes: The study area of the present highway development project area has several lentic and lotic water bodies in which few are perennial and most of the water bodies are seasonal or monsoon fed. Apart from some major rivers, few private ponds are also present in the study area mainly used for the culture of fishes. All these water bodies support some fish species. Fishes found in the study area have been listed in the table below.

Table 4-30: Fish Fauna in Seasonal & Perennial Water Bodies in Study Area

S. No.	Name of the Taxa	Family Name	S-1	S-2	S-3	S-4	S-5	S-6	S-7	S-8	S-9	IUCN Status	WPA 1972 Schedule
1	<i>Catla catla</i>	Cyprinidae	+		+		+		+		+	VU	NA
2	<i>Channa stiatus</i>	Chandadae		+		+		+		+		LC	NA
3	<i>Channa punctatus</i>	Chandadae	+	+	+	+	+	+	+		+	LC	NA
4	<i>Cirrhinus carpio</i>	Cyprinidae				+			+	+		LC	NA
5	<i>Cirrhinus mrigala</i>	Cyprinidae		+	+	+			+	+		LC	NA
6	<i>Cirrhinus reba</i>	Cyprinidae	+			+			+	+		LC	NA
7	<i>Labeo bata</i>	Cyprinidae					+	+		+		LC	NA
8	<i>Labeo rohita</i>	Cyprinidae	+		+		+		+		+	LC	NA
9	<i>Macrobrachium malcomsoni</i>	Palaemonid ae	+	+	+		+		+	+	+	LC	NA
10	<i>Mastacembelus armatus</i>	Mastacemb elidae				+			+	+		LC	NA
11	<i>Mystus bleekeri</i>	Bagridae			+		+		+		+	LC	NA
12	<i>Mystus tengara</i>	Bagridae	+	+		+		+	+	+	+	LC	NA
13	<i>Puntius sarana</i>	Cyprinidae	+		+	+		+	+	+		LC	NA
14	<i>Puntius sophore</i>	Cyprinidae		+		+	+		+	+	+	LC	NA
15	<i>Puntius stigma</i>	Cyprinidae		+				+	+		+	LC	NA
16	<i>Puntius ticto</i>	Cyprinidae	+			+	+		+			LC	NA
17	<i>Xenentodon cancila</i>	Belonidae		+				+	+	+	+	LC	NA
18	<i>Pangasius buchanani</i>	Pangasiida e			+	+			+	+		LC	NA
			8	8	8	11	9	7	15	12	8		

Source: Primary Survey data and the data supported by Department of Forest, Chhattisgarh, IUCN Status =LC: Least Concern, VU: Vulnerable. CR: Critically endangered.

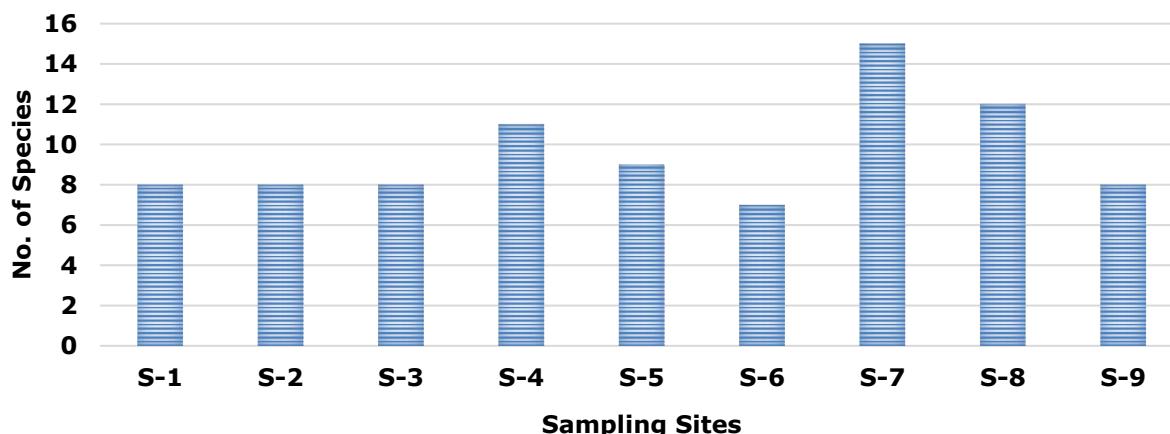


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 4-20: Site wise Qualitative Distribution of fishes in Study Area



4.5.7 Observation of the Present Study

Flora: The maximum part of the study area is protected forest as compared to the rural agricultural fields and barren land. Hence, major floral diversity and density have been recorded at all the sites. During the developmental phase, much vegetation will be removed. No, rare, endangered, or threatened floral species were observed from the core zone of the present study area. However, during site preparation/cleaning care will be taken to protect the rare natural vegetation if found. Compensatory greenbelt development and plantation in patches will be done in the buffer zone to enhance the natural habitat for the local wildlife species.

Fauna: Several Protected Forests are part of the project area, and there are no National parks, Biosphere Reserves, Wildlife corridors, Tiger/Elephant reserves (existing as well as proposed), within 10 km of the project area.

On the other hand, **Indian elephant (*Elephas maximus indicus*)**, **Indian Pangolin (*Manis crassicaudata*)**, **India monitor lizard (*Varanus bengalensis*)**, **Sloth bear/Bhalu (*Melursus ursinus*)**, **Leopard/ Tendua (*Panthera pardus fusca*)**, **Indian python / Azgar (*Python molurus*)**, **Indian Gazella / Chinkara (*Gazella gazella bennetti*)**, **Indian Vulture / Gidh(*Gyps indicus*)** and **Indian Peafowl (*Pavo cristatus*)** are found the in the study area, which are listed under the Schedule-I species list of the Wildlife (Protection) Act, 1972. A detailed site-specific conservation plan has been prepared and submitted with the final EIA-EMP report. The conservation plan for wildlife animals has been prepared by **WE THE FORESTERS WELFARE SOCIETY CHHATTISGARH** to comply with the term of references issued by MoEF&CC and enclosed as **Appendix 3**.

4.6 Socio-Economic Profile

Proposed project starts Ch. 8/150 of SH-04 near Bhaisma village in Korba Tehsil and Korba District and terminates near Turua Ama village in Pathalgaon Tehsil and Jashpur District of Chhattisgarh State, 10km away from Pathalgaon along NH-43 towards Jharkhand border. The Project Road is part of Raipur – Dhanbad economic corridor. The Project stretch lies geographically within three districts Korba, Raigarh and Jashpur in the State of Chhattisgarh. However, the part of the proposed alignment Urga-Pathalgaon passing through the State of Chhattisgarh has been considered for discussion in this report. In the light of above circumstance, the socio-economic



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

profile of the Project area will elucidate the details of the districts concerned of the state Chhattisgarh coming in the way of proposed Urga-Pathalgaon greenfield alignment.

Main demographic features of project impacted districts of Chhattisgarh section have been presented in this chapter. The description of socio-economic features of the districts through which the Project alignment traverses comprise the demographic, social and economic aspect of the population, which includes the features of population distribution, density of population, workforce and share of workers in major economic categories, and the vulnerable groups. This chapter constitutes the socio-economic profile of the Project area is illustrated in the following sections.

4.6.1 General Socio-Economic Profile of Project State

State: Chhattisgarh is a very important state of the country with respect of political awareness and historical. Maharashtra borders on the west and Andhra Pradesh lies in its south. Orissa is in the eastern side.

As per census of India 2011, the state of Chhattisgarh with an area of 135191 sq. Km. accounts for about 4.11% of the total geographical area of the country. It has a population of 25.54 million, which accounts for 2.11% of the population of the country. The adverse land-man ratio is 189 per sq. km. The decadal growth of population for 2001-2011 is 22.59%. According to 2011 census, the literacy rate in the state is 70.28% in which male literacy is 80.27% with respect to the male population and female literacy is 60.24% with respect to the female population, creating a gender gap of 20.03%. The Scheduled Caste population comprises 12.82% whereas tribal population constitutes a mere 30.62% of the total population. About 52.32% population of the state is non-working. Therefore, there a specific need for infrastructure development so that, economy of the region can go in positive dimension. Some of the salient features of Chhattisgarh State are listed below.

Table 4-31: Salient Feature of the Chhattisgarh State, 2011

Indicators	Census, 2011
Area (sq. km)	135191
Households (No.)	5650724
Population (No.)	25545198
Male Population	50.24%
Female Population	49.76%
Urban population	23.24%
Rural population	76.76%
SC Population	12.82%
ST Population	30.62%
Population growth rate	22.59%
Population density (per sq. km.)	189
Sex Ratio (females+ 1000 males)	991
Total Literate	70.28
Total Male Literate	80.27
Total Female Literate	60.24
Work Participation Rate (WPR)	47.68
WPR (Male)	55.59%



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Indicators		Census, 2011
	WPR (Female)	39.70%
	Main Workers	32.26%
	Main workers (Male)	43.62%
	Main workers (Female)	20.80%
Main Workers	Cultivation Ratio	36.86%
	Agriculture Ratio	30.41%
	Household Ratio	1.66%
	Others Ratio	31.07%
	Marginal workers	15.42%
	Marginal workers (Male)	11.97%
	Marginal workers (Female)	18.90%
Marginal Workers	Cultivation Ratio	24.54%
	Agriculture Ratio	65.66%
	Household Ratio	1.29%
	Others Ratio	8.51%
	Non-Workers	52.32%
	Male Non-workers	44.41%
	Female Non-workers	60.30%

Source: Census of India, 2011

4.6.2 General Socio-Economic Profile of Project Districts

KORBA DISTRICT PROFILE

Korba district is situated in the northern part of Chhattisgarh State and is surrounded by 5 districts of the State, namely Koriya in the North, Bilaspur in the West, Janjgir-Champa in the South, Raigarh in the East, and Surguja in the North-East direction. Korba is situated at the confluence of the Hasdeo and Ahiran rivers. Korba is the district headquarters town. Total geographical area of the district is 6,598.50 square km². The demographic profile of the district based presented in **Table below.**

Table 4-32: Salient Feature of the Korba District

Indicators	Census, 2011
Area (sq. km)	6598
Households (No.)	280073
Population (No.)	1206640
Male Population	50.80%
Female Population	49.20%
Child Population 0-6	14.26%
Male Population 0-6	14.27%
Female Population 0-6	14.24%
Urban population	36.99%
Rural population	63.01%
SC Population	10.33%
ST Population	40.90%
Population growth rate	19.25%
Population density (per sq. km.)	183



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Indicators	Census, 2011	
Sex Ratio (females+ 1000 males)	969	
Total Literate	72.37	
Total Male Literate	82.48	
Total Female Literate	61.93	
Work Participation Rate (WPR)	43.19	
WPR (Male)	54.38%	
WPR (Female)	31.64%	
Main Workers	29.03%	
Main workers (Male)	42.46%	
Main workers (Female)	15.17%	
Main Workers Distribution	Cultivation Ratio	25.59%
	Agriculture Ratio	27.00%
	Household Ratio	1.57%
	Others Ratio	45.84%
Marginal workers	14.16%	
Marginal workers (Male)	11.92%	
Marginal workers (Female)	16.47%	
Marginal Workers Distribution	Cultivation Ratio	13.71%
	Agriculture Ratio	74.45%
	Household Ratio	1.41%
	Others Ratio	10.43%
Non-Workers Ratio	56.81%	
Male Non-Workers	45.62%	
Female Non-Workers	68.36%	

Source: Census of India, 2011

AGRICULTURE ACTIVITIES

Paddy is main kharif crop and wheat, gram, tiwara, linseed, alsi etc. are rabi crops of the district. Maize, kodo-kutki, tuvar, urad, kulthi, groundnut, til, ramtil and soyabean are also sown in good quantity in the district.

ANIMAL HUSBANDRY

The main occupation of people in the district is agriculture and cattle-rearing. In Korba district, Cows, Goats and Buffaloes are the main species among animals. As per the Livestock Statistics of Department of Animal Husbandry, the district has 208154 cattle, 73300 buffaloes, 71561 goat and 2252 pigs. Other livestock are 409 sheep, 483 horse and others and 113108 poultry. There are veterinary hospitals and veterinary dispensaries in the district to after the welfare of livestock. After the green revolution, white revolution plays an important role in the economy of the district.

FISHERIES

Fish rearing in the district is very popular in villages because of low cost. This is also a powerful medium to eradicate unemployment. Various programmes like training to the village people, availability of loans, subsidiaries, production of fish-farming etc. are being encouraged for the development of fish forming in the district. The village ponds are given on patta to local people on long-term which have created employment in an extensive way. In rivers and ponds, fish like Parhin, Rohu, Mogri, Katla, Singhani and Sefar are found in abundance.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

INDUSTRY

Korba district is industrially developed. The district is rich in minerals and therefore, it is famous in the Industrial map of India. Due to the existence of many power plants, it is called the power hub of Chhattisgarh. Thermal Power Plants namely, NTPC (National Thermal Power Corporation), KSTPS, BCPP, CSEB and Coal company SECL, and BALCO are industrial giants in the district.

DEMOGRAPHIC PROFILE

The district of Korba with an area of 6598 sq. Km. accounts for about 4.88% of the total geographical area of the state. It has a population of 1.21 million, which accounts for 4.72% of the population of the state. The adverse land-man ratio is 183 per sq. km. The decadal growth of population for 2001-2011 is 19.25%. According to 2011 census, the literacy rate in the district is 72.37% in which male literacy is 82.48% with respect to the male population and female literacy is 61.93% with respect to the female population, creating a gender gap of 20.55%. The Scheduled Caste population comprises 10.33% whereas tribal population constitutes 40.90% of the total population.

RAIGARH DISTRICT PROFILE

Raigarh district is situated in the upper eastern part of Chhattisgarh State. It lies in Bilaspur Revenue Commissioner's division. The district was constituted on the 1st of January 1948. It is bounded on the east by Sundergarh, Jharsuguda and Bargarh districts of Odisha. On the north by Jashpur and Surguja districts, on the west by Korba, Janjgir-Champa and parts of Raipur districts, on the south-west and south by Mahasamund district. It extends from 21° 20' to 22° 47' North latitude and 82° 57' to 83° 47' East longitude. Total geographical area of the district is 7086 sq. kms. The demographic profile of the district as drawn based on Census, 2011 is presented below.

Table 4-33: Salient Feature of the Raigarh District

Indicators	Census, 2011
Area (sq. km)	7086
Households (No.)	902629
Population (No.)	3589049
Male Population	50.03%
Female Population	49.97%
Child Population 0-6	13.05%
Male Population 0-6	51.22%
Female Population 0-6	48.78%
Urban population	0.01%
Rural population	99.99%
SC Population	15.54%
ST Population	36.23%
Population growth rate	18.1%
Population density (per sq. km.)	506.5
Sex Ratio (females+ 1000 males)	999
Total Literate	62.20%
Total Male Literate	71.31%



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Indicators		Census, 2011
Total Female Literate		53.09%
Work Participation Rate (WPR)		47.97%
WPR (Male)		57.71%
WPR (Female)		38.23%
Main Workers		32.6%
Main workers (Male)		63.46%
Main workers (Female)		14.66%
Main Workers Distribution	Cultivation Ratio	38.32%
	Agriculture Ratio	43.16%
	Household Ratio	1.32%
	Others Ratio	17.2%
Marginal workers		32.04%
Marginal workers (Male)		19.2%
Marginal workers (Female)		51.46%
Marginal Workers Distribution	Cultivation Ratio	22.02%
	Agriculture Ratio	71.37%
	Household Ratio	1.3%
	Others Ratio	5.32%
Non-Workers Ratio		52.03%
Male Non-Workers		40.66%
Female Non-Workers		59.34%

Source: Census of India, 2011

AGRICULTURE

Paddy is main crop of the district. However, maize, kodo-kutki, tuvar, urad, kulthi, groundnut, til, ramtil and soyabean crops are also sown, wheat, gram, tiwara, linseed, alsi etc. are main rabi crops.

ANIMAL HUSBANDRY

Cows, Goats and Buffaloes are the main species among animals. As per the Livestock Statistics of Department of Animal Husbandry, the district has 462133 cattle, 105932 buffaloes, 124365 goat and 13389 pigs. Other livestock are 27811 sheep, 179 horse and others and 316562 poultry.

FISHERY

Practically, every village has many tanks. In this district, the local fishes are not prolific breeders. The protein yielded by them is also not of the requisite standard.

Industry

Raigarh district is industrially developed. Promotion of industries in the district is managed by District Industry Centre. There are 35 large scale industries, and 8 Medium scale enterprises exist in the district. People are getting employment opportunities mainly in the rice mill, timber mills, gudakhoo factory and collection of tendu leaves. Gunny bags, iron, and steel, Kosa silk fabric are the main exports of the district. In the field of large-scale industry, the district has a Jute mill.

DEMOGRAPHIC PROFILE

The district of Raigarh with an area of 7086 sq. Km. accounts for about 5.24% of the total geographical area of the state. It has a population of 3.6 million, which accounts for 14.11% of



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

the population of the state. The adverse land-man ratio is 5.6 per sq. km. The decadal growth of population for 2001-2011 is 18.1%. According to 2011 census, the literacy rate in the district is 62.2% in which male literacy is 71.31% with respect to the male population and female literacy is 53.09% with respect to the female population, creating a gender gap of 18.22%. The Scheduled Caste population comprises 15.54% whereas tribal population constitutes 36.23% of the total population.

JASHPUR DISTRICT PROFILE

Jashpur district lies in the Northern corner of Chhattisgarh State adjoining the borders of Jharkhand and Odisha States in the eastern side. It extends from 220 17' to 230 15' on North latitude and 830 30' to 840 24' East longitude. The total area of the district is 5837.75 sq. km. Socio-Economic Profile of the district is presented in Table below.

Table 4-34: Salient Feature of the Jashpur District

Indicators		Census, 2011
Area (sq. km)		5837.75
Households (No.)		502260
Population (No.)		2215490
Male Population		49.79%
Female Population		50.21%
Child Population 0-6		14.35%
Male Population 0-6		14.52%
Female Population 0-6		14.17%
Urban population		1.51%
Rural population		98.49%
SC Population		5.61%
ST Population		63.38%
Population growth rate		14.6%
Population density (per sq. km.)		380
Sex Ratio (females+ 1000 males)		1008
Total Literate		57.53%
Total Male Literate		65.64%
Total Female Literate		49.49%
Work Participation Rate (WPR)		58.51%
WPR (Male)		62.69%
WPR (Female)		54.38%
Main Workers		34.72%
Main workers (Male)		47.19%
Main workers (Female)		22.37%
Main Workers Distribution	Cultivation Ratio	53.32%
	Agriculture Ratio	32.95%
	Household Ratio	1.77%
	Others Ratio	11.96%
Marginal workers		23.79%
Marginal workers (Male)		15.49%



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Indicators		Census, 2011
Marginal workers (Female)		32.01%
Marginal Workers Distribution	Cultivation Ratio	41.25%
	Agriculture Ratio	52.80%
	Household Ratio	1.28%
	Others Ratio	4.67%
Non-Workers Ratio		41.48%
Male Non-Workers		37.31%
Female Non-Workers		45.61%

Source: Census of India, 2011

AGRICULTURE AND CROPPING PATTERN

The Matasi soil (yellow loamy clay soil) is considered as the best soil for the cultivation of rice while Kanhar soil (very rich alluvial soil, darker and heavier than Matasi soil) suits the cultivation of wheat and gram. The main crops sown are Paddy, Maize, Wheat and Jowar are the main cash crops are urad and gram. The production of oil seed like groundnut, Soyabean etc are also important in the district. Rice, Maize, Pigeon pea, Black gram, Sesame, Niger, Groundnut and Sugarcane are Kharif crops whereas; Wheat, Pea, Tori and Linseed are Rabi crops. Total cultivable area in the district is 326700 ha. Of this, 'Net sown area' is 267200 ha. and 'Area sown more than once' is 59500 ha.

ANIMAL HUSBANDRY

In the district of Jashpur Cow and Buffaloes are the main species among animals. As per the Livestock Statistics of Department of Animal Husbandry, the district has 392783 cattle, 49513 buffaloes, 177630 goat and 60870 pigs. Other livestock are 16998 sheep, 1548 horse and others and 318063 poultry.

INDUSTRY

The economy of Jashpur district is predominantly agro-based and it has not been made much headway in industrial sector as compared with similar activities in the adjoining districts. People are getting employment opportunities in Rice mill, Gudakhu factory, etc.

DEMOGRAPHIC PROFILE

The district of Jashpur with an area of 5837.75 sq. Km. accounts for about 4.31% of the total geographical area of the state. It has a population of 2.2 million, which accounts for 8.62% of the population of the state. The adverse land-man ratio is 380 per sq. km. The decadal growth of population for 2001-2011 is 14.6%. According to 2011 census, the literacy rate in the district is 57.53% in which male literacy is 65.64% with respect to the male population and female literacy is 49.49% with respect to the female population, creating a gender gap of 8.04%. The Scheduled Caste population comprises 5.61% whereas tribal population constitutes 63.38% of the total population.

4.6.3 General Socio-Economic Profile of Project Influenced Area (Project Villages)

The Project corridor area comprises of 23 villages of Korba, Raigarh and Jashpur Districts. District-wise distribution of Project affected villages is presented in **Table** below.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 4-35: List of Affected Villages

S. No.	Districts	Villages
1.	Korba	Gidhauri
2.	Korba	Dongdarha
3.	Korba	Dongama
4.	Korba	Nonbirra
5.	Korba	Srimar
6.	Korba	Sakdukalan
7.	Korba	Kotmer
8.	Korba	Kartala
9.	Korba	Champa
10.	Korba	Chachiya
11.	Korba	Katkona
12.	Korba	Jilga
13.	Raigarh	Narkalo
14.	Raigarh	Bayasi
15.	Raigarh	Dharamjaigarh Colony
16.	Raigarh	Ganeshpur
17.	Raigarh	Sisringa
18.	Raigarh	Bhalupakhana
19.	Raigarh	Saskoba
20.	Raigarh	Charkhapara
21.	Jashpur	Tildega
22.	Jashpur	Pathalgaon
23.	Jashpur	Kumekela

Source: Published Section 3A

The socio-economic profile for all the villages within the Project corridor has been drawn based on Census of India 2011 and summarised in Table below.

Table 4-36: Demographic Profile of the Project Affected Villages

S. No.	Description	Number	In %
1	Total Population - Gender wise	210518	100
	Male	104855	49.81
	Female	105663	50.19
	Sex ratio (No. of females per 1000 males)		1008
2	Total Population (0-6 years) - Gender wise	29700	14.11
	Male	15087	50.80
	Female	14613	49.20
	Sex ratio (No. of females per 1000 males)		966
3	Total Population (Sector Wise)	210518	100
	Rural	210518	100
	Urban	-	0.00
4	Total No. of Households	48212	-
	Average Household size		4.37



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Description	Number	In %
	Lowest Household size (Village: Jilga)		3.79
	Highest Household size (Village: Katkona)		4.98
5	Total SC and ST Population	158315	75.20
	Total Population (SC)	19438	9.23
	Total Population (ST)	138877	65.97
6	Total Literates – Gender wise	111486	52.96
	Male Literacy (with respect to the male population)	65082	62.07
	Female Literacy (with respect to the female population)	46404	43.92
	Literacy gap between male and female		18.15
7	Total Workers and Work Participation Rate	119059	56.56
	Male (Number and % with respect to the male population)	63854	60.90
	Female (Number and % with respect to the female population)	55205	52.25
	Gender gap in workforce (in percentage)		8.65
8	Total Main Workers and percentage to total worker	85231	71.59
	Male (Number and % with respect to the male working population)	53931	84.46
	Female (Number and % with respect to the female working population)	31300	56.70
a)	Main Worker as Cultivator (Number and Percentage)	45002	52.80
b)	Main Worker as Agricultural Labour (Number and Percentage)	32745	38.42
c)	Main Worker as Household Industry Worker (Number and Percentage)	947	1.11
d)	Main Worker as other workers (Number and Percentage)	6537	7.67
9	Total Marginal Workers and percentage to total worker	33828	28.41
	Male (Number and % with respect to the male working population)	9923	15.54
	Female (Number and % with respect to the female working population)	23905	43.30
a)	Marginal Worker as Cultivator (Number and Percentage)	10664	31.52
b)	Marginal Worker as Agricultural Labour (Number and Percentage)	21413	63.30
c)	Marginal Worker as Household Industry Worker (Number and Percentage)	379	1.12
d)	Marginal Worker as other workers (Number and Percentage)	1372	4.06
10	Number and Percentage of Marginal Worker (3-6 Months)	26963	79.71
11	Number and Percentage of Marginal Worker (0-3 Months)	6865	20.29

As per Census of India 2011, the total population of the study area is 210518 in which 104855 (49.81%) are males and 105663 (50.19%) are females. An average gender ratio of the study area is 1078, which shows that the composition of male and female is balanced. 14.11% of population belongs to 0-6 age group. An average gender ratio of the 0-6 age group of the study area is 966 females' children per 1000 male children.

Based on interpretation made above, the major outcomes specify the following observations and gap in the Project influence area.

- Average literacy rate of the study area is approximately 52.96% whether as male literacy is 62.07% and female literacy rate is 43.92% with creating a gender gap of 18.15%.
- The composition of Schedule Caste (SC) in total population is 9.23% and Schedule Tribe (ST) is 65.97%.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Work Participation Rate of the study area is 56.56% in which males are 60.90% and females are 52.25%, creating a gender gap of 8.65%. Among the total workers 71.59% are main workers and rest 28.41% are marginal worker.
- All identified archaeological structures fall outside the delineated project area.

4.6.4 Socio-economic Profile of the PAPs along the Project Road

The Socio-economic Survey of affected households was conducted along with Census Survey. A questionnaire was used for both Census and Socio-economic Surveys which is attached as **Annexure-5.1**. Different questionnaires were used for Land and structures survey. The socio-economic details of the people include their educational status, social stratification, income level, occupational pattern etc. have been provided in the following sub sections.

IMPACT ON AFFECTED FAMILY

The data reveals that as many as total 108 numbers of affected families among the categories of titleholders (land and structures losers), squatters, and tenants (non-titleholders) are likely to be affected due to the Project. The details for the same are shown in **Table below**.

Table 4-37: Affected Households and PAPs

S. No.	State	Category	Nos. of Affected Family	Share %
1	Chhattisgarh	Title Holders	105	97.22
2		Squatter	1	0.93
3		Tenant	2	1.85
Total			108	100.00

Source: Census Survey, 2021

TOTAL NUMBER OF AFFECTED POPULATIONS

At this stage of study, only those households are included whose structures are losing in the survey. There is a total of 671 PAPs being affected which includes 337 (50.22%) males and 334 (49.78%) females. The average household size is 6.3 and the sex ratio among PAPs is 991.

This figure does not include the affected persons of those households who were not available for survey, and the family members of the wage earners. At few locations, people were even reluctant in giving the details of their families. The detail of number of PAPs enumerated has been mentioned in **Table below**.

Table 4-38: Number of Affected Persons

S. No.	Age Group (Years)	Total PAPs	% age	Gender Disaggregated Population			
				Male	%	Female	%
1	<=6 Years	72	10.73	32	9.50	40	11.98
2	>06-<=14 Years	86	12.82	50	14.84	36	10.78
3	>14-<=59 Years	440	65.57	211	62.61	229	68.56
4	Above 59 Years	73	10.88	44	13.06	29	8.68
Total		671	100.00	337	100.00	334	100.00
%		-	-	50.22	-	-	-

Source: Census Survey, 2021

DISTRICT WISE AFFECTED HOUSEHOLDS AND PAPS:

Districts and gender wise Project affected population is given in the **Table below**, shows that out of 671 of total PAPs, male comprises of 337 (50.22%) and females are 334 (49.78%).



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 4-39: District wise Project Affected Population

S. No.	State	Districts	Total Affected PAHs	%	PAPs (Gender wise)				Total Affected PAPs	%	
					Male	%	Female	%			
1	Chhattisgarh	Jashpur	9	8.3	21	6.2	21	6.3	42	6.26	
2		Korba	17	15.7	54	16.0	87	26.0	141	21.01	
3		Raigarh	82	75.9	262	77.7	226	67.6	488	72.73	
Total			108	100	337	100	334	100	671	100	
%					50.2		49.8				

Source: Census Survey, 2011

RELIGIOUS CATEGORY

Majority of the families belong to Hindu religion (90%) followed by 8.33% who are Christian and 1.85% are Muslims. The trend shows that Hindu communities dominate the Project Road. **Table below** delineates the religious break-up of the affected families.

Table 4-40: Religious Categories of the Affected Families

S. No.	State	Religious Group	No. of Family	Percentage (%)
1	Chhattisgarh	Hindu	97	89.81
2		Muslim	2	1.85
3		Christian	9	8.33
Total			108	100

Source: Census Survey, 2011

SOCIAL CATEGORIZATION

Out of the total 108 PAFs, 48 (44.44%) belong to General caste, 13 (12.04%) are OBC, 3 (2.78%) and 44 (40.47%) are ST. **Table below** shows social categories of PAFs along the proposed road.

Table 4-41: Social Stratification of Affected Families

S. No.	Districts	General	OBC	SC	ST	Total
1	Jashpur	-	3	1	5	9
2	Korba	2	6	-	9	17
3	Raigarh	46	4	2	30	82
Total		48	13	3	44	108
%		44.44	12.04	2.78	40.74	100

Source: Census Survey, 2011

FAMILY TYPES

The Socio-economic Survey revealed that out of the total 108 affected families, 72.22% are nuclear families and 27.78% are joint families. The nuclear family in the Project affected area is growing due to employment etc. **The table below** shows the total percentage of Joint and Nuclear Families affected along the road.

Table 4-42: Family Types of PAHs

S. No.	Districts	Nuclear	Joint	Total
1	Jashpur	6	3	9
2	Korba	15	2	17
3	Raigarh	57	25	82



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Districts	Nuclear	Joint	Total
Total	78	30	108	
Percentage	72.22	27.78	100.00	

Source: Census Survey, 2011

OCCUPATIONAL PATTERN OF THE AFFECTED PERSONS

Out of 361 PAPs, 181 constitute the working population and 180 represent the non-working population. Occupation-wise analysis of working and non-working group population is shown in **Table below**. As far as the occupation of the affected population is concerned, majority of PAPs are engaged in agricultural activities.

Table 4-43: Occupational Pattern of Working Population

S. No.	Occupation	Distribution of PAPs in working population	%	Distribution of PAPs by Gender			
				Male	%	Female	%
1	Government Service	19	5.26	13	6.88	6	3.49
2	Pvt. Service	16	4.43	7	3.70	9	5.23
3	Business	62	17.17	57	30.16	5	2.91
4	Agriculture	60	16.62	50	26.46	10	5.81
5	Agri. Labour	3	0.83	3	1.59	0	0.00
6	Non-Agri. Labour	21	5.82	20	10.58	1	0.58
7	Non-working	180	49.86	39	20.63	141	81.98
	Total	361	100.00	189	100.00	172	100.00

Source: Census Survey, 2011

INCOME PATTERN OF THE AFFECTED HOUSEHOLDS

Annual Income as revealed by the PAFs has been analysed. This information helps in assessing the family's financial condition. During the Census cum Socio-economic Surveys incomes of the households were recorded. As per available information collected during the survey, the income level of the affected households is mostly (30.56%) between Rs. 60,001 to Rs. 1,20,000 per annum. About 17.59% of families earn below Rs. 60,000 per annum.

Table 4-44: Annual Income of the affected households

S. No.	Annual Income	Number of PAH	Percentage
1	Below 60,000	19	17.59
2	Between 60,001 to 1,20,000	33	30.56
3	Between 1,20,001 to 1,80,000	15	13.89
4	Between 1,80,001 to 2,40,000	10	9.26
5	Above 2,40,000	31	28.70
	Total	108	100.00

Source: Census Survey, 2011

EDUCATION AND LITERACY

Below **Table** presents the educational level of households, wherein majority of them were found to be literate. As per Census cum Socio-Economic data literacy rate is highest in Secondary level i.e., 49.35 % followed by Primary (20.78%) and Higher (15.96%). The following table shows the



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

gender-disaggregated information on the educational level and literacy rate of the affected people in the Project area.

Table 4-45: Education and Literacy among PAPs

S. No.	Indicators (Literacy Rate / Educational Level)	Total Persons	%	Gender Disaggregated Information			
				Male	%	Female	%
1	Illiterate	53	9.83	10	1.86	43	7.98
2	Literate (Read & Write)	22	4.08	13	2.41	9	1.67
3	Primary (class 1-5)	112	20.78	59	10.95	53	9.83
4	Secondary (Class 6-12)	266	49.35	146	27.09	120	22.26
5	Higher (graduate)	86	15.96	56	10.39	30	5.57
Total		539	100	284	52.69	255	47.31

Source: Census Survey, 2011

VULNERABLE GROUPS ALONG THE PROJECT ROAD

Below **Table** indicates that 70 households belong to vulnerable category, out of which, 64.29% are SC/BPL, 27.14% are WHH (2 WHH belong to SC category (and therefore included in SC category) and remaining 8.57% are ST households.

Table 4-46: Vulnerable Groups along the Project Road

S. No.	State	Vulnerable category	Numbers	Total %
1	Chhattisgarh	ST	45	45.92
2		SC	3	3.06
3		BPL	29	29.59
4		Divyang	3	3.06
5		WHH	18	18.37
Total			98	100

Source: Census Survey, 2011

4.6.5 Social Consultation

Project affected people were informed about the proposed road development and potential impacts during consultations. Consultations at new proposed Green Field Project locations were undertaken at 15 locations as part of the SIA. Peoples' representatives affected people and common public participated in the consultations.

Public consultation meetings were held in 15 locations Chitapali Km. 70.900, Nonbirra Km. 76.700, Premnagar Km. 111.270, Baisi Km. 112.000, Baisi Colony Km. 113.540, Medharmar Km. 117.200, Bhandara Para Km. 129.500, Sisringa Km. 131.520, Tejpur Km. 134.680, Rairuma khurd Km. 137.140, Bakaruma Km. 141.430, Budhadand Km. 147.300, Gala Km. 148.670, Pangsuwa Km. 153.000, Dhodhapani Km. 156.700 villages along the Project corridor to obtain their views and suggestions regarding the proposed Project interventions. The consultations have provided inputs towards mitigation of impacts, improvement in designs, and preparation of resettlement plan and its implementation. The details and outcome of consultation with photographs is reported in RAP (Resettlement Action Plan). The SIA report (Resettlement Action Plan) is enclosed as **Appendix 2**.



5 ANTICIPATED ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

5.1 Introduction

This Chapter describes various social and environmental impacts identified and assessed for the construction and operation phases of the proposed corridor. Chapter also discusses about suitable mitigation. For superimposition of the impacts, the baseline information was collected through primary and secondary data.

5.1.1 The Context of Impact Analysis

The Prediction of impacts is the most important component in the Environmental Impact Assessment studies. Both qualitative and quantitative techniques and methodologies have been used to conduct analysis of the potential impacts likely to occur because of the proposed development activities on physical, ecological, and socio-economic environments. The prediction of impacts would, therefore, help in minimizing the adverse impacts and to enhance the beneficial impacts on environmental quality both during pre and post project.

5.1.2 Analysis of Impacts

The proposed development of Urga - Pathalgaon Section of NH130A would create impacts on the environment in two distinct phases:

- During the construction phase, this may be regarded as temporary or short term.
- During the operation phase, it would have long-term effects and hence require mitigation plan for management.

The description and magnitude of likely impacts on various environmental components along with mitigation measures are presented in the following sections.

5.2 Meteorological Parameters

IMPACT

Proposed highway is the part of sub-tropical monsoon climate region with high variation of temperature between summer and winter seasons. Though no significant change in the macro-climatic setting (regional precipitation, temperature, and wind) is envisaged due to the Project, however, microclimate is likely to be temporarily modified by vegetation removal and increased paved surface. An increase in daytime temperature near the road surface is likely due to increased pavement surface, which in turn might lead to formation of heat islands especially near the inhabited sections.

This increase in the daytime temperature assumes significant especially in close vicinity of proposed highway, as the Project area experiences temperatures as high as 43°C during summer season.

MITIGATION

Although the impact is significant but reversible in nature and shall be compensate by avenue tree plantation alongside the proposed highway as per IRC SP-21:2009 to compensate the micro-climatic impacts. It must be noted that the impact is unavoidable. No tree felling shall be done beyond corridor of impact i.e., direct construction zone. No slow-moving traffic or pedestrians are likely on proposed highway.



5.3 Physical Environment

5.3.1 Impacts on Land Use

The proposed construction of the highway corridor will have significant impacts on the existing land use. The present land use of the site is mostly agricultural/ open with patches of settlements and forest. However, after the implementation of the Project, the land use of the area falling under the proposed RoW will permanently change from agricultural to non-agricultural land i.e., paved surface and area near the road may change into commercial place. Therefore, loss of agriculture land and productive soil is anticipated due to land acquisition.

MITIGATION

To minimize the effects of the change in the land use, the proper mitigation measures shall be taken including greenbelt development, water sprinkling, and reclamation of dug out pits for construction purpose.

5.3.2 Impacts on Physiography

Road construction activities involve alterations in the local physiography and drainage patterns. The landform or the topography of the Project stretch is undulating plain with highly varying elevations i.e., as low as 261m amsl to 582m amsl. Therefore, the impacts on physiography may include destabilisation of slopes due to cut and fill operations. Cut-and-fills will be designed for improvement to the road geometry, and parallel cross drainage structures will be added to improve drainage.

MITIGATION

For earthen embankments the side slopes recommended from consideration of safety of traffic as per IRC: 36-1970, are as follows:

Up to 1.5m height	-	1: 4 (V: H)
1.5m to 3.0m height	-	1: 3 (V: H)
3.0m to 4.5m height	-	1: 2.5 (V: H)
4.5m to 6.0m height	-	1: 2 (V: H)

Slope shall be designed for embankment height greater than 6.0m using MoRT&H software for High Embankment design.

The foregoing slopes require an appreciable width of land. It is therefore felt that the side slopes of 1V:2H and 1V:3H are enough for embankments height up to 3m and higher than 3m respectively. These slopes are considered adequate from stability point of view. The reaches having embankment height more than 3m shall have W Beam Metal Crash Barriers on the outer edge of the highway to meet the safety standards.

SLOPE PROTECTION

Slopes on embankment height less than 6m shall be turfed and those above this height shall be protected with geo-blanketing.

5.3.3 Impacts on Geology and Seismology

The entire stretch of the Project highway traverses through seismic Zone - II and III as defined by the Indian Standard (IS) seismic zoning classification system, i.e., a zone of stability. Therefore, development of the Project will not have any impact on the geological or seismic stability of the area however, associated mining activities for sourcing the construction material for the Project may alter the local geology to some extent.

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)****MITIGATION**

Suitable seismic design of the road and Cross-Drainage (CD) structures will be adapted to offset impacts due to earthquakes in future.

5.3.4 Impact due to Quarries

Quarrying in non-scientific manner may unstable the soil condition and affect the terrain of the area. Six existing borrow areas located on both sides along the Project Road that are already in operation were identified and are recommended for the Project. No new quarries are proposed and hence no major impacts, which arise in making new quarries operational, are foreseen.

As no new quarry needs to be opened for this project (majority of the material shall be from cut operations, reuse of old materials and existing quarries), therefore, no new impacts are likely to arise due to quarrying operations. However, it needs to be ensured that quarry contractor/s are following environment and social management safeguard to take care of the working conditions of workers in the existing quarry areas selected for the Project.

In case Contractor/Concessionaire decides in opening new stone quarries he shall obligated to follow the stipulated Government of India norms.

MITIGATION

Existing approved quarries which are already in operation with the required environmental clearances have been recommended for this project, hence no new quarries have been proposed. It needs however, to be noted that recommendation on use of quarries is a guideline only and has been done to establish the feasibility of construction. Though the quarry materials are to be transported to the construction sites, almost all the quarries identified have proper access roads, therefore, no major impacts during the hauling of materials are envisaged. The issue of dust generation etc. along the haul roads needs to be addressed through proper enforcement of dust suppression measures.

Sand required for the construction will mostly be procured from the approved operating river quarry. As an alternative to borrowing of sand from riverbed the possibility of using stone crusher dust shall be explored. Stone dust from crusher can be used for the construction works provided the quantity and the quality produced is certified by Monitoring consultant to be satisfactory for all construction works, else river sand shall be used from the identified quarry. None of the sand quarry sites would require any additional preventive environmental measures. However, the long leads mean that care would have to be taken to prevent spillage of material and damage to the haul roads during transportation. No additional adverse environmental impact except those resulting from spillage during transportation is expected to occur. Hence proper care for transportation should be considered.

Guidelines for Existing Quarry Management and Guidelines for New Quarry Management have been presented in **Annexure 6.1** and **Annexure 6.2** respectively.

5.3.5 Soil**5.3.5.1 Soil Erosion****PRE-CONSTRUCTION STAGE IMPACT**

The removal of vegetation may cause erosion on the slopes and increased run-off due to paved surface would in turn lead to erosion of productive soil from nearby areas. The direct impact of erosion is the loss of embankment soil and danger of stability loss for the road itself. This impact

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

is generally restricted to the RoW. No vegetation clearance or tree felling is proposed beyond the construction zone.

MITIGATION

The Project has taken care of this issue at the engineering design stage itself, as at design gradients of 1:2, the slopes of the embankments are perceived to be stable. Tree felling shall be limited for the corridor of impact only. High embankment section of the road shall be suitably turfed by stone pitching or any other suitable turfing materials.

CONSTRUCTION STAGE IMPACT

Elevated sections of the highway, high embankments along the bridges and the bridge approaches would be vulnerable to erosion and need to be provided proper slope protection measures to prevent erosion. Construction of new bridges involves excavation of riverbed and banks for the construction of the foundations and piers. If the residual spoil is not properly disposed of, increased sedimentation downstream of the bridge is likely.

MITIGATION

Adequate slope protection measures are proposed as part of engineering design. Silt fencing shall be provided to prevent eroded material from entering watercourses. Though during construction period, drainage alteration and downstream erosion / siltation is anticipated, however, cross drainage structure based on hydrology study shall compensate the drainage alteration in the surrounding area.

5.3.5.2 Contamination of Soil**IMPACT**

Soil contamination may take place due to waste disposal from the labour camp set up during pre-construction stage. The sites where construction vehicles shall be parked and serviced are likely to be contaminated because of leakage or spillage of fuel and lubricants. Fuel storage areas are also susceptible to the soil contamination by accidental spillage and run-off. Unwarranted disposal of construction spoil and debris will add to soil contamination. During the operation stage, soil pollution due to accidental vehicle spills or leaks is also having a low probability.

MITIGATION

Following mitigation strategies are proposed to control soil contamination.

- Fuel oil shall be stored in separately designated covered area with RCC surface to prevent any soil contamination due to spillage.
- Overflow of service and washing areas shall be passed through the oil interceptors.
- Septic tank with soak pit facility will be provide in labour camps to prevent any soil contamination due to sewage discharge.
- Waste management system was per Solid Waste Management Rules, 2016 will be adopted in construction camps.
- Scarified bitumen (if any) waste shall be disposed-off at designated landfill site only.

The quality of the soil shall be monitored on regular basis to find out the effectiveness of the mitigation measures and further improvement in measures (if required). The monitoring plan shall be functional in construction as well as in operation stages. The frequency, duration and responsibility will be as per the Environmental Management Plan.

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

Guidelines for Identification of Debris Disposal Sites and Precautions and Guidelines for Rehabilitation of Dumpsites and Quarries have been attached as **Annexure- 6.4** and **Annexure- 6.5** respectively.

5.3.5.3 Compaction of Soil**IMPACT**

Compaction of soil may take place due to movement of heavy machinery and vehicles on nearby agricultural land. Similarly, compaction will take place during setting up of construction camps and stockyards.

MITIGATION

The movement of construction vehicles shall be limited to designated road. So that compaction of nearby productive land can be saved. Provision of reclaiming of nearby land has also been suggested to cure the soil compaction in nearby productive lands.

OPERATION STAGE

No soil erosion is envisaged when the road is in operation as all the slopes and embankments of the Project Road shall be stabilised through sound engineering techniques. The regular cleaning of the drains by the Contractor will ensure that these structures are not overloaded or rendered ineffective due to overload.

5.3.6 Air Quality

Air quality along the Project corridor will be impacted both during the construction and operation stages of the Project. Construction stage impacts will be of short term and have adverse impacts on the construction workers as well as the habitation located near to the proposed highway, especially those in the down wind direction. Operation stage impacts will not be as severe as the construction stage impacts and will generally be confined to a strip of up-to 100m from the edge of the lane on either side of the corridor.

5.3.6.1 Generation of Dust**PRE-CONSTRUCTION STAGE IMPACT**

Generation of dust is the most likely impact during this stage due to:

- Site clearance and use of heavy vehicles and machinery etc.
- Transport of raw materials from quarries to construction sites

MITIGATION

The impacts will mostly be concentrated in the ROW. Adequate measures such as regular sprinkling of water on haul roads, covering of dumpers carrying construction and excavated materials, use of PUC certified vehicles, etc. are proposed for abatement of dust emission.

CONSTRUCTION STAGE IMPACT

During construction phase, the Project would have impacts on ambient air quality due to the emissions by construction equipment and vehicles, and an increase in dust level by the construction activities. Earth excavation work, foundation work, transportation, and handling of construction materials together with wind erosion could be the major factors, which may produce a temporary and localized increase in PM10 and PM2.5 levels. The increased movement of heavy vehicles carrying construction materials, operation of DG sets as standby power back-up system would generate gaseous emissions. The construction contractor must ensure regular monitoring of dust levels in the vicinity of the proposed expansion site during the construction activities. Dust



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

suppression will have to be applied and other means as necessary to suppress and curb dust pollution if high levels of dust are observed.

Construction activities to be carried out during the dry season when the moisture content would be less, dust generation, particularly due to earthworks will be significant. Dust is likely to be generated due to the various construction activities including:

- Movement of construction vehicles and machineries on unpaved surface.
- Transportation of construction materials.
- Mixing of construction materials.
- Construction and allied activities.

MITIGATION

Generation of dust is a critical issue and is likely to have adverse impact on health of workers working in dust prone areas. The Environmental Action Plan to be prepared by Contractor / Concessionaire must lay emphasis on enforcement of measures such as provision of pollution masks, regular sprinkling of water to suppress dust, transportation of construction material in covered trucks, etc. to mitigate the impact.

5.3.6.2 Generation of Exhaust Gases

IMPACT

Generation of exhaust gases is likely during the pre-construction stage due to movement of heavy vehicles and machinery, oil tankers, etc. SO₂, NO₂ and HC are likely to be emitted from hot mix plant operations. Volatile toxic gases may also be released due to heating process during bitumen production. Although the impact is much localized however, it can spread downwind depending on the wind speeds. Construction vehicles shall also be releasing exhaust gases.

The major impact on air quality during operation stage will be due to plying of vehicles. The impacts on air quality will at any given time depend upon traffic volume / rate of vehicular emission within a given stretch and prevailing meteorological conditions. Air pollution impacts arise from two sources: (i) inadequate vehicle maintenance; and (ii) use of adulterated fuel in vehicles.

MITIGATION

- Regular maintenance and pollution check is proposed for construction vehicles and machineries.
- No bad quality fuel shall be used in construction vehicles and machinery.
- Hot mix Plant to be installed in downwind direction from nearby settlement at minimum 1000m distance.
- Broad-leaved pollution resistant species, which can grow in high pollutant concentrations or even absorb pollutants, shall be planted as they help settle particulates with their higher surface areas along with thick foliage.
- *Cassia fistula* (Amaltas), *Ficus religiosa* (Peepal), *Ficus bengalensis* (Banyan), *Tamarindus indica* (Imli) and *Azadirachta indica* (Neem) are recommended. However, plantation shall be carried out in close communication with the forest dept. with the help of native species.

Other measures such as the reduction of vehicular emissions, ensuring vehicular maintenance and upkeep, educating drivers about driving behaviour. However, these methods are beyond the scope of the Project but will be far more effective in reducing the pollutant levels. NHAI together



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

with the Motor vehicles Department and SPCB can arrange for provision for inspection for PUC certificates at the toll plazas.

OPERATION STAGE

No dust generation is envisaged during the operation stage as shoulders shall be compacted and paved and all slopes and embankments shall be turfed as per best engineering practices. The air quality shall further also be improved due to the plantation activity to be carried out in the available RoW at the end of construction phase. Generally, the impacts will be confined to a width 50 to 75m from the edge of the lane on either side of the corridor.

The major impact on air quality during operation will be due the movement of vehicles in the area (as line source of emission). The impacts on air quality at any given time will depend upon traffic volume / rate of vehicular emission within a given stretch and prevailing meteorological conditions.

CALINE4 software developed by the California Department of Transportation (CALTRANS) has been used for estimation of air quality impacts due to vehicular movement on the proposed highway.

CALINE4 is a line source air quality model developed to assess air quality impacts near roadways. The model input is broadly divided into five parameters such as Job Parameters, Link Geometry, Link Activity, Run Condition and Receptor Positions

Job Parameters: contains general information that identifies the job, defines general modelling parameters, and sets the units (feet or meters) that will be used to input data on the Link Geometry and Receptor Positions Screens.

Run Type: determine averaging times and how the hourly average wind angle(s) will be determined. In the present case modelling exercise were made to predict the impact on worst case scenario. Multi-Run/Worst Case Hybrid type was used impact modelling.

Aerodynamic Roughness Coefficient: determine the amount of local air turbulence that affects plume spreading. CALINE 4 offers the 4 choices for aerodynamic roughness Coefficient namely, Rural, Suburban, Central Business District and Other. For the present modelling rural roughness options have been considered.

Altitude above Sea Level: Define the altitude above mean sea level. This input is used to determine the rate of plume spreading. The Project corridor has an average altitude of 384m above MSL.

Link Type: 5 choices available such as At Grade, Fill, Depressed, Bridge and Parking lot. In this model study At Grade link type is used.

Link Height: For the Project link height is being considered as zero.

Mixing Zone Width: Mixing zone is defined as the width of the roadway, plus 3m on either side.

Traffic Volume: The hourly traffic volume anticipated to travel on each link, in units of vehicles per hour.

Emission Factor: The weighted average emission rate of the local vehicle fleet, expressed in terms of grams / mile per vehicle.

Wind Speed: Expressed in meters per second. USEPA recommends a value of 1 m/s as the worst-case wind speed.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Wind Direction: The direction the wind is blowing from, measured clockwise in degrees from the north. As the model study is on “Worst Case scenario”, therefore CALINE 4 will not consider this input.

Emission Rate: Factor is arrived using standard values prescribed by The Automotive Research Association of India, Pune under Air Quality Monitoring Project-Indian Clean Air Programme (ICAP).

Modelling exercise has been undertaken considering the Traffic scenario in Year 2053-54. Emission rate as estimated for the Project are detailed out in Table below.

Table 5-1: Traffic and Emission Rate used for Model

Projected Traffic Year 2053-54 (AADT)	CO Emission Factor (gm/mile/vehicle)
57469	3.72

RESULTS

Dispersion model software was run by using data as discussed above. The output results at various distances along the Project highway for projected Year 2053-54 are presented below.

Table 5-2: Predicted Ground Level Concentration

Distance from RoW Edge (m)	CO Incremental Concentration (mg/m ³)
0m	0.57
10m	0.37
20m	0.28
30m	0.23
40m	0.20
50m	0.18
60m	0.16
70m	0.15
80m	0.14
90m	0.13
100m	0.12

CONCLUSION

Considering the baseline ambient concentration of CO was <1.14 mg/m³ at all monitoring stations and predicted incremental concentration of 0.18 mg/m³ at 50m from the RoW, the maximum resultant CO concentration shall be in the tune of 1.32 mg/m³ in respect to 2 mg/m³ of Ambient Air Quality Standards. Hence, predicted CO concentration including ambient level shall remain well within the National Ambient Air Quality Standards for the Projected year 2053-54.

5.3.7 Water Resources

5.3.7.1 Physical Loss of Surface Water Bodies

IMPACT

- Alteration of the surface water regime is expected due to proposed highway construction.
- Surface water bodies along the Project Road might be subject to adverse impacts due to the various construction activities.
- Project section is crossing rivers/canals at the following locations –
- Pansari Nala at 82+560.
- Kortimasara Nala at 89+165.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Dhawan Nala at 92+520.
- Chuiya Nadi at 99+825.
- Maand River at 106+375.
- Chikatwani Nala at 120+470.
- Bharari Nala at 145+500.

MITIGATION

- There are 159 nos. of culverts and 27 nos. of bridges consisting of 6 major bridges and 21 minor bridges are proposed to avoid any impact on local hydrology.
- Cross drainage structures are designed to avoid any compromise on the flow part of water bodies.
- Continuous both side drain has been proposed along the proposed highway. Surface runoff shall be drained to the nearest cross drainage structure. The engineering design includes design of cross drainage structures, which should take care of the extra flow.
- Silt fencing during construction period will be provided between road and water bodies to avoid any siltation due to run-off from construction area.

5.3.7.2 Water Required for the Project

IMPACT

The construction works requires a considerable quantity of potable water for the various activities including construction of the pavement, dust suppression, curing etc. The total demand of water to be used during the construction phase will be around 34,09,045 KL. The demand though is only indicative in nature and shall differ during the period of construction. The demand shall be met through availability of supply both from surface and ground sources. However, mostly surface water shall be used for the construction work.

MITIGATION

Prior approval for taking adequate quantities of water from surface and ground water sources shall be taken from respective authority before start of construction. Rainwater harvesting structures are proposed at every 500m interval to augment and conserve rainwater. The road operation does not make a demand on the available water resources apart from time-to-time requirement during works such as maintenance of roadside tree plantations.

5.3.7.3 Water Quality

IMPACT

Due to site clearing activities, soils around the surface water regime will be exposed, due to which, the suspended sediments and the associated pollutants can be transported into these water sources. The impacts due to the increased sediment load will be significant to some extent. Contamination of groundwater is another likely impact of road construction and allied activities. The contamination of the water resources due to the Project is likely from following reasons:

- Concentration of suspended solids in receiving water bodies due to soil erosion from site clearing area.
- Run-off from the construction site near the water bodies and sources of water supply
- Disposal of solid and liquid wastes by labour, spills or leaks can affect the water quality.
- Run-off from fuel storage and work-shop area as Oil and grease form a film on the water surface and hinder the transfer of oxygen into water.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Contamination by fuel and oil containing discharge or accidental spillage from construction vehicles or bitumen from hot-mix plants.
- Wastewater generated from rinsing of Batching plants and sewage generated by employees may cause health hazard if not disposed of at properly designated places.

Increased sediment load, lesser sunlight, difficulty to settle, etc. will make the surface water more turbid. If the concentrations are higher, smaller fish may be harmed. Large, heavy sediment, particularly with slow moving water may smother algae and eventually alter the nature of the sub-stratum. Excessive sediment loads may also mean disruption to areas where fish lay their eggs.

Further, construction of the cross-drainage structures i.e., Major and Minor bridges and culverts are proposed for the Project. The cross-drainage structures will be constructed without compromising on the flow part. Short-term increase in runoff sedimentation load during construction may occur due to the removal of trees, vegetative cover, and compaction of the surrounding soil during pre-construction. Thus, the increased sediment load will be a significant impact that needs to be addressed for all water bodies along the corridor.

Therefore, the water quality of surface drainage channels is likely to be impaired if the construction period continues.

MITIGATION

The engineering design shall ensure protection of embankment slopes. Loose soil and construction material heaps around the construction sites are prone to erosion and contribute to the increased sediment load in the near-by water bodies. The major parameter of concern would be the sediment load from the spoils. The major pollutants of concern are suspended solids, oil, and grease, lead and other heavy metals.

Silt fencing shall be provided on either side of the crossing water body to control the sediment load. Septic tanks or bio-toilets should be used to treat sewage generated by employees. Guidelines for Sediment Control has been attached as **Annexure 6.6**.

5.3.8 Noise levels

PRE-CONSTRUCTION STAGE AND CONSTRUCTION STAGE IMPACT

Construction activities normally result in temporary and short-term increases in noise and vibration levels. Site clearing activities, movement of man and machineries, crusher, and mixing plants operation, etc. are likely to increase the noise level of project region. Noise pollution is matter of concern, where alignment is passing near to settlement areas.

About 90 dB (A) of noise shall be generated from construction activity which shall attenuate to less than 55 dB(A) i.e., daytime prescribed noise level at about 100m and less than 45 dB (A) i.e., night-time prescribed noise level at about 300 m.

Comparison of distance vs Noise level (considering two Noise source of Intensity 90 dB(A) are working in parallel) for day and night-time are shown in Figures below.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 5-1: Day-time Construction Noise Intensity vs Distance from the Source

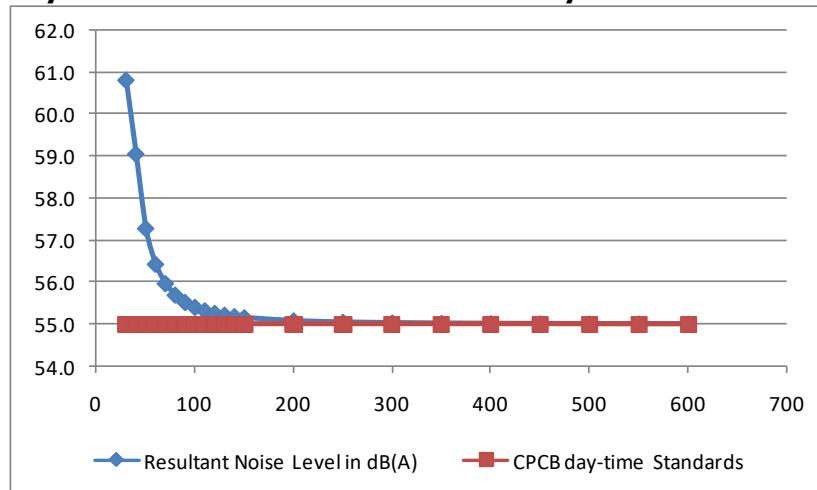
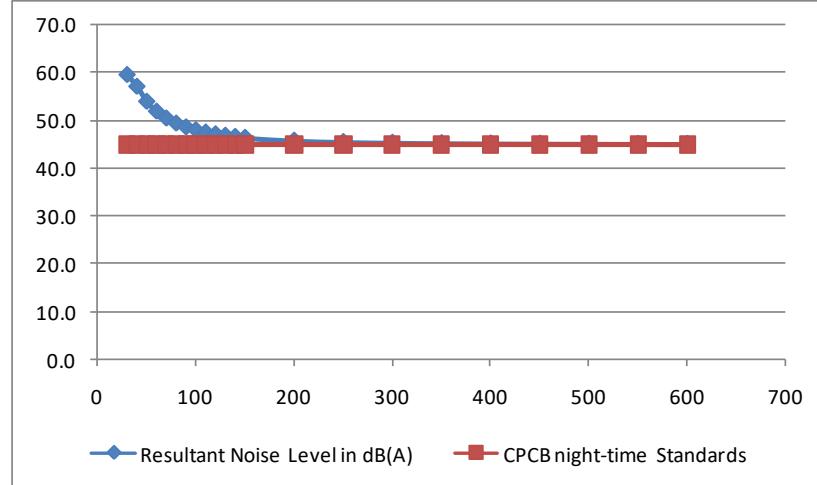


Figure 5-2: Night-time Construction Noise Intensity vs Distance from the Source



Part of project stretch is proposed adjacent to settlement areas. Therefore, the impact due to the noise shall be significant at these locations. Prior mitigation measures shall be required for neutralizing the affects.

MITIGATION

Construction camp shall be established at least 1000m away from nearest habitation and forest area. Temporary noise barriers should be provided surrounding the high noise generating construction equipment during work near to settlement area. Stationary noise source like generator sets shall be provided with an acoustic shield around them. The plants, equipment and vehicle used for construction should strictly conform to CPCB standards. Vehicles and equipment should be fitted with silencer and maintained accordingly.

Noise generating activities should be scheduled based on community welfare. Noise level should regularly be monitored as per monitoring plan and if the noise level at any time found to be higher, then immediate measure to reduce noise in that area should be ensured.

Provision of Personal Protective Equipment (PPE) for the crew will be made a part of conditions of contract. Specifying construction timings will prevent disturbance to the local populations.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

The following mitigation measures as given in **Table below** need to be worked out for the noise impacts associated with the various construction activities.

Table 5-3: Summary of Mitigation Measures for Construction Stage

Source of Noise	Impacts	Generic Mitigation Measures
<ul style="list-style-type: none">Utilization of heavy construction machinery.Construction of structures and facilities.Crushing plants, asphalt production plants; andLoading, transportation and unloading of construction materials	<p>Increased Noise Levels causing discomfort to local-residents and workers</p>	<ul style="list-style-type: none">All construction equipment, plants, machinery, and vehicles will follow prescribed noise standards.All construction equipment used for an 8-hour shift shall conform to a standard of less than 90 dB (A). If required, machinery producing high noise as concrete mixers, generators etc. must be provided with noise shields.At construction sites within 500 m of human settlements, noisy construction activities shall be stopped between 9.00 PM and 6.00 am.Vehicles and construction machinery shall be monitored regularly with particular attention to silencers and mufflers to maintain noise levels to minimum.Workers in the vicinity of high noise levels must wear ear plugs, helmets and should be engaged in diversified activities to prevent prolonged exposure to noise levels of more than 90 dB (A) per 8-hour shift.Hot mix plant, batching or aggregate plants shall not be located within 1000 m of sensitive land use and settlements.Project is a highway project and shall facilitate free flow of the traffic. Therefore, proposed development is likely to reduce the noise associated with Traffic Jam on existing roads.

OPERATION STAGE IMPACT

Road noise depends on factors such as traffic intensity, the type and condition of the vehicles plying on the road, acceleration / deceleration / gear changes by the vehicles depending on the level of congestion and smoothness of road surface. Noise is a major area of concern, especially near the sensitive receptors (education facilities, health centres, etc.) in proximity of the road.

CoRTN (Calculation of Road Traffic Noise) model developed by up UK Department of Transport is used for assessment of Noise Impact Intensity at various distances from the proposed highway.

Traffic Noise has been estimated for uninterrupted traffic flow condition.

LIMITATIONS

Meteorological conditions are not considered, and Model does not take background noise into account such as trains, aero plane, industry, daily activities, market activities, etc.

CLASSIFICATION OF VEHICLES

In CoRTN model vehicles are classified onto two categories:

- Light vehicles
- Heavy vehicles

APPROACH, METHODOLOGY AND VALIDATION

The model has been validated for Indian Conditions by (CSIR) Central Road Research Institute and published the validation in 2008 vide paper titled "Validation of Noise Prediction Model for an



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Urban Area". The present model used for the Project is derived from the CSIR CRRI validated and modified model.

INPUT TRAFFIC

CoRTN model software was run by using traffic forecast data of year 2053.

RESULT AND DISCUSSION

Considering individual sections have different traffic intensity, therefore, variation in the noise level increments is observed along the proposed corridor. However, to attain the worst-case scenario, traffic project of the section having highest intensity used as the input for noise prediction model.

The increment noise level will attain to the standards of residential i.e., 55 dB(A) at 100m from the carriageway edge. Space of carriageway and median is limited for 11m out of 60m RoW. Therefore, the effective distance for attenuation of noise level to ambient standard level shall be 24 m from the RoW edge.

Table below and **Figures 5.3** below presents the Noise level due to traffic activities at various distances from carriageway edge against the Noise standards for rural and residential areas.

Table 5-4: Noise Level due to Vehicular Traffic (Year 2053)

Distance (m)	Noise Level in dB(A)	Standard for Residential Area in dB(A)
0	67.5	55
5	66.2	
10	65.0	
15	64.0	
20	63.1	
25	62.3	
30	61.5	
35	60.8	
40	60.2	
45	59.6	
50	59.1	
55	58.6	
60	58.1	
65	57.6	
70	57.2	
75	56.8	
80	56.4	
85	56.0	
90	55.7	
95	55.3	
100	55.0	
105	54.7	
110		

Source: Outcome of Mathematical Modelling

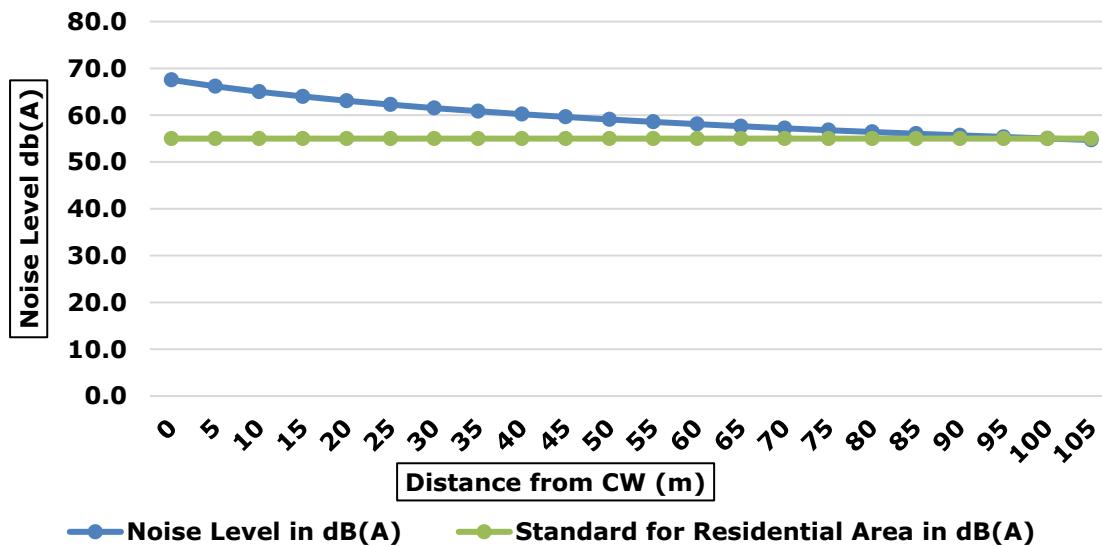


FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 5-3: Noise Intensity due to Vehicular Operation vs Noise Standards (Year 2053)



MITIGATION

Though the level of discomfort caused by noise is subjective, there is a definite increase in discomfort with an increase in noise levels. Road noise depends on factors such as traffic intensity, the type and condition of the vehicles plying on the road, acceleration / deceleration / gear changes by the vehicles depending on the level of congestion and smoothness of road surface. Noise is a major area of concern, especially near the sensitive receptors (education facilities, health centres, etc.).

Noise barrier shall be provided along the sensitive receptors (education facilities, health centres, etc.). No horn zone sign shall be displayed 100m before on either side of these receptors. Regular monitoring is proposed in operation stage to monitor the efficiency of mitigation measures.

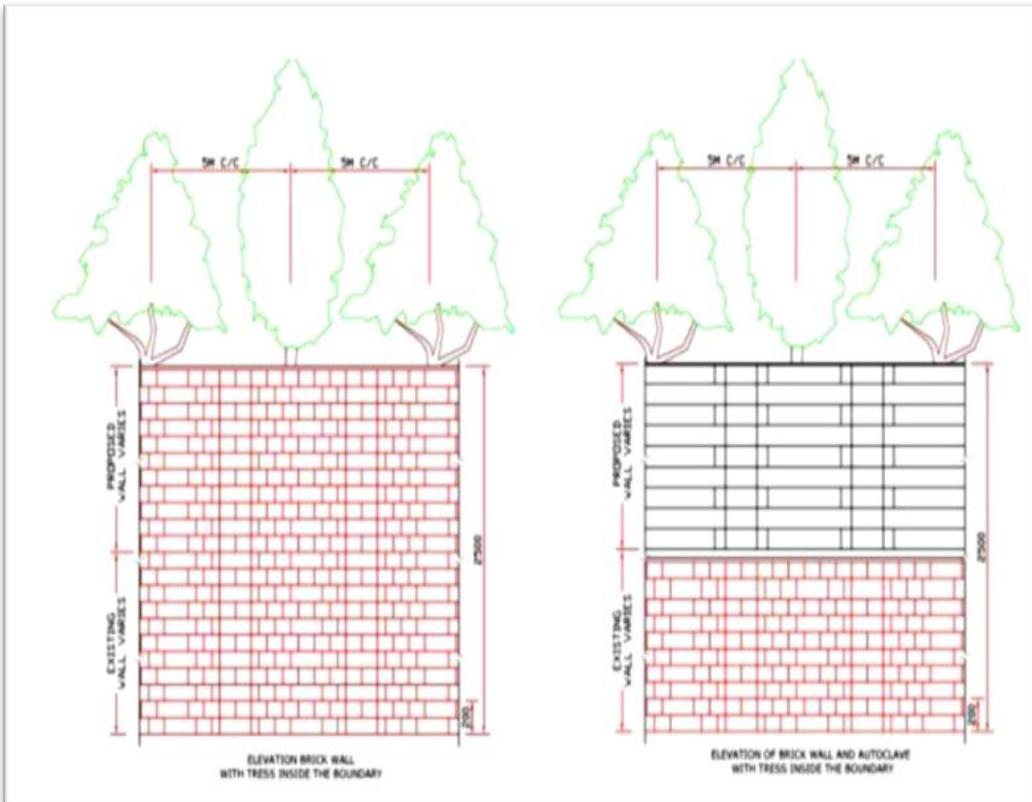
To reduce noise and vibrations, compound wall as noise barriers (Wall of 2m height) is proposed in front of education and medical facilities located along the proposed corridor. As per research carried out in the developed countries, a masonry wall has Noise Reduction Coefficient (NRC) value between 0.2 to 0.5.

Many of the sensitive receptors have their own compound wall. The feasibility of extending the existing boundary wall will be checked by the contractor during construction phase. The plantation (if possible) along the compound wall will act as additional facility to inhibit noise disturbance. Typical Cross section of the Boundary wall (Noise Barrier) is given as Figure below.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 5-4: A sample of Cross Section of Compound Wall as Noise Barrier





5.4 Biological Environment

Development activities of a road project implies direct impacts on the biological environment in its vicinity. Road projects are linear in nature, and it traverses several types of landscapes depending on the length of the Project stretch. The degree of impact on biological environment thus depends on the type of the landscapes i.e., forest/wooded area, agricultural, urbanised, rural, wastelands and barren areas. The proposed road project is a greenfield project that will pass mainly through the agriculture fields. In this scenario and based on the observations following impacts on the terrestrial flora, fauna and aquatic life have been envisaged in the construction and operation phases of the Project.

5.4.1 Construction Phase

In construction phases various impacts take place due to the anthropological activities like movement of machines, storing of material, living camp formation, movement of staff/workers and other group of people during project construction phase.

5.4.1.1 Protected Areas

The proposed alignment is not passing through any National Park or Wildlife Sanctuary. However, the alignment is passing through forests area and nearly 169.0231 ha. diversion of forest land is required. Diversion of forest land shall directly cause loss of habitat for wildlife while, the construction along forest area may cause modification of wildlife habitat and restriction in wildlife movement.

5.4.1.2 Felling of Trees and Habitat Destruction

Nearly 33,685 number of trees in forest are likely to be felled due to the proposed project. The felling of trees shall have manifold impact. Most visible impact is the loss of shade. Also, there is a possibility of the local people may get deprived of tree products as the project study area is likely to be supporting species that serve the food, medicinal, fodder, fuel, fibre, and timber needs of the local community. Trees act as micro-ecosystems and habitat/shelter for birds, small mammals and insects which depend on these trees. Therefore, the construction-related site-clearance activities may potentially destroy or damage such living natural resources. The avifauna, insects and wild animals consuming the fruits and dwelling in the area will be impacted and will be forced to move out to other locations.

The removal of trees and subsequent clearing of under growth can expose the soil to the impact of rainfall and accelerating the runoff especially in slopes which may cause soil erosion. The loss of vegetative cover will mostly be permanent and only some might be revived through mitigation efforts.

5.4.1.3 Impact on Habitat

The removal of trees for the clearing of PRoW results in loss of micro-ecosystems as agroecosystems including trees, hedgerows, fringe vegetation and roadside plantation act as micro-ecosystems and micro habitat for birds, small terrestrial fauna, snakes, and insects therefore, removal of vegetation will also affect these faunal species. Loss of trees also takes place under the demand of firewood and timber for cooking by workers. Moreover, the chances of bush fire-accidents can happen due to negligence of project workers.

Further, the road construction activities will involve cutting of hillsides, quarrying, preparation and transfer of stone chips and construction material and other earthwork may cause



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

accumulation of dust on the surrounding vegetation. This leads to deterioration of the vegetative health, which in turn will affect the ecology and results in habitat modification.

5.4.1.4 Impact on Fauna

The impacts of road construction to wildlife includes direct and indirect mortality; destroying, degrading, and fragmentation of habitat; barriers to wildlife movement; and spurs domino effect brought by a change in land-use. The transportation of construction materials, movements of the worker and machines and sounds of the machines frighten the fauna and interfere with their routine habits.

The project study area supports good biodiversity especially in forested areas. The presences of some species of conservation importance i.e., species listed in Scheduled I of the Wildlife Protection Act and endangered species as per IUCN in the forest area are also reported in the forested areas especially, Asiatic Elephant and King Cobra, both the species are important form conservation point of view as Asiatic Elephant are recorded as endangered species as per IUCN Red List of Threatened Species and also listed as Scheduled I species in WPA 1972, whereas, King Cobra is considered extremely rare and is listed under CITES Appendix II and Vulnerable IUCN Red List of Threatened Species. Mortality from vehicle strikes remains the most significant impact of roads on reptile populations other reptiles and small animals.

The construction activities and noise will cause stress and disturbance to wildlife. It may cause change in their movement, feeding, breeding, and resting. Some animals may migrate to other locations.

A pictorial presentation of the elephant movement within the Project districts sourced from a study conducted by Wildlife Trust of India to track the movement of Elephant herd in Central India is provided as **Figure 5.5** below.

Figure 5-5: Elephant movement within project Districts



Source: Wildlife Trust of India



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

As mentioned in Chapter 4, the proposed highway is traversing through the Elephant Corridor connecting the forests of Raigarh, Korba with Jashpur. Therefore, the project will affect elephant population that move between Korba forests, Dharamjaigarh forests, Katghora forest, Tamor Pingla forests and Sarguja locally.

5.4.1.5 Impact on Aquatic Life

Road development activity is likely to disturb the aquatic habitat depending on the extant and design of the Project. Construction material like stones, pebbles, gravel, and sand are stored and used in construction phase. The construction phase of the bridge will lead to the release of debris, and this may impact aquatic life. Further, there are possibilities of contamination of the waterbodies like ponds, canals etc. due to spillage of oils and other hazardous materials.

Construction activities can alter potential habitat for aquatic life or may cause direct loss of habitat of aquatic organisms. The surface runoff causing sediment loading and increased turbidity shall result in decline in the number and diversity of aquatic flora and fauna. This may lead to loss of breeding and nursery grounds of fishes, aquatic fauna owing to changes in water quality, siltation etc.

5.4.2 Operation Phase

Roads are considered as the major cause of the pollution due to the vehicular movement. This affects the biotic components in the surrounding. The noise caused by the vehicular movements shall disturb and frighten the fauna and their habitats.

Further, due to vehicular movement, roads also act as barrier in the corridors/migratory routes. Animals are also at risk to road kills during project operation.

MITIGATION

CONSTRUCTION PHASE

Clearing of the RoW and propagation of the road structure will be carried carefully to cause least possible disturbance to the soil, water, and air environment. Disposal of construction wastes shall be done in approved wastelands besides recycling and reuse of certain materials as per the approval obtained from SPCB.

Labour camps shall be setup only after obtaining proper permissions from the Engineer and alternate fuel shall be provided to the labourers in the labour camps to ensure that no firewood will be used for cooking etc. The camps shall have proper toilets with sanitary disposal of wastes. Smoking, hunting, and fishing in the wild are prohibited and the contractor shall conduct regular awareness trainings related to non-use of firewood, prohibition on smoking in natural areas, bush fires accidents, safe handling of animals (if encountered), prohibition of fishing etc.

No labour camps shall be permitted in the vicinity of any water body to avoid the deterioration of water quality and any human induced impact on aquatic life, nor shall workers be permitted to use waterbodies for bathing and washing. Silt fencing has also been proposed to ensure that siltation and hence turbidity will not increase.

The contractor after consulting the Forest officials shall place proper signboards at identified wildlife corridors, elephant passages to inform local people about the importance of the corridor area and advise them to minimise their activities in these corridors. Similarly, sign boards shall be placed to prevent trespassing in the forest area.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

The speed of project vehicles needs to be slow down at identified and probable wildlife crossing areas.

The contractor shall regularly service the construction vehicles and machinery and maintain these in good condition to avoid high level noise. The construction activities shall not be permitted after 8 PM in normal circumstances. In case of exigencies permissions for the same shall be accorded by the Project Director and the Team Leader. Moreover, all EMP provisions made for the air, water, noise pollution control will be implemented, and thus will be also helpful to control the negative impacts on the flora and fauna.

The loss of trees and ecosystem shall be compensated through compensatory plantations in accordance with the principles of the Forest (Conservation) Act, 1980 and Indian Forest Policy. Compensatory plantation/afforestation shall be undertaken for each tree to be felled as per forest department's directive which will be twice the number of trees to be felled for the project i.e., 2x33,685 no. of tree. Such compensation shall be done with native species and proper care of the saplings will be taken to ensure survival. Plantation along the proposed highway shall act as a new habitat for avifauna, lesser mammals, and insects.

The avenue and median plantation shall also be undertaken as per SP-21:2009. Adequate provisions for the maintenance and monitoring of the same must be worked out. Co-operation of locals to ensure that local cattle does not damage the saplings during the early stages of growth will be required. Tree Plantation strategy has been attached as **Annexure 5.2**. List of local native floral species are recommended for taking up afforestation has been presented in **Table** below. Local forest authority and populace may also be consulted by the Contractor for selection of species types.

Table 5-5: Species Recommended

Scientific name	Common Name	Reason
<i>Azadirachta indica</i>	Neem	Noise barrier, pollution sink, economic and medicinal value
<i>Butea monosperma</i>	Dhak	Aesthetic value, pollution sink
<i>Cassia fistula</i>	Indian laburnum	Landscaping, flowering plant, pollution sink
<i>Dalbergia sissoo</i>	Sheesham	Economic value, pollution sink
<i>Ficus bengalensis</i>	Banyan	Noise barrier, pollution sink, shade tree, supports other species, religious values
<i>Ficus religiosa</i>	Peepal	Noise barrier, pollution sink, shade tree, supports other species, religious values
<i>Mangifera indica</i>	Mango	Noise barrier, pollution sink, shade tree, economic value (fruit bearing)
<i>Morus alba</i>	Shahtoot	Economic value, shade
<i>Pongamia pinnata</i>	Karanj	Economic Value
<i>Syzygium cumini</i>	Jamun	Pollution sink, economic value (fruit bearing)
<i>Tamarindus indica</i>	Imli	Noise barrier, pollution sink, economic values and medicinal
<i>Terminalia arjuna</i>	Arjun	Noise barrier, pollution sink

Considering that the proposed alignment is passing through the Elephant Corridor, twelve (12) underpasses and overpasses for safe crossing of wildlife and elephants are proposed for the safe movement of wildlife, lists of such crossings area is provided in **Table below** and engineering drawing of such underpasses and overpasses is attached as **Annexure 5.6**.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 5-6: Details of Proposed Wildlife/Elephant Underpass

S. No.	Chainag e	Elephant Underpass/ Overpass	Chainage		Span		Min vent height (m)
			From	To	Arrangement	Length (m)	
1	78+040	EUP	78+010	78+070	2x30x7	60	7
2	80+985	Minor bridge cum EUP	80+940	81+030	3x30x7	90	7
3	82+530	Major bridge cum EUP	82+455	82+605	5x30x7	150	7
4	85+720	EUP	85+690	85+750	2x30x7	60	7
5	89+700	EUP	89+580	89+820	8x30x7	240	7
6	96+280	EUP/ EOP	96+250	96+310	2x30x7	60	7
7	98+550	EUP	98+505	98+595	3x30x7	90	7
8	107+700	EUP	107+580	107+820	8X30x7	240	7
9	108+840	EUP	108+780	108+900	4X30x7	120	7
10	119+340	EUP	119+310	119+370	2x30x7	60	7
11	123+750	EUP	123+720	123+780	2x30x7	60	7
12	135+210	EOP	135+180	135+240	2X25X5.5	50	5.5
		Total	12 no.			1280	

OPERATIONAL PHASE

The provisions for the mitigation measures as described in the EMP shall be complied. The compensatory plantation work will replenish the loss of greenery. This will also recreate the habitat for the small animals and avifauna. Therefore, the plantation/compensatory afforestation along the proposed highway and other areas shall act as new habitat for these faunal species and after a period the negative impact due to the road construction shall be mitigated with more aesthetic advantages.

There will be proper embankment with crash barriers and other barricades to stop the wild and domesticated animals to enter or cross the road. Project is an access-controlled highway. Entry and exit at the highway at the highway shall only be allowed through interchanges. The project is passing through forest area. LVUP / SVUP shall be provided and maintained for crossings of animals. Therefore, no roadkill is likely due to the proposed improvement. Roadkill data of the highway shall be recorded during operation stage of the Project. Format for reporting of Roadkill is provided in **Annexure 5.3**.

5.5 Social Environment

5.5.1 Land Acquisition and Extent of Loss to Properties

The Project is a greenfield requiring a total of 707.541 Ha of land is to be acquired for the Project. Out of total 707.541 Ha of land, 2.29 Ha of land is available with NHAI, 162.330 Ha of Government land will be transferred, and 542.921 Ha of private land will be acquired. In total, 23 villages will be affected due to land acquisition.

5.5.2 Impact on Properties

As per the findings of the Census Survey of affected land and non-land assets, the Project impacts can be broadly classified as (i) impacts on private land, (ii) impacts on private structures (iii)



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

impacts on livelihoods due to loss of private properties and (iv) loss of common property resources. From the analysis of impacts, it is noted that 110 structures, including 106 private structures, will be affected due to the proposed Green Field Project Road. As per the survey, total 108 household comprising of 671 people will be affected in the Project.

Table 5-7: Project Impacts

S. No.	Impacts	Number
1	Total Land required (Ha)	707.541
	Total land available (Ha)	2.29
2	Total Private Land to be Acquired (Ha)	542.921
3	Total Number of Vulnerable households affected	108
4	Total number of Affected persons (APs)	671
5	Total number of private structures affected	106
6	Total number of Government Properties	2
7	Total number of Community Properties	1
8	Total number of religious properties affected	1

Source: Census Survey, 2021

5.5.3 Land use Change

Considering the access-controlled status, ribbon development near the proposed highway is having very less possibility. However, interchange locations are likely to induce ribbon development. The availability of labour and easy access to markets in the city will make roadside areas quite an incentive for the industrialist and investors of their sectoral development. Reduced transportation costs and availability of high-class transportation facilities for raw materials and products will be the most important advantage of the proposed highway.

5.5.4 Exploitation of Resources

Improvement in the connectivity will have an impact on the natural resources. Easy accessibility of the area may increase the migration and population of the region. This means more and more use of the natural resources like ground water and energy needs like fuel, etc. While the impact may not be large enough to be noticed, the long-term implications are potentially noticeable. Separate labour camp away from habitation shall be constructed. All day-to-day need shall be procured from nearby city markets. No fuelwood shall be permitted for the cooking and other purpose.

5.5.5 Loss to access of Common Property

With the acquisition of land, there is potential loss of access to common property. Common property here refers to grazing lands, water bodies like ponds, wells, valuable/religious trees, medicinal plants, firewood etc. which might hinder the daily existence of the population.

5.5.6 Traffic congestion during construction

Traffic congestion due to construction activities is common phenomena for any developmental activities. Safe and convenient passage for public vehicles, pedestrians, and livestock to and from crossing roads and property access connecting the Project highway is the mostly required. The construction activities that shall affect the use of crossing roads and existing access to individual properties shall not be undertaken without providing adequate provisions.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Detailed Traffic Control Plans will be prepared prior to commencement of works on any section of the Project highway. These plans shall be approved by the consultant and employer prior to execution. The traffic control plans will contain details of temporary diversions details of arrangements for construction under traffic and details of traffic arrangement after cessation of work each day.

Temporary diversion will be constructed with the approval of the Monitoring consultant before undertaking the construction activities at any existing roads. Special consideration will be given in the preparation of the traffic control plan to the safety of pedestrians and workers at night. The road safety measures to be adopted during construction for traffic control and safety during construction are provided under **Annexure 5.4**.

5.5.7 Working conditions

Contractor is required to comply with all the precautions as required for the safety of the workmen as per the International Labour Organization (ILO) Convention No.62 as far as those are applicable to this contract. Contractors supply all necessary safety appliances such as safety goggles, helmets, masks, etc., to the workers and staff. Contractor shall comply with all regulation regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, trenches and safe means of entry and egress.

5.5.8 Risk from Electrical Equipment

Adequate precautions will be taken to prevent danger from electrical equipment. No material or any of the sites will be so stacked or placed as to cause danger or inconvenience to any person or the public. All necessary fencing and lights will be provided to protect the public.

5.5.9 Risk at Hazardous Activity

All workers employed on mixing asphaltic material, cement, lime mortars, concrete etc, will be provided with protective footwear and protective goggles. Workers, who are engaged in welding works, would be provided with welder's protective eye-shields. The use of any toxic chemical, if any will be strictly in accordance with the manufacturer's instructions. The Monitoring consultant will be given at least 6 working days' notice of the proposed use of any toxic chemical.

5.5.10 Malarial Risk

Gravid, blood-laden mosquitoes cannot fly very far, so they generally bite within a kilometre or so of their breeding place. Pits dug up nearby settlement will be adequately drained to prevent water logging. Proper preventive measures are to be taken as per the malaria prevention guidelines adopted in the State Government Suitable direction of the medical authorities will also be taken. The people in the camps should also be informed and educated on the prevention of malaria.

5.5.11 First Aid

At every workplace, a readily available first aid and unit including an adequate supply of sterilized dressing material and appliances will be provided as per the Factory and Safety Rules. Trainings to be provided to project staff to avoid any wildlife conflict and what to be taken in an event of snakebite and wildlife human conflict.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

5.5.12 Potable Water

In every workplace, at suitable and easily accessible places, potable water (as per IS) supply will be provided. If the drinking water is obtained from an intermittent public water supply, then, storage tanks will be provided.

5.5.13 Construction Camp

Contractor during the progress of work will provide, erect, and maintain necessary living accommodation and ancillary facilities for labour to standards and scales approved by monitoring consultant. All temporary accommodation shall be constructed and maintained in such a fashion that quality water is available for drinking and other domestic purpose. The sewage system for the camp shall be properly designed, built, and operated so that no water related health hazard occurs and no pollution to the air, ground or adjacent watercourses take place. Compliance with the relevant legislation must be strictly adhered to. Garbage bins shall be provided in the camp and regularly emptied and the garbage disposed-off in hygienic manner. Guidelines for Siting and Layout of Construction Camp have been presented in **Annexure 5.5**.



6 ENVIRONMENT MONITORING PROGRAM

6.1 General

The environmental monitoring programme is devised to ensure that the envisaged purpose of the environment management plan is achieved and results in the desired benefit to the target population. To ensure the effective implementation of the EMP, it is essential that an effective monitoring programme be designed and carried out. Broad objectives of the monitoring programme are:

- To evaluate the performance of mitigation measures proposed in the EMP.
- To suggest improvements in the management plans, if required.
- To satisfy the statutory and community obligations.
- To provide feedback on adequacy of Environmental Impact Assessment.

6.2 Monitoring Indicators

The monitoring programme contains monitoring plan for all performance indicators, reporting formats and necessary budgetary provisions. Physical, Biological, and Environmental management components identified as of significance in affecting the environment at critical locations have been suggested as Performance Indicators. The Performance Indicators shall be evaluated under three heads as:

- Environmental condition indicators to determine efficacy of environmental management measures to control air, noise, water, and soil pollution.
- Environmental management indicators to determine compliance with the suggested environmental management measures.
- Operational performance indicators have also been devised to determine efficacy and utility of the mitigation/enhancement designs proposed.

For each of the environmental condition indicator, the monitoring plan specifies the parameters to be monitored, location of the monitoring sites, frequency, and duration of monitoring. The monitoring plan also specifies the applicable standards, implementation, and supervising responsibilities.

6.3 Monitoring Parameters and Standards

The Environmental monitoring of the parameters involved, and the threshold limits specified are discussed below:

6.3.1 Ambient Air Quality Monitoring (AAQM)

The air quality parameters as per CPCB standard procedure and further recommendation of the World Bank as per direction of Environment Specialist of Monitoring / Supervision Consultant shall be regularly monitored at identified locations from the initiation of the Project just after award of job to concessionaire. Ambient air quality shall be monitored in accordance with the National Ambient Air Quality Standards as given.

The location, duration, and the pollution parameters to be monitored and the responsible institutional arrangements are detailed in the Environmental Monitoring Plan **Table below**.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**Table 6-1: National Ambient Air Quality Standards**

S. No.	Pollutants	Time-weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural, and other Areas	Ecologically Sensitive Areas (notified by Central Government)	
1	Sulphur Dioxide (SO ₂) µg/m ³	Annual*	50	20	<ul style="list-style-type: none">Improved West and GaekeUltraviolet fluorescence
		24 hours**	80	80	
2	Nitrogen Dioxide (NO ₂) µg/m ³	Annual*	40	30	<ul style="list-style-type: none">Modified Jacob and Hochheiser (Na-Arsenite)Chemiluminescence
		24 hours**	80	80	
3	Particulate Matter (size less than 10 µm) or PM ₁₀ µg/m ³	Annual*	60	60	<ul style="list-style-type: none">GravimetricTOEMBeta attenuation
		24 hours**	100	100	
4	Particulate Matter (size less than 2.5µm) or PM _{2.5} µg/m ³	Annual*	40	40	<ul style="list-style-type: none">GravimetricTOEMBeta attenuation
		24 hours**	60	60	
5	Ozone (O ₃) µg/m ³	8 hours**	100	100	<ul style="list-style-type: none">UV photometricChemiluminescenceChemical Method
		1 hour**	180	180	
6	Lead (Pb) µg/m ³	Annual*	0.50	0.50	<ul style="list-style-type: none">AAS/ICP method after sampling on EPM 2000 or equivalent filter paperED-XRF using Teflon filter
		24 hours**	1.0	1.0	
7	Carbon Monoxide (CO) (mg/m ³)	8 hours**	02	02	<ul style="list-style-type: none">Non-Dispersive Infra-Red (NDIR) spectroscopy
		1 hour**	04	04	
8	Ammonia (NH ₃) µg/m ³	Annual*	100	100	<ul style="list-style-type: none">ChemiluminescenceIndophenol Blue Method
		24 hours**	400	400	
9	Benzene (C ₆ H ₆) µg/m ³	Annual*	05	05	<ul style="list-style-type: none">Gas chromatography based continuous analyser.Adsorption and Desorption followed by GC analysis

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Pollutants	Time-weighted average	Concentration in Ambient Air		Methods of Measurement
			Industrial, Residential, Rural, and other Areas	Ecologically Sensitive Areas (notified by Central Government)	
10	Benzo(a) Pyrene Particulate Phase only ng/m ³	Annual*	01	01	<ul style="list-style-type: none">Solvent Extraction followed by HPLC/GC analysis
11	As ng/m ³	Annual*	06	06	<ul style="list-style-type: none">AAS/ICP method after sampling on EPM 2000 or equivalent filter paper
12	Ni ng/m ³	Annual*	20	20	<ul style="list-style-type: none">AAS/ICP method after sampling on EPM 2000 or equivalent filter paper

* Annual Arithmetic mean of minimum 104 measurements in a year taken twice a week 24 hourly at uniform interval.

** 24 hourly or 08 hourly or 01 hourly monitored values, as applicable, shall be compiled with 98% of the time in a year. 2% of the time, they may exceed the limits but not on two consecutive days of monitoring.

Note: Whenever and wherever monitoring results on two consecutive days of monitoring exceed the limits specified above for the respective category, it shall be considered adequate reason to institute regular or monitoring and further investigation.

Source: MoEF Notification dated 16th November 2009

6.3.2 Noise Quality Monitoring

The noise levels shall be monitored at already designated locations in accordance with the Ambient Noise Quality standards given in Table 6.2 below.

Table 6-2: National Ambient Noise Quality Standards

Category of Area / Zone	Limits in dB(A) Leq	
	Daytime	Night-time
Industrial area	75	70
Commercial area	65	55
Residential area	55	45
Silence Zone	50	40



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Note: (1) Day time shall mean from 6.00 a.m. to 10.00 p.m. (2) Night-time shall mean from 10.00 p.m. to 6.00 a.m. (3) Silence zone is an area comprising not less than 100 metres around hospitals, educational institutions, courts, religious places, or any other area which is declared as such by the competent authority (4) Mixed categories of areas may be declared as one of the four above mentioned categories by the competent authority.

6.3.3 Water Quality Monitoring

Water quality parameters such as pH, BOD, COD, DO, coliform count, total suspended solids, total dissolved solids, Iron, Fluorides etc. shall be monitored at all identified locations from initiation of the Project just after award of job to concessionaire as per standards prescribed by Central Pollution Control Board and Indian Standard Drinking water specifications IS 10500:2012, presented in below tables respectively. The location, duration, and the pollution parameters to be monitored and the responsible institutional arrangements are detailed out in the Environmental Monitoring Plan.

Table 6-3: Primary Water Quality Standards

S. No.	Designated Best Use	Class of Water	Criteria
1	Drinking Water source (with conventional treatment)	A	Total Coliform MPN/100 ml shall be 50 or less pH between 6.5 to 8.5 Dissolved Oxygen 6 mg / l or more Biochemical Oxygen demand (BOD) 5 days 20°C 2 mg/l or less
2	Outdoor bathing (organised)	B	Total Coliform MPN/100 ml shall be 500 or less pH between 6.5 to 8.5 Dissolved Oxygen 5 mg / l or more Biochemical Oxygen demand (BOD) 5 days 20°C 3 mg/1 or less
3	Drinking Water source (without conventional treatment)	C	Total Coliform MPN/100 ml shall be 5000 or less pH between 6 to 9 Dissolved Oxygen 4 mg / l or more Biochemical Oxygen demand (BOD) 5 days 20°C 3 mg/1 or less
4	Propagation of Wildlife	D	pH between 6.5 to 8.5 for fisheries Dissolved Oxygen 4 mg / l or more Free Ammonia (as N) 1.2 mg/l or less

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Designated Best Use	Class of Water	Criteria
5	Irrigation, Industrial Cooling, Controlled Waste	E	pH between 6.0 to 8.5 Electrical Conductivity at 25°C µmhos/cm Max. 2250 Sodium absorption ratios Max. 26 Boron, Max.2 mg/l

Ref: CPCB (1999). Bio mapping of rivers, Parivesh New Letter, 5 (iv), Central Pollution Control Board, Delhi, PP.20.

Table 6-4: Indian Standard Drinking Water Specifications: IS 10500:2012

S. No.	Substance / Characteristics	Requirement (acceptable limit)	Undesirable effect outside the desirable limit	Permissible limit in the absence of alternate source	Methods of Test (ref. To IS)	Remarks
Essential Characteristics						
1	Colour, Hazen Units, Max.	5	Above 5, consumer acceptance decreases	15	IS 3025 (Part 4)	Extended to 15 only if toxic substances, in absence of alternate sources.
2	Odour	Agreeable	-	Agreeable	IS 3025 (Part 5)	A test cold and when heated. Test at several dilution
3	Taste	Agreeable	-	Agreeable	IS 3025 (Part 7 and 8)	Test to be conducted only after safety has been established
4	Turbidity NTU, Max.	1	Above 5, consumer acceptance decreases	5	3025 (Part 10): 1984	
5	PH value	6.5 to 8.5	Beyond this range the water will not affect the mucous membrane and /or water supply system	No relaxation	IS 3025 (Part 11)	
6	Total hardness (as CaCO ₃) mg/1, Max.	300	Encrustation in water supply structures an adverse effect on domestic use	600	IS 3025 (Part 21)	
7	Iron (as Fe) mg /l Max.	0.3	Beyond this limit taste/appearance are affected has adverse effect on	No relaxation	IS 3025 (Part 53)	Total concentration of manganese

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Substance / Characteristics	Requirement (acceptable limit)	Undesirable effect outside the desirable limit	Permissible limit in the absence of alternate source	Methods of Test (ref. To IS)	Remarks
			domestic uses and water supply structures and promotes iron bacteria			(Mn) and iron (Fe) shall not exceed 0.3 mg/l
8	Chlorides (as Cl) mg/1 Max.	250	Beyond this limit, taste corrosion and palatability are affected	1000	IS 3025 (Part 32)	
9	Residual, free chloride, mg/1 Min.	0.2		1	IS 3025 (Part 26)	To be applicable only when water is chlorinated. Tested at consumer end. When protection against viral infection is required, it should be Min. 0.5 mg/l
Desirable characteristics						
1	Dissolved solids mg/1 Max.	500	Beyond the palatability decreases and may cause gastrointestinal irritation	2000	IS 3025 (Part 16)	
2	Calcium (as Ca) mg/1 Max.	75	Encrustation in water supply structure and adverse effects on domestic use	200	IS 3025 (Part 40)	
3	Magnesium (as Mg) mg/1, Max.	30	Encrustation in water supply structure and adverse effects on domestic use	100	IS 3025 (Part 46)	
4	Copper (as Cu) mg/1 Max.	0.05	Beyond taste, discoloration of pipes, fitting and utensils will be caused beyond this	1.5	IS 3025 (Part 42)	
5	Manganese (as Mn) mg/1, Max.	0.1	Beyond this limit taste/appearance are affected, has adverse effect on	0.3	IS 3025 (Part 59)	

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Substance / Characteristics	Requirement (acceptable limit)	Undesirable effect outside the desirable limit	Permissible limit in the absence of alternate source	Methods of Test (ref. To IS)	Remarks
			domestic uses and water supply structures.			
6	Sulphate (as 200 So ₂), mg/l, Max.	200	Beyond this causes gastro-intestinal irritation when magnesium or sodium are present	400	IS 3025 (Part 24)	May be extended up to 400 provided (as Mg) does not exceed 30
7	Nitrate (as No ₂) mg/l, Max.	45	Beyond this methemoglobinemia take place	No relaxation	IS 3025 (Part 34)	To be tested when pollution is suspected
8	Fluoride (as F) mg/l, Max.	1.0	Fluoride may be kept as low as possible. High fluoride may cause fluorosis	1.5	IS 3025 (Part 60)	To be tested when pollution is suspected
9	Phenolic compounds (as C ₆ H ₅ OH) mg/l, Max.	0.001	Beyond this it may cause objectionable taste and odour	0.002	IS 3025 (Part 43)	To be tested when pollution is suspected
10	Mercury (as Hg) mg/l, Max.	0.001	Beyond this the water becomes toxic	No relaxation	IS 3025 (Part 48)	To be tested when pollution is suspected
11	Cadmium (as Cd), mg/l, Max.	0.003	Beyond this the water becomes toxic	No relaxation	IS 3025 (Part 41)	To be tested when pollution is suspected
12	Selenium, (as Se). mg/l, Max.	0.01	Beyond this the water becomes toxic	No relaxation	IS 3025 (Part 56)	To be tested when pollution is suspected
13	Arsenic (As) mg/l, Max.	0.01	Beyond this the water becomes toxic	0.05	IS 3025 (Part 37)	To be tested when pollution is suspected
14	Cyanide (as CN) mg/l, Max.	0.05	Beyond this the water becomes toxic	No relaxation	IS 3025 (Part 27)	To be tested when pollution is suspected
15	Lead (as Pb), mg/l, Max.	0.01	Beyond this the water becomes toxic	No relaxation	IS 3025 (Part 47)	To be tested when pollution is suspected
16	Zinc (as Zn) mg/l, Max.	5	Beyond this limit it can cause astringent taste and an opalescence taste and an opalescence in water	15	IS 3025 (Part 49)	To be tested when pollution is suspected

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Substance / Characteristics	Requirement (acceptable limit)	Undesirable effect outside the desirable limit	Permissible limit in the absence of alternate source	Methods of Test (ref. To IS)	Remarks
17	Anionic detergents (as MBAS) mg/1, Max.	0.2	Beyond this it can cause a light froth in water	1	Annex K of IS 13428	To be tested when pollution is suspected
18	Chromium (as Cr ⁶⁺) mg/1, Max.	0.05	May be carcinogenic above this limit	No relaxation	IS 3025 (Part 52)	To be tested when pollution is suspected
19	Poly nuclear aromatic hydra carbons (as PAH) mg/1, Max.	0.0001	May be carcinogenic above this limit	No relaxation	APHA 6440	-
20	Mineral oil mg/1, Max.	0.5	Beyond this limit undesirable taste and odour after chlorination take place.	0.03	IS 3025 (Part 39)	-
21	Pesticides mg/1, Max.	-	Toxic	-	-	-
22	Radioactive material	-	-	-	IS 14194	-
23	Alpha emitters bq/1, Max.	0.1	-	No Relaxation	-	-
24	Beta emitter pci/1, Max.	1.0	-	No Relaxation	-	-
25	Total alkalinity (as CaCO ₃), mg/l, max	200	Beyond this limit taste becomes unpleasant	600	IS 3025 (Part 23)	-
26	Aluminium (as Al) mg/1, Max.	0.03	Cumulate effect is reported to cause dementia	0.2	IS 3025 (Part 55)	-
27	Boron mg/1, Max.	0.5	-	1.0	IS 3025 (Part 57)	-

Source: Indian Standard Drinking Water Specification – IS 10500:2012

6.4 Environmental Monitoring Plan

With the knowledge of baseline conditions, the monitoring program can serve as an indicator for any deterioration in environmental conditions due to operation of the Project and suitable mitigating steps could be taken in time to safeguard the environment. A specific routine environmental monitoring plan is given as below:

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**Table 6-5: Environmental Monitoring Plan**

Environmental Components	Monitoring			Location	Frequency	Institutional Responsibility	
	Parameters	Guidance	Standards			Implementation	Supervision
Air	PM2.5, PM10, SO ₂ , NO _x , CO	As per CPCB guidelines	The Air (Prevention and Control of Pollution) Rules, CPCB, 1982	At hot mix plant, batching plant, sensitive areas and chainage as directed by Environment Specialist of PMC / SC / AE	<ul style="list-style-type: none">• 10 locations twice a month for three seasons in a year for 2 years for construction period• 05 locations once in a season for three seasons in one year for 10 years of operational period	Contractor / Concessionaire through NABL / MoEF&CC approved monitoring agency	NHAI and SC / PMC / AE
Water	pH, BOD, COD, TDS, TSS, DO, Total coliform, Conductivity, Oil and Grease other Baseline Parameters	Grab sample collected from source and analysed as per standard methods for examination of water and wastewater	Water quality standards by CPCB	Road-side ponds and ground water near construction campsites and chainages as directed by Environment Specialist of PMC / SC / AE	<ul style="list-style-type: none">• 06 ground water and 06 surface water locations during pre and post monsoon period in a year (twice a year) for 2 years during construction period• 03 ground water and 03 surface water locations during pre and post monsoon period in a year (twice a year) during operational period of 10 years	Contractor / Concessionaire through NABL / MoEF&CC approved monitoring agency	NHAI and SC / PMC / AE
Noise Levels	Noise level for day and night on dB(A)scale	In free field at 1m distance from the equipment to be monitored	Noise standard by CPCB	At equipment yards, camp, and settlements along the alignment and at chainages as directed by	<ul style="list-style-type: none">• 10 locations once in a season for two seasons for 2 years (twice a year) of construction period• 05 locations once in year for 10 years of operational	Contractor / Concessionaire through NABL / MoEF&CC approved monitoring	NHAI and SC / PMC / AE

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Environmental Components	Monitoring			Location	Frequency	Institutional Responsibility	
	Parameters	Guidance	Standards			Implementation	Supervision
				Environment Specialist of PMC / SC / AE	period	agency	
Soil quality	Monitoring of NPK and heavy metals, grease, and other Baseline Parameters		ICAR Criteria of Soil Quality	Sensitive land use and chainages as directed by Environment Specialist of PMC / SC / AE	<ul style="list-style-type: none">• 08 locations during pre and post monsoon seasons in a year (twice a year) for 2 years of construction period and• 04 Locations once per year for 10 years of operational period	Contractor / Concessionaire through NABL / MoEF&CC approved monitoring agency	NHAI and SC / PMC / AE
Road-side plantation	Survival rate of trees, success of re-vegetation	The number of trees surviving during each visit should be compared with the number of saplings planted	The survival rate should be at- least 75% below which re- plantation should be done	At locations of compensatory afforestation	<ul style="list-style-type: none">• Once during winter season every year during construction period• Once during winter / post monsoon season for 10 years during operation period	Forest department and or Contractor / Concessionaire as per contract	NHAI and SC / PMC / AE
Wildlife	Accidental Roadkill	Format attached as Annexure 5.3	Zero accidental kill of Schedule – I species	Entire Project Stretch	<ul style="list-style-type: none">• As and when required.• Summary to be prepared every month during construction and quarterly during operation period	Contractor / Concessionaire	NHAI and SC / PMC / AE



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

6.5 Monitoring of Earthworks Activities

Earthworks activities like quarries and borrow areas may cause some environment issues. Details regarding the guidelines and procedures adopted to minimize the environmental impacts of opening, operating, and closing of Quarries and Borrow Areas are presented in Annexure 6.1, 6.2, 6.3, 6.4, 6.5 and 6.6. Contractor/Concessionaire shall ensure that measures proposed in these procedures are being followed in addition to law of lands. Other environmental effects associated with the earthworks include the development of adequate temporary drainage to minimize detrimental effects (e.g., erosion) due to run-off, and safety aspects related to Work's implementation.



7 ADDITIONAL STUDIES

The suggested additional studies conducted for preparation of the EIA-EMP to provide a clear picture of the proposed project and project area are detailed out in the following sections of this Chapter.

7.1 Stakeholder Consultation

As a part of the Project preparation and to ensure that the community support is obtained, and the Project supports the felt needs of the people; public consultations were undertaken as an integral component for input to the Project development. The information gathered in the consultation process has led to substantial inputs for the Project preparation including, influencing designs. Consultations involve soliciting people's views on proposed actions and engaging them in a dialogue. It is a two-way information flow, from project authorities to people and, from people to project authorities. While decision making authority would be retained by the Project authority, interaction with people and eliciting feedback allows affected populations to influence the decision-making process by raising issues that should be considered in designing, mitigation, monitoring and management plans and the analysis of alternatives.

Major purpose of the public consultation on environmental issues in the EIA study is to appraise the stakeholders on potential environmental impacts and collect their feedback so that adequate safeguards can be considered during the planning phases. The objectives of consultation sessions, the procedure adopted, and the outputs of the consultation conducted have been described in the following sub-sections.

7.1.1 Objectives

The main objective of the consultation process is to minimize negative impacts of the Project and to maximize the benefits from the Project to the local populace. The objectives of public consultation as part of this project are:

- To obtain the information on baseline scenario.
- Promote public awareness and improve understanding of the potential impacts of proposed projects.
- Solicit the views of affected communities / individuals on environmental and social aspects.
- Improve environmental and social soundness.
- Identify contentious local issues which might jeopardize the implementation of the Project.
- Establish transparent procedures for carrying out proposed works.
- Inform the affected populace about the entitlement framework and to settle problems with mutual consent; and
- Create accountability and sense of local ownership during project implementation.

7.1.2 Type of Stakeholders

For the Project, following major groups of stakeholders were identified for consultations at screening stage:

- **Primary Stakeholders** are local people including project affected people, residents, shopkeepers, farmers, etc.; and
- **Institutional Stakeholders** such as concerned Government departments etc. and local authorities.



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

7.1.3 Methodology

Project affected villages were selected for conducting public consultation. Affected communities and potential stakeholders such as residents, panchayat members, etc. were invited to attend the meeting. Efforts were made to make the gathering representative of the local population directly or indirectly affected by the potential impacts. During the meetings, no person was prevented from entering and /or leaving the meeting as he/she desired.

Discussions, Questions and Answers: During consultation meeting, the participants were explained the proposed project and potential environmental impacts due to the proposed highway. Thereafter, a session for question and answer was kept facilitating interaction with the stakeholders, exchange of information and direct communication and collect their opinion on the environmental issues. The issues broadly covered in questionnaire included the following topics:

- Disturbance due to present traffic scenario with respect to environmental pollution and road safety
- Anticipation of disturbance due to the proposed green field highway with respect to environmental pollution and road safety
- Expectation on road safety measures in the improvement proposal
- Accidents and conflicts involving wildlife if any.
- Preference of avenue trees if any
- Forest, Wildlife, and environmental sensitive area
- Historical and Archaeological sites
- Flora and fauna of the area

7.1.4 Consultations with Community / Primary Stakeholders

Consultations were held with the affected population and community residing in near the vicinity of project. Probable Management plan to avoid or minimize the negative impacts were also discussed during consultation.

7.1.5 Outcome of the Consultation

Major findings related to key issues such as general perception about the Project; suggestions to mitigate hardships resulting from dislocation and loss of livelihood are presented below:

- It was observed that people were not only aware of the Project but also welcomed the Project in general. People suggested for service road along the side of proposed highway.
- Affected people demanded for vehicular underpass for day-to-day activities.
- People requested for acquisition of complete khasra rather than partial acquisition.
- People requested for provision for quality drinking and irrigation facilities.
- Air and Noise pollution was not a big concern. However, dust pollution in dry season and noise due to traffic movement sometime disturbs immediate roadside dwellers.
- The potential PAPs in general were very much concerned about the mode and amount of compensation.
- People suggested that adequate safety measures should be provided. In brief, it was felt during consultation that regular meeting with the local population / community could easily resolve any dispute between the community people and implementing agency settlements.
- Green Belt development along the highway. Site specific EMP has been designed to address environmental and social related issues.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 7-1: Summary of Stakeholder Meetings

S. No.	Date	District	Village/ Chainage	Location	No. of participants	Issues/ Concerns	Views & Suggestions
1	03.04.2021	Korba	Chitapali Km. 70.900	Chitapali Village	11	Compensation Service Road Link road Irrigation Facilities Employment	Compensation according to LA Act, 2013 Local people should be consulted. Air & Noise Pollution measures near CPR/Religious structures Proper drainage should be provided Employment opportunity should be provided to the affected families or local people during construction phase
2	04.04.2021	Korba	Nonbirra Km. 76.700	Nonbirra Village	14	Compensation Service Road Link road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Good quality material should be used in construction. Provision of drainage and Culverts Job should be provided for one member of the family
3.	26.03.2021	Raigarh	Premnagar Km. 111.270	Premnagar Village	10	Compensation Provide Toilets Borewell Compensation Trees' Compensation Service Road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Good quality material should be used in construction. Provision of drainage and Culverts Job should be provided for one member of the family
4.	26.03.2021	Raigarh	Baisi Village Km. 112.000	Baisi Village	17	Compensation Irrigation Facilities Service Road Borewell Compensation	Compensation according to LA Act, 2013 Provision of Streetlights Provision of water storage facilities for irrigation Purpose Air & Noise Pollution measures near CPR/ Religious structures

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Date	District	Village/ Chainage	Location	No. of participants	Issues/ Concerns	Views & Suggestions
5.	27.03.2021	Raigarh	Baisi Colony Km. 113.540	Baisi Colony Village	12	Compensation Service Road Link road Irrigation Facilities	Local people should be consulted. Air & Noise Pollution measures near CPR/Religious structures Compensation according to LA Act, 2013 Excavated material shouldn't be dumped at private land, it should be dumped at dumping sites. Speed breakers should be provided at desirable locations
6.	30.03.2021	Raigarh	Medharmar Km. 117.200	Medharmar Village	11	Compensation Service Road Link road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Good quality material should be used in construction. Provision of drainage and Culverts Job should be provided for one member of the family
7.	01.04.2021	Raigarh	Bhandar Para Km. 129.500	BhandarPara	07	Compensation Service Road Link road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Provision of water storage facilities for irrigation purposes. Air & Noise Pollution measures near CPR/Religious structures.
8.	01.04.2021	Raigarh	Sisringa Km. 131.520	Sisringa Village (Dhaba)	10	Compensation Service Road Link road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Good quality material should be used in construction. Provision of drainage and Culverts

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Date	District	Village/ Chainage	Location	No. of participants	Issues/ Concerns	Views & Suggestions
							Job should be provided for one member of the family
9.	01.04.2021	Raigarh	Tejpur Km. 134.680	Tejpur Village	10	Compensation Provide Toilets Borewell Compensation Trees' Compensation Service Road Irrigation Facilities	Local people should be consulted. Air & Noise Pollution measures near CPR/Religious structures Compensation according to LA Act, 2013 Excavated material shouldn't be dumped at private land, it should be dumped at dumping sites. Speed breakers should be provided at desirable locations
10.	01.04.2021	Raigarh	Rairuma khurd Km. 137.140	Rairuma khurd Village (Dhaba)	17	Compensation Service Road Link road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Good quality material should be used in construction. Provision of drainage and Culverts Job should be provided to one member of the family
11.	02.04.2021	Raigarh	Bakaruma Km. 141.430	Bakaruma Village	10	Service road Compensation Link Road Tube well Compensation Trees' Compensation Employment	Local people should be consulted. Air & Noise Pollution measures near CPR/Religious structures Compensation according to LA Act, 2013 Excavated material shouldn't be dumped at private land, it should be dumped at dumping sites. Speed breakers should be provided at desirable locations.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Date	District	Village/ Chainage	Location	No. of participants	Issues/ Concerns	Views & Suggestions
							Employment opportunities should be provided to the affected families or local people during construction phase
12.	03.04.2021	Jashpur	Budhadand Km. 147.300	Budhadand Village	06	Compensation Provide Toilets Borewell Compensation Trees' Compensation Service Road Irrigation Facilities Employment	Compensation according to LA Act, 2013 Provision of Streetlights Provision of water storage facilities for irrigation purposes Air & Noise Pollution measures near CPR/Religious structures Employment opportunities should be provided to the affected families or local people during construction phase.
13.	03.04.2021	Jaspur	Gala Km. 148.670	Gala Village	11	Service road Compensation Link Road Tube well Compensation Trees Compensation	Compensation according to LA Act, 2013 Local people should be consulted. Air & Noise Pollution measures near CPR/Religious structures Proper drainage should be provided
14.	03.04.2021	Jaspur	Pangsuwa Km. 153.000	Pangsuwa Village	10	Compensation Service Road Link road Irrigation Facilities	Compensation according to LA Act, 2013 Provision of Streetlights Provision of water storage facilities for irrigation purposes Air & Noise Pollution measures near CPR/ Religious structures
15.	03.04.2021	Jaspur	Dhodhapani Km. 156.700	Dhodhapani Village	13	Compensation Service Road Link road	Local people should be consulted. Air & Noise Pollution measures near CPR/Religious structures



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Date	District	Village/ Chainage	Location	No. of participants	Issues/ Concerns	Views & Suggestions
						Irrigation Facilities Employment	Compensation according to LA Act, 2013 Excavated material shouldn't be dumped at private land, it should be dumped at dumping sites. Speed breakers should be provided at desirable locations. Employment opportunities should be provided to the affected families or local people during construction phase



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 7-1: Glimpses of Public Consultation



Public Consultation at Village Chitapali (Km.
70+900)



Village Nonbirra (Km. 76+700)



Village Premnagar (Km. 111+270)



Village Premnagar (Km. 112+270)



Village Baisi (Km. 112+450)



Village Baisi Colony (Km. 113+540)



Village Baisi Colony (Km. 113+730)



Village Baisi Colony (Km.+115+000)



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



Village Baisi Colony (Km. 115.390)



Village Medharmar (Km. 117+200)



Village Sisringa (Km. 125+280)



Village BhandaRAPara (129+500)



Village Sisringa (Km. 131+520)



Village Tejpur (Km. 134+680)



Village Rairuma Khurd (Km. 137+140)



Village Bakaruma (Km. 141+430)



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



Village Budhadand (Km. 147+300)



Village Gala (Km. 148+670)



Village Pangsuwa (Km. 153+000)



Village Dhodhapani (Km. 156+700)

7.2 Public Hearing

The proposed project falls under Category 'A' and Public Hearings were organized in all the project districts as per the provisions of EIA Notification 14th September 2006 & its subsequent amendments. Draft EIA report along with executive summary in Hindi and English were submitted to Chhattisgarh State Pollution Control Board for its wide circulation. Public Hearing notices were also published in Newspaper 30 days prior to proposed public Hearing dates. Summary of Public Hearings are given in Table below.

Table 7-2: Summary of Public Hearing

Content	Public Hearing - 01	Public Hearing - 02	Public Hearing - 03
District / Tehsil	Dharamjaigarh	Pathalgaon	Korba
Date of Hearing	11.5.22	25.05.2022	20.09.2022
Chaired By	Shri R. A. Kuruvanshi (ADM, Raigarh)	Shri L.I. Thakur (ADM, Jashpur)	Shri Vijendra Singh Patle (ADM, Korba)
Regional Officer (PCB)	Shri S. K. Verma (Raigarh)	Shri S. K. Verma (Raigarh)	Shri Ankur Sahu (Korba)
Time	11:00 AM	11:00 AM	11:00 AM
Place	Govt. Middle School, Bakaruma	Community Center Ground, Kachhar	Govt. Higher Secondary School, Kartala
Newspaper 1	Indian Express (07.04.2022)	Hindustan Times (23.04.2022)	Times of India (18.08.2022)
Newspaper 2	Swadesh (07.04.2022)	Nav Bharat (23.04.2022)	Dainik Bhaskar (18.08.2022)



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Content	Public Hearing - 01	Public Hearing - 02	Public Hearing - 03
Newspaper 3	Dainik Bhaskar (07.04.2022)	-	-

Figure 7-2: Glimpses of Public Hearing



Dharamjaigarh





FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
**DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.**

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



Pathalgao



Korba

Table 7-3: Response of Verbal Suggestions / Issues (Dharamjaigarh)

S. No.	Questions / Issues	Reply
1.	Dilsai Tirkey, Kajubari is my 4.5 acres of land, so half an acre of land is entering mine, what will you do, everything is going to the road, then my land is over, somewhere I will have to adjust, if I get money, I will adjust the land somewhere, I am not denying it. If the government is taking it, then I should get the money.	Land acquisition and compensation will be as per the LARR act 2013 and NH act 1956.
2.	Khirod, we do not know what compensation is being given to the land that is being acquired. I had received land from the government, my land is khasra number 157, about half an acre of it has gone to Bharat Mala Road, but 1.21 hectares of land is being acquired there, I have not yet received information about the reason for which this land is being acquired. Apart from this, due to being a general class, I do	Land acquisition and compensation will be as per the LARR act 2013 and NH act 1956. Re-evaluation of assets will be done as per norms and compensation will be provided as per norms of NH act 1956.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
	agricultural work, so whatever compensation you will give, as we are hearing is 6 lakh per hectare, then according to that we will not get to buy land anywhere else in this compensation amount, so I object that additional land should not be taken from me. And in my field, there is a mango tree, teak and khamhar planted by me, I sell mangoes worth 5000 rupees per year in a tree, so you are giving 6000 compensations in it, it is also wrong in a way. After this, we have a railway line which is currently being bought and sold adjacent to it in Prem Nagar Colony, which is going to be 40 to 60 lakhs per acre, so I want we should also get compensation in the same way. In Patwari Halka No. 37, which is next to our village, 22 lakhs per acre is being given, while in our Baisi Colony, I have come to know that 6 lakh per hectare is being given for barren land, while we all have irrigated land like there is a pond in my own farm. There is a well and there is almost a forest in one acre in which I have planted teak, it has not been surveyed in my presence yet, so I object that we should get proper compensation so that I can buy land of general category in other places too. I have no objection to the environment.	
3.	Chandan Rao, Sisringa, it has been pointed out in your paper that the journalist has given 15 decimals and now the compensation is getting 2 lakh 1 thousand, this is wrong, please correct it.	The corrections will be made if required.
4.	Dyal Singh Rathia, Rairuma khurd - The road that is going to come up on the highway was down earlier, now going to my farm, my name is not in it, my father's name is also not there.	The corrections will be made if required.
5.	Ishwar Ram Rathia, Sisringa - There is a bypass going on in our road for which we are not getting proper compensation, Patwari people have not seen the land properly. More compensation is being given in other villages.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
6.	Devsay, Rairuma khurd - We are not getting the right compensation for our land on the main road in the bypass road that is going on, so we are applying and the compensation for the two crops is also double.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
7.	I have a lot of land buried in it, Patwari says that you have an undue possession of the land, my father and grandmother have been earning and earning, their map is not measles, and if they do not give compensation for our living and food, then how will it happen, so I ask the government to give compensation for it and we do not have any expectations in it. If the government does not give it, then where will we earn and eat, so I request you people to get compensation from the government.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956 and will be fixed by district administration after verification.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
8.	Rakesh, Dharamjaigarh Colony - There should be a public hearing before the award is passed, so how is the public hearing being held after receiving the award? This is not just an injustice to the farmers and there should be a gram sabha, not even a gram sabha, the NH people who are our officials of Bharat Mala, from Urga, to Pathalgaon 130A, which is not even a gram sabha of the national highway. And, when a committee is constituted, our Hon'ble Collector should also have a woman representative residing in the affected area, who is not there. The project should have a land acquisition officer and a representative of the national authorized bank, be a member of the affected village, there is no rule indicated in it, no rules have been formed, a woman is a member of the committee and whether the committee has been formed. Our movable property has not yet been released in both our Dharamjaigarh Colony and Baisi Colony, the rest of our Bakaruma, Sisringa, Tezpur leaflets have been removed, in which every well, bari and whatever poetry farm, movable property is there, which I have seen in the letter, 70 percent of those who have come out, 40 percent, 90 percent compensation has been deducted and what is this rule, how can you guys tell what is deducted in it and according to the guidelines of the Chhattisgarh government, according to the guidelines of the Chhattisgarh government, nothing is visible in it. What kind of rules are these, different rules, different rules of Chhattisgarh government in railways and different in our national highway, how is it? Going on the road will make it difficult, so I oppose environmental clearance.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956 and will be fixed by district administration after verification.
9.	Mukhiram Rathia, Bakaruma - One of my jamun trees has not been written, so I have come to you to tell you the news.	Corrections will be made if required.
10.	Santudas Mahant, Khargaon: I would like to tell you about things related to the environment and pollution. Yet, all our colleagues have spoken, so far, the award has been given, everyone has been told and there was no public hearing. We do not know till date, no one knows the villagers, all our brothers who have come out of these are unable to speak anything and this kind of gram sabha is not related. On the one hand, the government says that the Gram Sabha should be given prominence and such things are being said by calling 20 villages and the entire Marriage Assembly at one place. The person who can speak in the village cannot speak on this platform, you have kept such a big platform decorated and told this villager that you come and talk to us and ask, the poor person does not understand your language, what will you do? What is the relation of gram Sabha, who is called gram	There is deficiency has observed as mango trees, mahua trees etc. have not been evaluated, hidden measles has not been mentioned, survey has not been done by Patwari correctly, land grabbing has not been evaluated, gazette is published initially for land acquisition. It is done in the newspaper that if there is any objection within 21 days, then they are resolved. The compensation has been determined only after



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
	<p>sabha, explain to us, we should also understand what gram sabha is. The award has been given, the hearing has not been held and we do not even know that the land that was surveyed for the last time in the right way, the copy of the survey has been kept in 21 categories, which is two crops, irrigated, unirrigated, our farmer brothers are not even aware of this, why do we not even know this? If there is transparency, then why is transparency not being shown? We are proud, we want to thank Union Minister Gadkari ji that Bharat Mala Road, national highway has been given in our Chhattisgarh, it is very commendable. We know that without the connectivity of the city, there is no area that can develop, we also welcome that. But this does not mean that food is as important as the forest, if you do not have food then the forest is also of no importance and if there is no forest then food is also not important. A farmer grows food and raises his parents from it, from which his ancestral generation also passes by. As much as industrial development is necessary, our farmer brothers need their fertile land like the same used land because they cannot make money with money, but from some land, many generations after generations until they sell that land, their generation will survive from that land. I want to say that as a Gram Sabha, you hold a Gram Sabha in every 02-03 villages, we will also ask those villagers there, we will also tell those things, we will become homeless. Land is being lost, industrial development will happen, connectivity is needed, we also want development, but along with development, if the ancestral land of the farmers is going away, if they cannot develop due to the loss of that land, those things should also be taken care of, and compensation should be fixed on the basis that their life is settled. This is not a joke, I am speaking for everyone, you must have come from a farmer's house, you also eat the food that we eat, how sad we are due to the loss of land, ask us, we will not be able to run the money for two days because we are farmers. We can be satisfied with the same food that we grow by serving it and the matter of environment is that you are a big officer from the industrial area, you have come from a big industrial area, you can understand the difference between the environment there and the environment of our village, there is no need to tell. Pollution is so widespread that air pollution, water pollution, clean water is not available to drink in the city and we drink clean water from the river drain, drain, waterfall, pond, well, all our things are clean and if anyone can ruin that cleanliness, then it is industrial because there are a lot of rules in the industry. We will save the</p>	<p>evaluation, if there is any objection, it will be resolved by the officer. Land acquisition and compensation will be as per LARR act 2013 and NH act 1956 and will be fixed by district administration after verification.</p>



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
	<p>environment in this way, we will plant this tree in this way, we will pay attention to cleanliness in this way, we will pay attention to education in this way, we will do the work of development in this way, but if it is done, then you have also seen it and we have also seen, there is no need to tell more about it. Delhi has been developed, it is there for breathing for 6 months, give 250 rupees and get it charged. Take air worth Rs 250 and charge like a mobile and get out, this situation has happened. We want a public hearing in every village as a Gram Sabha, if it happens like this, then the youth of every village, the farmer of every village, the land of every village should be decided in the same village, so no one can come to this platform and speak. Our land is going away, our ancestral land, there is so much sorrow, the land that is being reared by the parents has been planted suddenly and thus like a chanamurra, I have seen in it, 6000 rupees in the awarded, 6000 rupees of mahua tree, we take a loan from a mahua tree in a year, In the same tree, we take 10000 mahua bins instead of 6000, you are not sure, let us tell you without doing and show it by going home. Is 6000 rupees enough for our livelihood, you tell me. Which category is 5000 rupees for a mango tree? We need transparency and the guidelines issued by the government, the guidelines of the Chhattisgarh government and the collector's guideline, that guideline should be given to every village and made aware of it and if the means of livelihood under that guideline are given to them, then land should be given to them. Let me believe that we have got general, OBC and ST/SC, all the people go to ST, you will give compensation, ST's land will be purchased in the same village, but the land of an ordinary person is gone, the land of an OBC has gone and if he has the same amount of land, then where will he go? He can't buy land. Should we be displaced from that village, is the money given by you enough to displace us, to settle in another village? You ask us, we are poor people, we are from the village, do not speak much, but we have learned something, we have experience, let us share those experiences with us and do justice to us, you will also be the sons of the farmer. You also eat food, I also eat food, you also drink water, I also drink water, then why are you not judging us? We want justice and in every village in the form of gram sabha, gram sabha means that the sarpanch of a village is sitting and all the citizens of the village are sitting in the middle of it, then a small person will also come and tell you that sir, this is the problem with me. Don't ignore sir, don't mess with our environment and if you can't give us the right</p>	



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
	means of living, then don't even do industrial development, we are happy in this, we will eat by breaking leaves, we will also plant sarai seeds, we will also plant mahua, dori will also be planted and by producing potatoes from the same land, we will try to carry forward the generation of ancestors and your rule to our family and Chhattisgarh. We would like to take governance and central government towards development and will do so. But do not crush the poor by giving benefits to the big people by industrial development, sir. Keep in mind that the inner self of the poor burns but is unable to speak to you, remains silent, there is a lot of confusion with them, questions arise on the question, but you cannot tell, sir, keep in mind.	
11.	Motilal Patel, Bagudega - Please provide a list of our villages on the national highway that is being built.	The list has been shared to gram panchayat and administrative offices; you may obtain from there.
12.	Ravi Shankar Rathia, Bakaruma: Sir, I oppose your environmental public hearing because I do not agree with the award passed on your behalf in which the rate of mahua tree and mango tree is fixed. I don't agree and my village also does not agree, because a mango tree has 6000, whereas in a year we pluck 6000 to 10-15 thousand fruits, mahua also has the same. I oppose what we will do and at the same time they are giving very little compensation for the land. My 2 lands are going 44/5 08 Rakta 547 hectares and one measles no. 354/1000 03 It is 0.202 hectares, my total is 1 acre 87 decimals, for this I am getting compensation only 5 lakh 77 thousand, if I go to take land elsewhere in lieu of this, then I will not even get 50 decimals, then there is no point in me going to this much land. It is an ancestral land, I have been earning and eating from our ancestors, I cannot support it. And especially for the tree, I can't do anything else. I am also going to go to Mahua tree, mango tree, berries. His compensation has not been made at all, so I don't agree with it.	There is deficiency has observed as mango trees, mahua trees etc. have not been evaluated properly. The compensation has been determined only after evaluation, if there is any objection, it will be resolved by the officer. Land acquisition and compensation will be as per LARR act 2013 and NH act 1956 and will be fixed by district administration after verification.
13.	Sajal Kumar, Dharamjaigarh, the EIA report that has been prepared deserves a lot of thanks made in Hindi. I want to ask the question to you who are SDM Madam, what is the land that is being acquired for Bharat Mala, the land that is being acquired the most in the vicinity of Dharamjaigarh development block? Is it fair that this is being done here under the kilometres away rule? There is no mention of wild elephants in it. The project of Bharat Mala is going very much in the Dharamjaigarh development block area and is being	We are giving 12 elephant passes. According to the policy of the government, compensation will be given according to the forest department. Wildlife conservation plan has been prepared and submitted to the forest department for approval.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
	affected the most. Since 2001, 154 villagers have died due to elephants in Bakarona range and Dharamjaigarh range of forest division and elephants have also died since 2005 till date. A total of 18 elephants have died in Bakaruma and Dharamjaigarh ranges and 54 elephants have also died. Let me tell you, maybe you will not have this information, so I have attached it. I want that the environment officer, my only demand is that the Bharat Mala project, which is passing through Bakaruma and Dharamjaigarh, should be changed so that the wild elephant is a forest can be protected and if action is not taken on this, then I will file a petition against them in NGT and I want that Proper action should be taken on my application. Anything is acquired, I believe that public hearing is done first, award is made later, but this is such a project, I do not know that it is being made under the Constitution that the opposite is being made, the award is being made first, after that the public hearing is being done. I strongly object to wild elephants and forests can be safe.	Additional arrangement also will be made if will be suggested by department.
14.	Vinay Kumar Toppo, Rairuma khurd - The localization where we have come here, in our Rairumkhurd, Nurajhor in which the map of 10-12 of us has not been repaired, it includes Pradeep Khalkho, Ajay Khalkho, Hermani, Noharsay, Rafal Khalkho, Bhuwal Khalkho, Juglal Khalkho, Agustina Khalkho, Rajkumar Bara, Kamal Khalkho, Maya and one can be there, our map is not corrected in it, which is going to the road of Bharatmala, which is going to our possession, ownership, but till date we have not even published it in Rajat, so we will be pleased to repair the map and publish it in the Gazette. There is about 1 kilometer in our Nurajhor, here no one has repaired the people I name. In this, according to me, the land is in number 597 and bate and there is a mixed villain, please solve it.	At the time of distribution of compensation, the map will be corrected. The compensation of the land was done as per the instructions of the Collector.
15.	Patrik Khalkho, Rairuma khurd - We have some land in the Bharatmala Road in which it is going. The map has not been corrected and it shows another place on the map and the possession is correct. We had put the map in for repair, so there has been no hearing on it. He said we will add it to the list later, but no hearing has been held yet. I request you to keep this in mind.	At the time of distribution of compensation, the map will be corrected. The compensation of the land was done as per the instructions of the Collector.
16.	Vibhuti Bairagi, Dharamjaigarh land acquisition has not been properly transparent, compensation should be given considering the price of 2018. Here compensation is being given for trees in a discriminatory manner. Fruit trees should be compensated according to their annual income. We object to it.	The compensation of the land was done as per the instructions of the Collector. The fruit tree is evaluated by horticulture, the timber is done by the forest department and



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
		compensation will be given accordingly.
17.	Shanti Tirkey, Tezpur - I oppose this public hearing, whenever I go to tehsil, there is a lot of bad behavior, I have 235 trees in which there is no details of compensation, even the land has not been compensated. Give him the right benefit.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
18.	Kuldeep Bhagat, Rairuma khurd - I want to speak about the movement of elephants. Will a bypass be built for elephants? Otherwise, the entire loss will be on us.	We have mentioned the movement of elephants. We are giving 12 elephant passes. According to the policy of the government, compensation will be given according to the forest department.
19.	Birju, Bakaruma - He is not satisfied with the compensation that is being received for the land that is being lost, he is also not satisfied with the compensation for the tree that is going away.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
20.	Chandrabhan Singh, Bakaruma - We do not know what the rate of our farm is and if we get three times the money, we won't get that kind of land. There are 10 teak trees, they are telling 1600 rupees, due to which I am not satisfied.	The compensation of the land was done as per the instructions of the Collector. The fruit tree is evaluated by horticulture, the timber is done by the forest department and compensation will be given accordingly. Compensation will also be given for the small trees.
21.	Rajendra, Dharamjaigarh - I oppose the award that we have received, and the farmers have also received compensation but there has been no public hearing. One tree has been made for Rs. 34, Rs. 6,29,000 for 4700 trees. The above subject may be duly followed. Please give compensation for the chicken farm that has been built on our land.	The compensation of the land was done as per the instructions of the Collector. The fruit tree is evaluated by horticulture, the timber is done by the forest department and compensation will be given accordingly. Compensation will also be given for the small trees.
22.	Kuleshwar Rathia, Tezpur - My poultry farm is built, it is 90 feet wide and 30 meters in length, it is not getting compensation, we oppose it. The public hearing was to be held within 15 kilometres; the whole man has not been able to reach.	The compensation of the land was done as per the instructions of the Collector as per LARR & NH act.
23.	Santodas Mahant, Phadgaon, my 3 acres 35 decimals of land are going away, I have two crops land, so I do not agree with this.	The compensation of the land was done as per the

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
		instructions of the Collector as per LARR & NH act.
24.	Champa Bai, Bakaruma - There is a land in the name of Sevak Dokra, when we are measured, do not call us, how to measure it, tendupatta, four, we will not be able to find it. You all give the land and take the money. Give me the money for tendu leaves, I will take a photo of four. Buy goats for Rs 10,000-12,000. Give me a torn bencher and take the money! I will bring 20 sacks of mahua. We have a lot of dori, mahua, char fruit and are giving us only 6,00,000. We take that much money in a year. I don't agree.	The compensation of the land was done as per the instructions of the Collector. The fruit tree is evaluated by horticulture, the timber is done by the forest department and compensation will be given accordingly. Compensation will also be given for the small trees.
25.	Avnesh, Dharamgarh - My land is also going into this project. We are farmers, the sole purpose of the farmer is to do farming, if we take our farm, what will we earn? Even 1 acre of land will not be available at the price of 10 decimals. Giving 5000 of litchi. The rule says that instead of 1 tree, it is said to plant 10 trees. You are also giving 500 rupees in cashew trees, but this makes several lakhs of rupees in 1 year. If you people do not give proper compensation for the tree, then how will the people of this area plant trees? Listen to the farmers, they are not getting proper compensation. The rules for taking land in this project are not being followed, the award has been passed earlier and there has been no public hearing. In the rules, farmers get compensation, and it shows. We are farmers, many have built houses and opened a poetry farm for which proper compensation is not being given. The price of timber, teak etc. is being given at the lowest rate. How much the farmer will fight to get his rights, the land tribunal has also been set up in the railways, in which compensation has been given, we are being given compensation in this area by reducing it. Farmers are being cheated. All the farmers who have come here have brought compensation. How can a farmer plant more trees? Our compensation amount is exceptionally low.	The compensation of the land was done as per the instructions of the Collector. The deficiency has been found, mango trees etc. have not been evaluated, hidden measles has not been mentioned, survey has not been done by Patwari correctly, land grabbing has not been evaluated, gazette is published initially for land acquisition. The compensation of the land was done as per the instructions of the Collector.
26.	Manish Rathia, Bakaruma, we are going to our land, at that time the tower was being installed, even the small tree was getting compensation but now we are not getting it, we should get the amount of 1 tree every year according to its production, only then we agree.	The fruit tree is evaluated by horticulture, the timber is done by the forest department and compensation will be given accordingly. Compensation will also be given for the small trees.
27.	Hetram, Bakaruma – Farmers are not satisfied with the land going into this project, their amount is exceptionally low, I oppose the compensation being received by the government.	The compensation of the land was done as per the instructions of the Collector as

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
		per LARR Act 2013 & NH act 1956.
28.	William Panna, Bagudega - I strongly object to this ongoing public hearing. You people have taken the award, built the structure and later are conducting a public hearing, the map has not been corrected, the land should have been verified and the right compensation should have been given. If you take only our ancestral land, then how will it happen? If you must take the land, then the right compensation should be given.	The compensation has been determined only after evaluation, if there is any objection, it will be resolved by the officer. At the time of distribution of compensation, the map will be corrected, public hearing for environmental clearance is done at one place in the district. The compensation of the land was done as per the instructions of the Collector.
29.	Janaiwal Rathia, Sisringa farmers do not know how much land is going away, first it was marked and later it is being marked at another place, so how will we know?	The compensation of the land was done as per the instructions of the Collector as per norms and gazette is published initially for land acquisition if there is any deficiency it will be corrected.
30.	Balwant Tigga - There is a lot of problem in the road that is going to my area, which our sisters are also complaining that they are not treated properly even in the tehsil. If we don't get the compensation, we will protest.	The compensation of the land was done as per the instructions of the Collector as per norms and gazette is published initially for land acquisition if there is any deficiency it will be corrected.
31.	Ghasiyaram Rathia, Baisa - The rate is made after the first public hearing.	Noted.
32.	Love Kush Mishra, Sisringa Who is presiding over today's public hearing, what can you do to solve the trees that will go into the road being built in the Bharatmala project, which will destroy the employment of the people. If employment is lost, what will the environmental authorities do about it? Why are the trees not being properly compensated? If you don't reply in writing, what does it mean? I am dissatisfied with today's public hearing.	The compensation has been determined only after evaluation, if there is any objection, it will be resolved by the officer. Around 88 thousand will be cut, if the road is widened, trees will be cut, and employment will be available, local people will be involved in this project. Educated people will be given employment according to their skills. At the time of distribution of compensation, the map will be

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Questions / Issues	Reply
		corrected, public hearing for environmental clearance is done at one place in the district. The compensation of the land was done as per the instructions of the Collector. The fruit tree is evaluated by horticulture, the timber is done by the forest department and compensation will be given accordingly. We have mentioned the movement of elephants. We are giving 12 elephant passes. According to the policy of the government, compensation will be given according to the forest department. Compensation will also be given for the small trees.

Table 7-4: Response of Written Suggestions / Issues (Dharamjaigarh)

S. No.	Name of Applicant	Subject	Remark
1.	Shri Khirod Vishwas Baysi Colony, Khasra No. 157, Patwari halka No. 36	Land Acquisition and Compensation Amount	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
2.	Shri Vishnu Ram Rathiya, Village Sisringa, tehsil Dharam Jai Garh District Raigarh, Chhattisgarh.	Dis-satisfied due to insufficient amount of compensation	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
3.	Shri Ramesh Ghosh, bakaruma, Reruma Khurd, tehsil Dharam Jai Garh, Chhattisgarh.	Act 3G and 3H was not published. Compensation shall be awarded as per market rate of 2018. Fuit trees shall be evaluate based on annual income from tree. Compensation shall be awarded as per land acquired for railway line development.	As per NH act 1956, 3(a) and 3(d) was published in gazette notification and newspapers. Land acquisition and compensation will be as per LARR act 2013 and NH act 1956. Assets will be evaluated as per RES guideline of Chhattisgarh govt. Fruits bearing trees shall be calculated as per guideline of forest department.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of Applicant	Subject	Remark
4.	Shri Shajal Kumar Madhu, Bakaruma	The routes have not been briefed for wild elephants.	Alternate routes / corridor / underpass has been provided for wild elephants.
5.	Shri Balram Rathiya Village Bakaruma, District Raigarh, Chhattisgarh	Tree counting is incorrect according to survey.	Tree counting has been done as per guidelines of forest department.
6.	Shri Tel Singh Rathiya, Shri Hari Ram Rathiya	Land of khasra number 554 has been marked barren land instead of fertile land.	Land categorization has to be identified by revenue department.
7.	Shri Kriti Kumar Rathiya, Shri Umang Das mahant & villagers of sisringa village, tehsil Dharam Jai Garh, Chhattisgarh	About sufficient compensation	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
8.	Shri Suchitra Vishwas Viyasi Colony, khasra no. 152/2 Patwari Halka no. 36	About compensation	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
9.	Shri Chandan Ram Pita Bhagirathi village Sisringa tehsil Dharam Jai Garh, Chhattisgarh	Compensation and land area correction	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
10.	Shri Santosh Vishwas, Viyasi Colony, khasra no. 359/1 Patwari Halka no. 36	Missing the land details during the survey from map.	Assets evaluation will be done as per RES guidelines of Chhattisgarh govt.
11.	Shri Vibhuti Vairagi, Viyasi Colony, Dharamjaigarh	Objection about land acquisition and compensation.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
12.	Shri Hemsagar Rathiya village Bakaruma Tehsil Dharama Jaigarh Dist. Raigarh Chhattisgarh	Khasra no. 267/11 has not included in survey.	Land acquisition and will be as per NH act 1956. Issue will be short out by
13.	Shri Manohar Tinki / silas Village Vagudega Tehsil Lailunga Dist. Raigarh Chhattisgarh	Regarding death of owner acquired land.	The distribution of compensation of land will be done as per LARR act 2013 by revenue department.
14.	Shri Ratin vishwas S\O Vishvas vyasi Colony, Tehsil Dharma Jaigarh Patwari no. 36 Khasra no. 143	Regarding the damage by pollution: My poultry farm size is 300 fit x 30 fit out of that 260 fit x 30 fit is being acquired, left area is only 40 fit x 30 fit.	Compensatory plantation is proposed. The evaluation of affected assets will be done as per guideline of Chhattisgarh govt.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of Applicant	Subject	Remark
15.	Shri Durga Parsad Shri Chamar Singh Shri Jayram Vyasi Colony Dharma Jaigarh	Act 3G and 3H was not published. Compensation shall be awarded as per market rate of 2018. The assets have been evaluated on lower rates. Fuit trees shall be evaluate based on annual income from tree. Compensation shall be awarded as per land acquired for railway line development.	As per NH act 1956, 3(a) and 3(d) was published in gazette notification and newspapers. Land acquisition and compensation will be as per LARR act 2013 and NH act 1956. Assets will be evaluated as per RES guideline of Chhattisgarh govt. The evaluation of affected assets will be done as per guideline of Chhattisgarh govt. Fruits bearing trees shall be calculated as per guideline of forest department.
16.	Shri Mangal das Shri Bandhan singh Shri Battos das Village Khandgam Tehsil Dharma Jaigarh Dist. Raigarh	Regarding the enough compensation of land being acquired as this is the only source for living.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
17.	Smt. Sankumati Rathiya Village Bakaruma	Regarding the release of insurance amount for tendu patta	Fruits bearing trees shall be calculated as per guideline of forest department.
18.	Shri Bhanglai Beba Devnath 54/8	900 trees of sagaun and 40 trees of mahua and 9 ½ acres land are not included in list / record.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
19.	Shri Mahfooz Alam	Regarding map correction.	This is being done by revenue department as per revenue documents.
20.	Shri Avnish Haldar Vyasi Colony Dharma Jaigarh	Act 3G and 3H was not published. Compensation shall be awarded as per market rate of 2018. The assets have been evaluated on lower rates. Fuit trees shall be evaluate based on annual income from tree. Compensation shall be awarded as per land acquired for railway line development.	As per NH act 1956, 3(a) and 3(d) was published in gazette notification and newspapers. Land acquisition and compensation will be as per LARR act 2013 and NH act 1956. Assets will be evaluated as per RES guideline of Chhattisgarh govt. The evaluation of affected assets will be done as per guideline of Chhattisgarh govt. Fruits bearing trees shall be calculated as per guideline of forest department.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of Applicant	Subject	Remark
21.	Shri Prakash Baggudega Siwarpara	Regarding job.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
22.	Shri Manish Kumar Shakiya Village Bakrum Tehsil Dharma Jaigarh	Regarding compensation	Land acquisition and compensation will be as per LARR act 2013.
23.	Smt. Shanti Kumari Tejpur Land no. 414	Regarding compensation	Land acquisition and compensation will be as per LARR act 2013.
24.	Shri Rakesh Ghosh Dharma Jaigarh Colony Ward no. 1	Regarding the sharing of summary and video of public hearing	Public hearing details and videography has been done as per norm of pollution department.
25.	Shri Pradeep Khalkho Shri Ajay Khalkho Shri Hirmani Kalkho and other	Map correction and compensation shall be provided by publishing in gazette.	This is being done by revenue department as per revenue documents. Land acquisition and compensation will be as per LARR act 2013.
26.	Shri Motolal Shri Wiliam panna Shri Nirmal Kujoor	Regarding objection about compensation	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
27.	Shri Pradeep Kalkho Ajay Shri Kalkho Village Reruma khurd Land no. 50192	Regarding my own farms acquisition.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
28.	Shri Fatehram Yadav, Village Sisringa Tehsil Dharama Jaigarh Dist. Raigarh.	Regarding the correction in land.	This is being done by revenue department as per NH act 1956.
29.	Smt. Agustina khalkho, Village rerumakhurd.	Regarding my own farms acquisition.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
30.	Shri Lavkush Mishra, Shri Shiv Kumar Soni, Sisringa, Dharamjaigarh	Regarding the assurance of jobs.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
31.	Shri Dijeshwar Nath and all villagers of Badaruma	Compensation rates shall be 6 time to market rates either we will oppose the acquisition.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
32.	Shri Ghanshyam & all villagers of Sisringa, Dharamjaigarh	Enough compensation shall be provided of land and trees.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956. Fruits bearing trees shall be calculated as per guideline of forest department.
33.	Shri Nand Lal Rathiya, Village Dhora Bhata	Land is not published.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of Applicant	Subject	Remark
34.	Shri Prakash Kumar Tejpur	Regarding enough compensation of land.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
35.	Shri Duryodhan, Village Baman Bahri sisringa, Dharamjaigarh	Khasra no. 121/1 K, Area 0.120 Hectare is part of proposed road but not in record.	Land acquisition and publication always supposed to be done as per guidelines of NH 1956 act.
36.	Shri Bal Singh Rathiya S/o Mangal Singh Rathiya, Patwari Halka No. 31 Village Sisringa	Regarding correction in land record and compensation.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
37.	Shri Premal Panna Village Bagudega, Police Station Lailunga	My name is not affected people list.	Land acquisition shall be done by revenue department as per NH act 1956.
38.	Shri Premal Panna Village Bagudega, Police Station Lailunga	Regarding the claim/objection of land acquisition. My name is not affected people list due to not distribution of Naksha.	Land acquisition and claim / objections shall be done by revenue department as per NH act 1956.
39.	Shri Anup Kahlkho, Shri Harman Khalkho and all villagers of Reruma Khurd.	Regarding the enough compensation of land being acquired.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
40.	Shri Patrik Khalkho, Shri Charan Say Khalkho, samsay Khalkho, villagers Reruma Khurd, Dharamjaigarh.	Khasra No. 501/5 parts and 501/16 parts, 501 / 39 parts land is marked in the map somewhere else. That's why Bharat Mala project is being affected.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
41.	Shri Dujeshwar Bararuma	Regarding pond located on khasra no. 263 in area of 0.627.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
42.	Shri Jageram Chauhan S/o Dhobiram Village Sisringa	Regarding the enough compensation of land being acquired.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
43.	Shri Budhram Rathiya, Village Koilar, Dharamjaigarh, Raigarh	Regarding the enough compensation of land being acquired.	Land acquisition and compensation will be as per LARR act 2013 and NH act 1956.
44.	Shri Gulapi Chaihan S/o Ashok Chauhan Village Sisringa	Regarding the house being acquired.	Assets will be evaluated as per RES guideline of Chhattisgarh govt.
45.	Shri Duhan Singh, Agariya S/o Sukh Lal Agariya Village Sisringa, Dharamjaigarh	Regarding the acquisition of land and trees.	Land acquisition and compensation will be as per the LARR act 2013 and NH act 1956.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Name of Applicant	Subject	Remark
			Fruits bearing trees shall be calculated as per guidelines of forest department.

Table 7-5: Response of Verbal Suggestions / Issues (Pathalgaon)

S. No.	Applicant	Suggestions / Issues	Remarks
1.	Jagdish Yadav, Kachhar	During the previous NH construction, was causing a lot of dust in which no criteria were met, in which many people complained of asthma, respiratory complaints, many times the strike was not heard. I want to know whether these parameters will be kept in the upcoming project. The rural people are not clear what compensation they will get.	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for plantation of trees and compensatory afforestation in place of the trees cut.
2.	Bhubaneswar Nath, Dumar bahal	Will this road not expand beyond Kachhar, is it over? If it goes ahead, my land is being acquired, Patwari has not measured it, it is told from below, if my 5 fields are going to be measured by airplane, then only 70 decimals are given in it, what is the rate in it, and I have also a list of many trees and plants I have planted in that land. Trees like mango, tamarind, jamun, mahua, teak, sesam, etc. are being damaged; tell us whether it will be compensated or not, we want to know how much compensation will be received for the land. We want to get compensation for the land. From where the land will go, there is a pillar in it, 100 meters more will be uprooted from there, we want to hear the answer.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
3.	Adya Shankar	I have objections to this public hearing. I have a letter in which it is written that the land has been acquired, whether all the farmers are aware of this land acquisition, whether approval has been taken from the Gram Panchayat, what percentage of people are ready to give the land. Jashpur district is a notified district. We understand the water, forest, land here more than life. The NH that is already there in this project, the road that is being constructed in your project, how much distance will be reduced	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
		from these two roads, can't 4-lane be built in the same 02-lane, where the villages are big, flyovers can be built. In this project, it will be mandatory to take permission from the gram panchayats from the villages from which the land will go. The people of all the villages have given their objections, what happened to those objections? Forest permission should be obtained, thousands of trees in the forest will be cut down, the biodiversity here is the best, there is no need for this project in Jashpur district. To stop this, we file an objection. The general manager's letter says that we have acquired the land, how much compensation will you give? You are doing a public hearing for the environment, where 80 percent do not agree, then how did you acquire the land? Consent should be taken before holding a public hearing. Call the sarpanch of the gram panchayat here to see if the information has been received. Make these 2 lanes to 4 lanes, this will save money. Those who are getting the register signed in the public hearing are fake.	Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
4.	Jagendra Toppo, Mudapara	This public hearing is being held against the 5 th Schedule. We should give priority to the Gram Sabha and there should be a public hearing in the village. We want to save our Jashpur district, we want to save this land, this project is not worth it to us. All of us villagers are raising our voice against it. Our culture and civilization will be taken away from us, our base is connected to the land, where we will leave our land and go away. What will we do if water and forest land are taken away? Our property is water, forest, land.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
5.	Sanjay Yadav, Kachhar	Some people are adopting politics to stop this, it will take less time to come and go, we take 3-4 hours to go to Jashpur, 4-4.5 hours to go to Raigarh, 3 hours to go to Ambikapur. If the road connectivity is right, then we can travel in 1.5-2 hours. We want	Noted, Thanks



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
		this road to be built; it will benefit everyone.	
6.	Arun Kumar Sharma, Jashpur	I oppose this Bharat Mala project because 25 years ago, there was an NH which has been under construction for 15 years and has not been completed. For which thousands of trees have been sacrificed and it was said by the government that twice as many trees will be planted than the number of trees cut. Jashpur is our green belt, don't go towards its destruction. In this, our fields, our forests & our houses are being acquired for this road. We also want development, Bharat Mala project should be brought in existing NH itself so that trees will not be cut, you said that the villagers should be informed, call the villagers, who got the information. First complete the NH that has been there for 15 years. We oppose this project that will be crushed by trucks. Everyone here has a placard of protest who is unable to speak.	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for plantation of trees and compensatory afforestation in place of the trees cut. The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
7.	Abdul Hakim	I am supporting the protest in Jashpur because the trees that have been planted will be uprooted, there will be difficulty in breathing, many people's trees, the fields & graveyard are coming is project. The tree is being cut down.	Noted.
8.	Sahdev, Bildegi	Will not give us a way to live with this project, how will we feed our family, from our land which has trees and plants.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
			guidelines of the Forest Department.
9.	Parmeshwari Yadav, Kachhar	Our land was compensated but it was withdrawn under another name. In this project also, my land has gone, it will be faked in someone else's name, money was withdrawn in our name, but that money was withdrawn in someone else's name, I have a full file to so how did it get withdrawn in someone else's name? All our money and land were gone.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government.
10.	Anil Yadav, Kachhar	Area is not developed due to lack of road connectivity here. I want the Bharat Mala project to be built. Today if someone is sick, it takes 12-14 hours to take him to Raipur because there is no rail here. We want this project to come here.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
11.	Savitri, Gala	What will be compensation of 50 dismals of land?	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
12.	Jayant Lakra, Jashpur	Some of our colleagues are saying that there is a need for a road here, we have been seeing for 15 years that the situation here is bad, the villagers are not able to speak, even if those whose land is being lost, get compensation, then what will happen because they do not know anything other than farming. Existing N.H. should be included in it.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
			Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
13.	Mohnish Sahu, Pathalgaon	Some people are saying that the road should be built, I say that the NH, which is already there should be built first, there are many types of snakes found here. This public hearing is illegal, our area is also affected. I oppose this public hearing as being conducted without no-objection certificate (NOC) from panchayat. I oppose it.	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for plantation of trees and compensatory afforestation in place of the trees cut.
14.	Animanand Ekka, Jashpur	Public hearing should be given 1 month in advance, which has not been given, so I protest. The entire district is jashpur tribal area, lakhs of trees will be cut here, so we oppose this public hearing. Here is N.H. 43 which should be added to the Bharat Mala project.	Written information has been given to the Gram Panchayat one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022.
15.	Sadram Minj, Ludeg	The 5 th schedule was formed for the conservation of water and forests, we must come here, the first NH has not been built, small farmers are not able to get treatment.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
16.	Hemant Kumar Patel, Gala	I am opposing it. There is some people's land here for which very little compensation is being given, so we are opposing.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
			The evaluation of trees is to be done according to the guidelines of the Forest Department.
17.	Nankuram Jangde, Kachhar	Borewell was constructed, the water has stopped, people are getting sad for water, I want a house, the sarpanch says he will not give, I want some solution.	The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government.
18.	Vijay Tripathi, Pathalgaon	I am a journalist & farmer, when it is being heard publicly, it should be publicized, the population here is telling how much publicity has been given here, 90 percent of the people are opposed. People want the Bharat Mala project to be built, but what will the poor do if their land is lost? It should be built by giving money to NH. I oppose it.	<p>The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.</p> <p>Written information has been given to the Gram Panchayat one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022.</p>
19.	Ramnarayan Thakur	There should be information about the programme that has been organized here. We have 50 decimals of land, what would happen if it lost in road, I oppose it.	Written information has been given to the Gram Panchayat one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022.
20.	Lemen Lakra, Pathalgaon	I oppose the public hearing of this project. If my land is lost, our tribalism will end, our existence will end, I oppose it, it should also be included in the NH.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
21.	Nirmala, Krishnavat Panchayat	I oppose the Bharat Mala project, this is affecting my entire family, money is not useful, if the road is coming, then it will be beneficial, but what will happen to us poor people, where will we take our animals? If we don't have land, how will we be called tribals? It is said that there is no road to the	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
		hospital, why not open the hospital here. We are happy with our land. We oppose it, the entire Mahila Party opposes it. We will not get water, we will not get clean air, there will be pollution, so we protest.	the National Highways Act, 1956.
22.	Kundobai, Pangsua	There are 5 acres of land and nothing else, give me land, 7 sons and daughters, how would earn livings for house in after taking away everyone?	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government.
23.	Salikram Minj, Mudapara:	I oppose this project. Many people lost their land and got money. If the Government of India wants our development, then we support it, how bad the roads here are. On behalf of the gram panchayat, I protest that land cannot be purchased with the money being given according to the compensation being given.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
24.	Jhulobai, Pangsua	My land is lost, so how will I take care of the family?	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
			The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
25.	Basanti	We are poor, we have nothing, we beg and eat.	The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
26.	Vimla Jangde, Kachhar	There is tap water in all the houses, they are drinking water but there is no water in our house, how will we take water for drinking, no one's pension is being received. Sarpanch says it won't be done now! Sarpanch is not paying attention to us. There is no road on our side. If we are not losing our land, then why will we protest?	The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
27.	Nirakar Yadav, Gara	I am opposing Bharat Mala.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
28.	Pankaj Kujur	Why is it getting hot here today because there are no trees here? Therefore, Bharat Mala Road should not be built because trees will be cut down, and the people here did not even get information. NH 43 should be widened. Jashpur is ranked 2 nd in India for	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for plantation of trees and compensatory

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
		biodiversity. Trees should not be cut down here.	afforestation in place of the trees cut.
29.	Barkholes Tigga, Minabahar	NH road should be widened. If our land is lost, then where we will live, we do not want Bharat Mala.	Noted.
30.	Rajkumar Jangde, Kachhar	Nothing is happening in ward number 3 of our Kachhar, there is also a problem for water. There is more trouble in the umperpara.	Noted, issue is not related.
31.	Hiralal,	We don't want such a project where our house and trees are being lost.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
32.	Dayamati Kunjur, Tirsod	Our land is being acquired; how we will survive? We don't want the Bharat Mala project.	The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
33.	Nandlal Yadav, Kachhar	The compensation amount is not being given as it is being heard today.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
34.	Mohan Lal Gupta	Give information about the agreed peoples. My land is being lost, that's why I am in protest.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
35.	Balsai Lakra	This project shall not be implemented.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
36.	Manihar Lakra, Tirsod	Why the big hospitals built outside, why are they not built here? We want Bharat Mala Road not to constructed. This shall be cancelled.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
			The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
37.	Krit Singh Rathia	I oppose this project, if our 2 acres of land is going away, then where will we go? I want it to be cancelled.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
38.	Manuram, Tirsauth	My house and land are being lost, so it should be cancelled.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government.
39.	Ashok Tigga	The road that is going to be built is in the interest of the people, but existing NH shall be completed. 99 percent of the people are saying that this Bharat Mala Road should not be built here.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
40.	Jagat Tigga	This road which is being built here is against the tribals, 43 roads which are being built should be brought in it. The decision has not been taken by the gram panchayat. The	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
		number here is also very low, so this road should be cancelled.	Resettlement Act, 2013 and the National Highways Act, 1956.
41.	Totaram Yadav, Mudapara	My land is being acquired but I do not know how much is going to lost and I just got the information about today's public hearing, I did not get the government's information. The detailed details of this scheme should reach the public. Why is the information not being given?	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
42.	Ravishankar Gupta, Mudapara	I am observing that people are opposing, when the farmer would lose farms than the public will suffer, we must save the environment, everyone is suffering in the sun, so it should be stopped.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956.
43.	Om Prakash Yadav	My house is being acquired to Bharat Mala, so I oppose it.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department (PWD) of Chhattisgarh Government.
44.	Bhuvneshwar Toppo -	My land has been lost in NH; the second instalment has not been received.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. Issue is related to administration department.
45.	Tej Kujur	We are getting information right now, so I have just come.	Written information has been given to the Gram Panchayat



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Suggestions / Issues	Remarks
			one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022.

Table 7-6: Response of Written Suggestions / Issues (Pathalgaon)

S. NO.	Applicant	Subject of application	comment
1.	Shri Pramod Kumar Tiranga Village Lavniparam	Jashpur district is declared as scheduled area. Environmental damage should not be allowed for development.	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for plantation of trees and compensatory afforestation in place of the trees cut.
2.	Smt. Hira Maniand Tigga Village Lamaniara	Road and rail roads should not be constructed. Biodiversity will be fully affected. Destruction and displacement in the name of development will not be accepted.	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for plantation of trees and compensatory afforestation in place of the trees cut.
3.	Ghanshyam Pradhan Lazarus and all the villagers of the village Gala Tirasod	All villages are legally covered under the Fifth Scheduled area. The public hearing program is completely illegal by law. The entire livelihood of the tribals depends on forests, trees, plants, and water. They will not give their land and completely disagree with this land acquisition.	Land is being acquired in the forest area of Urga-Pathalgaon project in width from 30 m to 60 m. There will be no damage to the environment. There is a provision for planting trees in place of cut trees and compensatory afforestation. There will be no loss of biodiversity.
4.	Shri Samaru Ram Yadav Village Bildegi Tehsil Pathalgaon District Jashpur Chhattisgarh	According to the survey, private pucca and raw houses and tube-bell roads are falling in the middle of road construction. Please make accommodation arrangements for the applicant by conducting a proper investigation.	The compensation for land acquisition is calculated as per the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Highways Act, 1956. The valuation of the assets is to be done as per the guidelines of Rural Mechanical Service (RES) and Public Works Department

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Applicant	Subject of application	comment
			(PWD) of Chhattisgarh Government. The evaluation of trees is to be done according to the guidelines of the Forest Department.
5.	Shri Animanand Ekka Sarva Adivasi Samaj District Unit Jashpur	The gram panchayat was not informed in writing. In protest against the construction of the road, the general public submitted an application to the sub-divisional officer of the area, which has not been taken cognizance of, which we strongly oppose. Jashpur district is an unscheduled area. Due to climate change, the people here will have to face huge difficulties. NH 43 should be linked to The Bharat Mala Project.	Written information has been given to the Gram Panchayat one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022. There is a provision for compensatory afforestation.
6.	Shri Arun Kumar Tigga Shri Rajnath Tiranga Shri Sanjay Tigga Shri Surajbhan Tiranga Shri Ajay Tigga	Our ancestors have duly mapped the map by the government in 1979-80. Devendra Yadav, along with Patwari, has fraudulently mapped the land of Khasra No. 273/58 acre 0.688 hectares. We have a 100-year-old possession of that land. He has made a lease of Khasra No. 273/58, on which he is not fit for life. That's why 273/ Please conduct a high-level inspection of 58 and take appropriate action against the culprits.	Land acquisition and compensation amount is calculated under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Register of Citizens Act, 1956.
7.	Shri Mahendra Raut Panchayat Kachhar	Bothare disabled in the eyes since birth. Please give me a disability pension to earn a living.	Land acquisition and compensation amount is calculated under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Register of Citizens Act, 1956.
8.	Shri Harish Chander Village Bilehdi Police Station Tehsil Pathalgaon District Jashpur Chhattisgarh	Please add my land Khasra No. 496/1 Rakwa No. 0.016 hectare to the compensation list and release compensation.	Land acquisition and compensation amount is calculated under the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. NO.	Applicant	Subject of application	comment
			National Register of Citizens Act, 1956. This objection is related to sub-divisional officer Pathalgaon, so register your objection to sub-divisional officer Pathalgaon.
9.	Shri Prahlad Village Bildegia Tehsil Pathalgaon District Jashpur Chhattisgarh	Additon of Khasra No. 502/2/C/ 2 & rakba 0.809-hectare to the to the light listing and compensation to be provided.	Land acquisition and compensation amount is calculated in accordance with the Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and the National Act 1956. This objection is related to sub-divisional officer Pathalgaon, so register your objection to sub-divisional officer Pathalgaon.
10.	Shri Adya Shankar Tripathi Senior Spokesperson Social Worker	The public hearing was not reported to the gram panchayat. The objections were not resolved. Trees will be cut down which will cause huge loss to the biodiversity of Jashpur district. The NH 43 already has to be converted into this Bharat Mala and made four-lane.	Written information has been given to the Gram Panchayat one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022. There is a provision for compensatory afforestation.
11.	Shri Leos Tikki Shri Michel Tirkey Shri Jeevan Tirkey Shri Heroh and all the villagers	Hearing information is meaningless. Public hearings of this type of corridor are invalid.	Written information has been given to the Gram Panchayat one month ago and was published in two dailies "Nav Bharat" and "Hindustan Times" on 23.04.2022. The public hearing has been carried out as per the guidelines of the Environment Department.

Table 7-7: Response of Verbal Suggestions / Issues (Korba)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
1.	Natwar Sharma, Village Kartala, District Korba	I would like to thank the Government of India for the project. Was the NOC of gram panchayat required for the project? So, has the NOC been taken through the Gram Sabha? What is a provision for water conservation in the	All the NOCs have been obtained for this project. The jobs to locals will be provided as per guidelines of NH act 1956.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
		gram panchayat, will water conservation be done? If not, it should be done. The people of the village should be included in the tender for wages.	
2.	Mohammad Qureshi, Village Nonarbira, District Korba	Double crop area and along with Borwell, then what will be the rate of compensation?	The calculation of land acquisition and compensation is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
3.	Shri Ramchandra, Rathia, Village Katkona, District Korba	The land from my village has been acquired for the Bharat Mala project. The survey was done only once, but it did not happen again. Our mahua, mango, jamun etc. trees were not surveyed. Everyone should get equal compensation, which is the market price. Which has been offered in other places, so that the farmer can buy another land with that money.	Compensation of the affected land in the said Project is under process and after surveying the trees, compensation is to be determined by the Forest Department. The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
4.	Shri Satya Prakash Khunte, Panch, Kartal, District Korba	Was widely publicized about the public hearing in the region. Give information about what is the obligation of the forum.	Newspaper Publication of said Public Hearing was published on month before in Times of India and Dainik Bhaskar on 18.08.2022.
5.	Shri Ramkumar Rathia, Village Katkona, District Korba	Fortunately, the government is constructing a road, but it is not known how much compensation will be received for our private land and forest lease? Compensation will be given in square feet near Urga, but the same rate shall be given to the land here. Whoever owns land should get employment.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
6.	Shri Vinod Kumar Rathia, Village Kotmer, District Korba	My land is being acquired for National Highway, but it has not been allocated till date how much compensation will be given. My land is having double crops and borewell.	Survey of trees is to be done in the affected land and the above survey compensation will be determined by forest Department.
7.	Ms. Sagun Nisha, Village Nonbirra, District Korba	My one acre of land is being acquired for road. My entire land is being acquired, how much compensation will	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition,

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
		I get or not get for it? Please make sure to be told.	Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
8.	Shri Razzaq Ali, Village Kartala, District Korba	Sabina Ali and my land is 2 acres in your record, while 4 acres of land has been acquired. Many fruit trees, which are expensive trees, have a limit to growing up to 10 years, compensated based on older trees. The project is good, but the survey of the land and plants was not done properly	This objection is related to the sub-divisional officer, Korba.
9.	Shri Resham Lal Village Katkona, District Korba Road	My land is being acquired, but my name is not on the survey list. Therefore, it should be added to the survey list.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer. Korba, so register your objection to the Competent Authority Land Acquisition, Korba.
10.	Shri Sukh Nandan, Village Jigla, Tehsil Kartala, District Korba	Proper compensation should be given for our land which is coming in the road and proper compensation should also be given to the plants planted in the land.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer. Korba, so register your objection to the sub-divisional officer CALA Korba.
11.	Shri Lala Ram Rathia, Village Katkona, District Korba	My land is being acquired. A government well is also coming to land. The water from the wells is used for crop irrigation. We should be given proper compensation.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of the assets is to be done as per the guidelines of the Rural Engineering Service (RES) and Public Works Department (PWD) of the Government of Chhattisgarh. The valuation of trees is to be done as per the guidelines of the Forest Department.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
12.	Shri Dilip Singh: Village Zilga, District Korba	We do not know how much of our land will be required for the road. There is no information.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
13.	Shri Dhanesh Ram Rathia, Village Zilga, District Korba	Our 3 acres land is being acquired for road development. The mango plant is also in land.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition. Rehabilitation and Resettlement Act. 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
14.	Shri Pawan Singh Rathia, Village Kotmer, District Korba	When the demarcation was conducted, the landowner was not called. My land should be re-demarcated.	This objection is related to the sub-divisional officer Korba, so, register your objection to the sub-divisional officer Korba.
15.	Shri Surendra Singh Rathia, Village Zilga, District Korba	Our 1 acre and our brother's 1.5 acres of land is demarcated for the road, proper compensation should be given for it. That is what we say.	This objection is related to the sub-divisional officer Korba, so, register your objection to the sub-divisional officer Korba.
16.	Smt. Shilmani Rathia, Sarpanch, Kartala, District Korba	Our village land is being acquired for the National Highway; it should be given proper compensation. Trees and plants should be given proper compensation.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act. 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
17.	Shri Phool Singh Rathia, Village Chachia, District Korba	Our land is being acquired for the road. It is double crop land. He should get proper compensation.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of Structures is to be done as per the guidelines of the PWD department.
18.	Shri Radheshyam Rathia, Village	Whatever our land being acquired for the road, it should be given proper compensation. The announcement for the public hearing was proper; if the	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition,

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
	Kotmer, District Korba	proper announcement had been made, then more villagers would have been present here. The public hearing should be quashed, that is our demand.	Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
19.	Shri Akash Saxena, Village Kartala, District Korba	We welcome the development of this National Highway. It is not known at what rate the compensation will be received and what compensation will be given to the trees and plants.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
20.	Shri Virendra Singh Rathia, Village Champa, District Korba	Farmers' land is being acquired for the road project. Common citizens are not aware of public hearings. The soil that will be used in road construction, ponds should be constructed, from which soil will also be obtained. As many trees as are proposed for cutting, as many trees should be planted. Compensation should be given as per the rules of the government. Proper guidance should be given to the farmers by the management.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. In the project, the affected population will be urbanized.
21.	Shri Ramprasad, Village Geraon, District Korba	I should get the right compensation for my 80 dismals of land.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
22.	Shri Nilambar Singh Rathia, Former Sarpanch Chachia, District Korba	I welcome the project. Please clarify how much compensation will be given for which land and tree.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
23.	Shri Prakash Kumar, Village Chachia, District Korba	My land is 2.5 acres. Part of our farm is lying on the side of the road. After the construction of the road, neither a house can be built on that land, nor can be used for other purposes. It should be resolved.	The compensation of Land will be given to landowner.
24.	Shri Harivikesh Rathia, Village	I do not know how much of our land is being acquired for the road. How	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
	Kartala, District Korba	much compensation will be received for that land?	Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub- divisional officer Korba, so register your objection to the sub-divisional officer Korba.
25.	Shri Mukti Singh Village Kartala, District Korba	I have 5 children. My land is being acquired for the road; tell me how much compensation I will get?	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
26.	Champa Bai, village-Kartala, District Korba	I have 4 mango trees on my land, which is 85 decimals of land. Give information about how much compensation will be received.	The compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
27.	Chamarin Bai Rathia, Village Kartala, District Korba	Tell me how much compensation will be offered.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
28.	Mrs. Kamla Bai, village Kartala, District Korba	We do not know how much our land is being acquired for the road and how much compensation will be received.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub- divisional officer Korba, so register your objection to the sub-divisional officer Korba.
29.	Shri Surit Ram Rathia, Village Katkona, District Korba	All my land is being acquired for the road, what will my family do now? I want this information.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
30.	Shri Dukhiram Rathia, Village Chachia District Korba	How much compensation will we get for the land which is being acquired for the road? Give information.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition,

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
			Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
31.	Shri Chand Khan, Deputy Sarpanch Nonbirra, District Korba	The project will change the direction of flow of water, whether there is a necessary culvert for it or not. What is the system for the education of children? Fix the compensation for individual trees separately.	The culverts will be provided as per TCS provided in DPR. The valuation of the assets is to be done as per the guidelines of the Rural Engineering Service (RES) and Public Works Department (PWD) of the Government of Chhattisgarh.
32.	Shri Satya Narayan Rathia, Village Kotmer, District Korba	The land which is being acquired for the road. What facilities will be available after the loss of land and whether jobs will be given in lieu of land or not, what compensation will be given in lieu of trees and how much compensation will be given for the land.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
33.	Shri Khem Singh, Turrikatra, District Korba	Our land, trees and plants are coming in land required for road, arrangements should be made for the employment of children.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
34.	Shri Sarju Ram, Village Katkona, District Korba	Two trees are mango, one is Mahua, proper compensation should be given.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
35.	Sawan Moti, Village Katkona, District Korba	I do not know how much land is being acquired for the road. Please tell me.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
36.	Shri Babulal Patel, Village Chachia, District Korba	Our land is double crop and having borewell. Double compensation shall be offered.	The project the valuation of the assets is to be done as per the guidelines of the Rural Engineering Service (RES) and Public Works Department (CHC) of the Government of Chhattisgarh.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
37.	Shri Siyaram Rathia, Village Kartala, District Korba	Our land, which is being acquired for the road, is two crop land. Those two-crop land should be compensated, and a stop dam should be built for farming.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
38.	Shri Jageshwar Singh Rathia, Village Chachia, District Korba	Compensation should be given according to trees and plants, because there is good arrival from trees and plants.	The valuation of trees is to be done as per the guidelines of the Forest Department.
39.	Shri Rupsingh Rathia, Village District Korba	Our land is being acquired for the road, how much land is being lost, we do not know it. 3 trees are going to Mahua and 02 trees of the sal, how much compensation will be received, it is not known.	The valuation of trees is to be done as per the guidelines of the Forest Department.
40.	Mr. Mohan, Village Chachia, District Korba	Information should be given whether we will get compensation for our land or not.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
41.	Shri Karam Singh, Village Katkona, Tehsil Kartala, District Korba	Compensation should be given properly for whatever land is being acquired for the road. Compensation for trees and plants should also be given appropriately.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
42.	Shri Deepak Kumar Rathia, Village Kotmer District Korba	My land is being acquired for four lane road, if the soil is required then my land is Tikra land, if you take the soil of the same Tikra land, then my barren and tikra land will become a fertile. It will benefit me. The soil should be taken from the farmers, which will benefit the land of farmers. Proper compensation for the land should also be given.	It will depend on requirement of soil.
43.	Shri Rajendra Kumar Rathia, former District	I welcome the project. What is the government's plan for our forest from an environmental point of view?	There is a provision for alternative plantation in lieu of the affected forest.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Issues / Suggestions	Remarks / Reply
	President, Kartala, District Korba	Whether there will be trees or not, whether there will be drainage culverts or not, call the villagers before the bridge is built and then decide.	
44.	Shri Bhagat Ram Patel, Village Chachia, District Korba	My land is being acquired for the road; how much compensation will be given per dismal/acre? Explain.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
45.	Shri Ram Swaroop Rathia, Village District, District Korba	How much compensation will be given for the cutting of crop tree Mahua, Mango, Jam. Compensation should be given in square feet. I agree, I'm happy. The people of the village should be given work to the tractor in the work.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
46.	Shri Shyam Dhan, Village - Chachia, District - Korba -	Our brothers' farm was not divided. The younger brother should also get compensation.	This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
47.	Shri Krishna Rai, Village Kartala, District Korba	My elder father and his sons have also died, explain how the compensation will be given in such a situation.	This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.

Table 7-8: Response of Written Suggestions / Issues (Korba)

S. No.	Applicant	Subject	Comment/Reply
1.	Natwar Sharma, Gram Panchayat Kartala	<ul style="list-style-type: none"> ✓ The public wants whether the NOC of the Gram Panchayat was obtained or not. ✓ Whether any provision has been made for water protection. For example, pond, school etc. ✓ In Urga Pathalgaon village, what benefits will be given to the villagers and contractors. 	<ul style="list-style-type: none"> ✓ Announcement for public hearing was posters and announcements for a week in all the affected villages and NOC is also obtained. ✓ In the project. the affected population will be urbanized/developed. ✓ The said project is under DPR stage and tender of above project is under progress.
2.	Md. Qureshi Village Nonbirra	How much will we get compensation for two crops and bore?	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Replay
			Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
3.	Ramchand Rathiya (Deputy Sarpanch) Village Katkona	<ul style="list-style-type: none">✓ Compensation for the land affected in the said road has not been received and survey for compensation of trees has not been done.✓ Compensation should be given to all the affected villagers at the same rate.	Compensation of the affected land in the said road is under process and after surveying the trees, compensation is to be determined by the Forest Department. The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956
4.	Satyaprakash Khute Village Kartala	Whether wide publicity was given for public hearing or not?	Newspaper Publication of said Public Hearing was published on month before in Times of India and Dainik Bhaskar On 18.08.2022.
5.	Ram Kumar Rathiya Village Katkona	<ul style="list-style-type: none">✓ The compensation rate is of not normal, in some villages compensation is being given at the rate of Square Feet.✓ Employment opportunities should be given to the affected people.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
6.	Vinod Kumar Rathiya Village Katkona	Survey of trees has not been done and compensation has not been fixed.	Survey of trees is to be done in the affected land and the above survey compensation will be determined by forest Department.
7.	Saigun Nisha Village Nonbirra	At what rate the affected land and farm has been determined, the compensation for the land should be done properly.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
8.	Razzaq Ali, Samina Khatoon Village Nonbirra	4 acres of land is affected, whereas according to NHAI only 1.45 acres are affected, and the Assessment and compensation of fruit trees and land should be done properly.	This objection is related to the sub-divisional officer, Korba.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Replay
9.	Resham Lal Village Katkona	The name in the publication is not really affected but the same has happen.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer. Korba, so register your objection to the Competent Authority Land Acquisition, Korba.
10.	Sukh Nandan Village Jilga	Land and trees should be properly assessed and compensated.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer. Korba, so register your objection to the sub-divisional officer Korba.
11.	Lala Ram Rathia Village Katkona	Proper compensation should be given for the affected land and bore and well.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of the assets is to be done as per the guidelines of the Rural Engineering Service (RES) and Public Works Department (PWD) of the Government of Chhattisgarh. The valuation of trees is to be done as per the guidelines of the Forest Department.
12.	Dilip Singh, Village Jilga	40 dismal land is going to be affected and 40 dismal is left, what will be the compensation for the trees.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Replay
13.	Dhanesh Ram Rathiya Village Kartala	55-60 tree is going to be affected and 3.5 decimals land. What will be the compensation.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
14.	Pawan Singh Rathiya Village-Kotmer	The farmer was not called at the time of demarcation, the farmer should be called again after demarcation.	This objection is related to the sub-divisional officer Korba, so, register your objection to the sub-divisional officer Korba.
15.	Surendra Singh Rathia Village Jilga	Acres of land is going but how much is the affected land.	This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
16.	Shilmani Rathiya, Sarpanch Village- Kartala	✓ Compensation should be given for the affected land. ✓ Regarding compensation of trees.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
17.	Phool Singh Rathiya Village Chachiya	Regarding compensation of bore and field	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of Structures is to be done as per the guidelines of the PWD department.
18.	Radheshyam Rathia Village Kotmer	How much compensation is being received for the land being affected.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
19.	Akash Saxena, Village kartla	At what rate will the farmer's compensation be determined?	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition,

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Replay
			Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
20.	Virendra Rathiya Village Champa	The pond should be deepened.	In the project, the affected population will be urbanized.
21.	Ram Prasad Rathiya, Village Jilga	What will be the compensation of 80 disimil land and a bore.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
22.	Nilamber Singh Rathiya, Sarpanch, Chachiya Purav Village	At what rate will the compensation? Be determined?	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
23.	Prakash Kumar Rathiya, Chachiya Village-	Out of 4 acres of land, if the land is affected in the road, then what to do with the remaining land. It is not clear that the land is affected.	The compensation of Land will be given to landowner.
24.	Hari Vikesh Rathiya	It is not clear that the land is affected.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
25.	Mukti Singh Rathiya, Village Kartala	How much compensation has been determined.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
26.	Champa Bai, Village Kartala	Regarding compensation for fruit trees.	compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Replay
27.	Chamreen Bai Rathiya Village-Kartala	Regarding compensation.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
28.	Kamla Bai, Village Kartala	How much land is going, it is not Basmant.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
29.	Surit Ram Rathiya, Village Katkona	50 decimal is affected how full will affect sustenance.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
30.	Dukhi Ram Rathiya, Village Chachiya	Regarding how much the affected land is going and the compensation amount.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
31.	Chand Khan, Vice Sarpanch, Village Nonbirra	<ul style="list-style-type: none">✓ Whether there is a provision of ancestral property Irrigated Bridge or not.✓ There is a provision of employment for those who's entire and is affected.✓ Tell the value of fruit trees and fruitful on the roadside.✓ Compensation determination of assets.	<ul style="list-style-type: none">✓ The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The bridge, Culverts has been proposed as per the DPR survey.✓ There is no provision of giving job to land losers.✓ The valuation of trees is to be done as per the guidelines of the Forest Department.✓ The valuation of the assets is to be done as per the guidelines of

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Reply
			the Rural Engineering Service (RES) and Public Works Department (PWD) of the Government of Chhattisgarh.
32.	Satyanarayan Rathiya, Village Kotmer	Regarding the amount of compensation for trees.	The valuation of trees is to be done as per the guidelines of the Forest Department.
33.	Khem Singh, Turri Katra Village Kotmer	How much is the affected land going in respect of the compensation amount.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHA Act 1956.
34.	Sarju Ram, Village Katkona	Regarding compensation amount.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHA Act 1956.
35.	Savan Moti, Village Katkona	How much land is going	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHA Act 1956. This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
36.	Babulal Patel, Village Chachiya	Compensation was received 2 times against the affected Tube well.	The project the valuation of the assets is to be done as per the guidelines of the Rural Engineering Service (RES) and Public Works Department (CHC) of the Government of Chhattisgarh.
37.	Siyaram Rathiya, Village Kartala	If the crop is two crops, then the determination should be in that stamp.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHA Act 1956.
38.	Jageshwar Singh Rathiya, Village Chachiya	Regarding the trees.	The valuation of trees is to be done as per the guidelines of the Forest Department.

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Replay
39.	Roop Singh Rathiya	Regarding fixation of compensation for trees.	The valuation of trees is to be done as per the guidelines of the Forest Department.
40.	Mohan, Village Chachiya	Regarding compensation of land.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
41.	Karam Singh, Village Katkona	Regarding compensation for fruit trees.	The valuation of trees is to be done as per the guidelines of the Forest Department.
42.	Deepak Kumar Rathiya	In the affected land, the farmer should use soil from the ground so that the land becomes fertile.	In the project, the affected population will be urbanized.
43.	Rajendra Kumar Rathiya, Purav Janpad Adhyaksha, Kartala	Whether there is a provision for alternative plantation in lieu of the affected forest.	There is a provision for alternative plantation in lieu of the affected forest.
44.	Bhagat Ram Patel, Village Chachiya	Regarding compensation.	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956.
45.	Ram Sawrup Rathiya, Village Jilga	Regarding compensation of land and Trees	The calculation of land acquisition and compensation amount is done as per Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act, 2013 and NHAI Act 1956. The valuation of trees is to be done as per the guidelines of the Forest Department.
46.	Shyam Dhan, Village Chachiya	Regarding partition of account.	This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
47.	Shri Krishna Ray, Village Kartala	Due to the death of the landowner.	This objection is related to the sub-divisional officer Korba, so register your objection to the sub-divisional officer Korba.
48.	Sarpanch, Gram Panchayat Sakdukala Janpad Panchayat &	Regarding, taking the soil of the farmer's land, and giving	The work will be done in conformity to State Govt. guidelines.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Applicant	Subject	Comment/Reply
	District Korba (Chhattisgarh)	money in exchange for the soil.	

Public Hearing proceedings are attached as **Annexure 7.1**.

7.3 Traffic Study

Detailed traffic studies conducted to identify present and likely future scenarios of inflow of traffic from adjoining areas to device suitable remedial measures and to evolve appropriate design method. Traffic forecasting requires detailed studies and investigations concerning socioeconomics as well as the magnitude and characteristics of the existing traffic flows and its past trend in respect of nature, composition, and growth.

7.4 Disaster Management, Risk Assessment and Mitigation Procedures

Risk assessment is a process that seeks to estimate the likelihood of occurrence of adverse effects because of major road mishaps, fire hazards, floods, cyclones, earthquakes etc. at Highway projects. Fatality rate on Indian highways is very high mainly due to road accidents. The other adverse impacts due to gas tanker explosions, fire hazards, floods, cyclones, earthquakes etc. are nominal. Elimination of the risk (avoidance of accidents) is given prime importance and NHAI has introduced road safety provisions during the design of highway with the help of Road Safety Manual. Some of these are listed below:

- Safety barriers/delineators hard shoulders on main roads
- Traffic signs and pavement markings
- Underpasses and other grade separators at junctions
- Removal of junctions and direct access points on main roads
- Improved median openings with stacking lanes
- Separate provisions and direct access point
- Service roads in towns and villages for segregating local and highways traffic.

The contractors shall conduct Risk Assessment for all works to decide on priorities and to set objectives for eliminating hazards and reducing risks.

7.4.1 The Risk Assessment Process and Hazard Identification

Highway projects consist of many risks, and this is due to involvement of many contracting parties including designers, contractors, sub-contractor, and suppliers. Risks are the major cause of poor performance on highway construction projects. Therefore, risk assessment for highway construction project is done to prevent adverse impact at the design or planning stage, prioritize hazards and control measures for scheduled completion and to maintain cost and quality of the Project. A critical observation/study of the structure/process/site under consideration by the risk assessment team is an essential part of hazard identification however, it is important that unsafe conditions are not confused with hazards, during hazard identification.

7.4.2 Objectives of Risk Assessment of Highways

The objectives of this study are listed below:

- To define the various major risks involved in highway construction project.
- To identify and classify the various risks involved in construction of highway.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- To analyse or evaluate the risks involved in highway construction.

7.4.3 Types of Risk associated with Highways

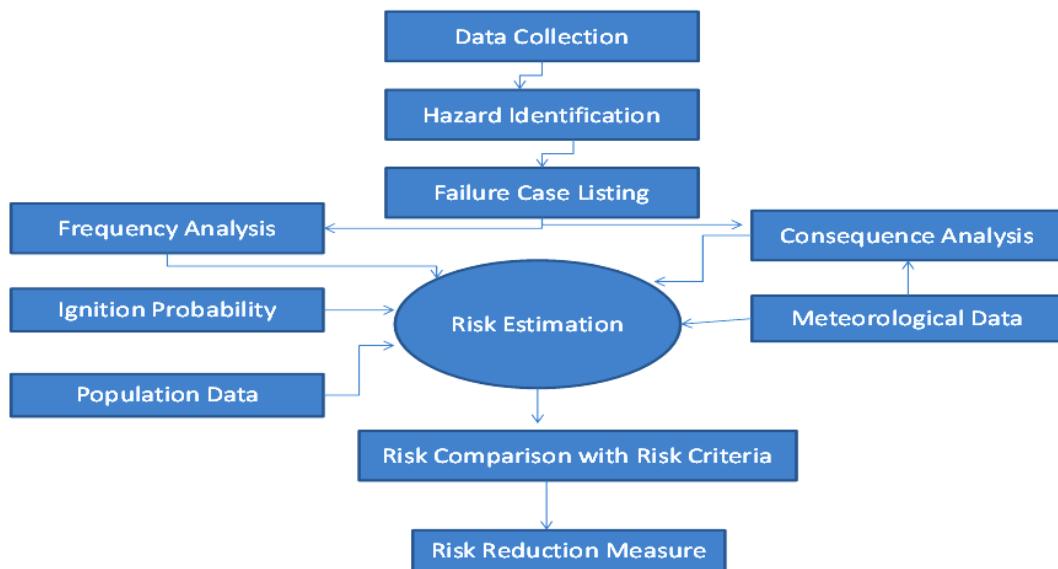
The various types of risks associated with Highway construction are:

- Construction risks- Machineries delay due to rain and other causes, uncertain market conditions, contractor productivity issues, time etc.
- Design Risk- Variations in design and defective designs.
- Political Risk- Excessive approval procedures in administrative government departments
- Organizational Risk- Lack of skilled labor, lack in knowledge level of lead group, etc.
- Accidental Risk- machineries accidents, overexertion, accidental falls etc.
- Uncertainty in market conditions- price inflation of construction materials.
- Time and Cost Overruns □
- Shortage of Utilities-Shortage of electricity, gas, water, fuel, etc.

7.4.4 Person(s) at Risk

On a construction area, the persons that would be at risk are site operatives, supervisors, transport drivers, other visitors, and the public. The risk assessment includes any additional controls required due to mitigate vulnerability of any of these groups, perhaps caused by inexperience or disability.

Figure 7-3: Risk Assessment Process



7.4.5 Risk Control Measures

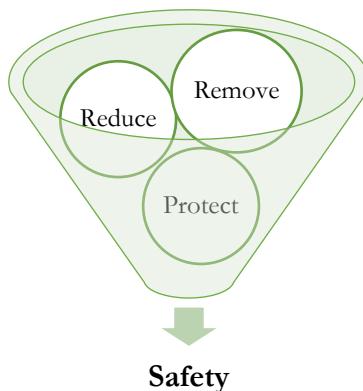
The basic principles that govern the identification of and protection from hazards, in order of priority, are:



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



General precautions to be maintained to have a safe working environment to ensure health, safety, and welfare of all workers while at work, including:

- Providing a safe working environment by promoting a safe system, safe handling, storage, and transportation of materials.
- Provide information, instruction, training and supervision for health and safety to the workers.
- Maintenance of means of safe access and egress.
- Necessary tests and examination of equipment and machinery before usage.

7.4.6 Emergency Response Plan

The Emergency Response Plan (ERP) is an integral tool of the Environment, Health and Safety and Concessionaire / Contractor shall prepare Emergency Response Plans for all work sites as a part of the Safety procedures while, Safety Officer will ensure its effective planning and implementation. The plan shall integrate the emergency response plans of the contractor and all other sub-contractors. Each Emergency Response Plan shall detail the procedures, including detailed communications arrangements, for dealing with all emergencies that could affect the site. This includes where applicable, injury, sickness, evacuation, fire, chemical spillage, severe weather, and rescue. Emergency plans and Fire Evacuation plans shall be prepared and issued. Mock drills shall be held on a regular basis to ensure the effectiveness of the arrangements and as a part of the programme, the telephone number of Local Fire Station, Local Police Station and Local Hospital/Nursing Home should be prominently displayed near each telephone on site. Other onsite Emergency Telephone Numbers that need to be always displayed at working sites should include:

- Contact details of Project Manager
- Contact details of Safety Manager/ Officer/ Engineer

The Emergency Response Plan will be prepared to deal with emergencies arising out of:

Fire and Explosion: Fire Safety Procedures will be developed and shall be integrated into Emergency Response Plan.

Collapse and Collision: Collapse of transport equipment building, sheds or structure etc. Collision of vehicles.

Road Accident: In case of road accidents, the following contact no should be contacted.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Table 7-9: Emergency Contact Number

Help Line no	Description
100	Police
101	Fire
102	Ambulance
103	Traffic Police
1033	Emergency Relief Centre on National Highways
104	State level helpline for Health
104	Hospital on Wheels
1066	Anti-poison
1070	Central Relief Commissioner for Natural Calamities
1070	Relief Commissioners of Central/State/Union territory
1073	Road Accident
1073	Traffic Help Line
1077	Control room of District Collector/Magistrate
108	Disaster management
1090	Anti-terror Helpline/Alert All India
1091	Women in Distress
1092	Earthquake Help line service
1096	Natural disaster control room
1099	Central Accident and Trauma Services
1099	Catastrophe and Trauma service
112	General emergency Department of Telecommunications (DoT)
112	All in one Emergency Number
1910	Blood bank Information
1911	Dial a doctor
1913	Tourist Office (Government of India)

Source: <http://www.newincept.com/helpline-numbers-all-over-in-india.html>;

Natural Calamities: Earthquake, flood, storms, cyclone and other.

The Emergency Response Plan should have procedure for at least but not limited to:

- Arranging for Fire Extinguishers and making them aware of the people at site on how to use them during emergencies.
- Arranging for Mock Drills at least once every six months.
- Arranging for Emergency Procedures involving personal injury / chemical burn /bleeding.
- Formation of an Emergency Action Committee to ensure effective action. The Emergency Action Committee would comprise of the following:
 - Project Manager
 - Contractor's Construction Manager
 - EHS / Safety Officers
 - Such a committee at site should perform:
 - Frame procedures for community and worker safety during emergency situations.
 - Demarcation of the areas to be evacuated with priorities.
 - Demarcation of safe areas and shelters at the time of emergencies.



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Security of property left behind in the evacuated areas.
- Identify functions and responsibilities of various members; and,
- Inform communities and involve them in emergency planning and mock drills.
- Setting up joint control action.

7.4.7 Traffic Management

Traffic management is designed and intended to specify adequate safety measures in advance against identified hazards and stipulated implementation of the said safety measures to ensure safe movement of traffic during the construction of Highway. The objective of safety standards is to provide safe travel to the drivers of vehicles plying on the Project Highway at all times of the day, throughout the year and provide protection to the Project workers when they are on the work. This overall traffic management delineates the safety standards in terms of construction zones, signs, and safety measures in work zones and during normal operations. Hazards due to external traffic are as follows:

- Construction workers hit by external vehicles while working
- Injury to Pedestrians
- Due to fall in excavated trenches
- Hit by construction equipment / vehicle.
- As they use carriageway due to blockage / absence of footpath
- Collision due to improper traffic management
- Between external vehicle and construction equipment / vehicle
- Between external vehicles
- External vehicle with other stationary objects in the side of the road

Traffic Control Plan

This plan gives the detailed guideline for traffic management in most of the common situations at our Projects.

As mandate by the “Guidelines for work zone road safety on all NHAI projects”, site specific traffic control plan need to be prepared for all work sites and shall include signage, lighting arrangements for night-time visibility, facilities for pedestrians, especially at underpasses and major bridge locations. Traffic Control Plan for a specific road section should be prepared based on this general guideline and applying the following variables, which may vary from project to project. The variables are:

- Average Vehicular Traffic Density in peak and non-peak hours.
- Maximum width of lane required for construction during various activities.
- Number and types of junctions in the road.
- Availability of standard footpath and its location and dimensions.
- Change in the lane width if any and its location.
- Regulatory and advisory speed limits etc.

Traffic Control Devices

Traffic control devices used to regulate the traffic in Road Construction Zones includes:

- Road Signs
- Drums



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Delineators
- Barricades
- Traffic Cones
- Pylons
- Reflective Road/ Pavement markings
- Flashing lights
- Hand Flasher/Batons

Table 7-10: Minimum Sightline Distance and the Minimum Size of the Signs

Average Speed (Km/h)	Distance of first sign in advance of the first channelizing device (m)	Size of Warning Sign (mm)	Minimum no of signs in advance of the hazard
Under 50	100	600	3
51 – 60	100 – 300	750	3
61 – 80	120 – 300	900	3 or 4
81 – 100	300 – 500	1200	4
Over 100	1000	1200 to 1500	4

CAUTIONARY / WARNING SIGNS

In case of divided carriageways, the signs should be provided both adjacent to the shoulder and on the central median to be visible from all lanes.

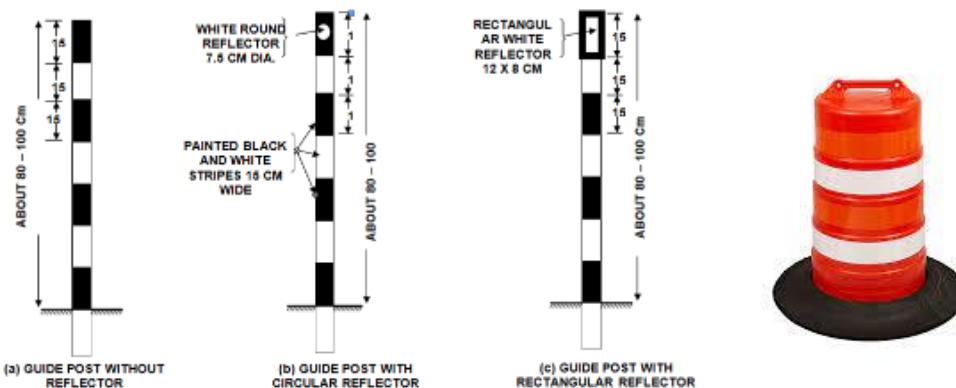
Delineators

Delineators are devices or treatment which outlines the roadway or portion thereof. They include Safety Cones, Traffic Cylinders, Tapes, Drums, Painted lines, Raised Pavement Markers, Guideposts, and Post-mounted Reflectors etc. They are used in or adjacent to the roadway to control the flow of traffic. Delineators are basically driving aids and should not be regarded as a substitute for warning signs or barriers for out-of-control vehicles.

Drums

Drums of height 800 mm to 1000 mm high and 300 mm in diameter can be used as either channelizing or warning devices. Both plastic and metallic drums (e.g., Bitumen drums) can be used for this purpose. Drums need to be filled up with earth or sand to increase its stability. Drums should be reflective and painted as shown in the Figure below.

Figure 7-4: Drum Reflections





FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

GUIDEPOST

They are intended to delineate the edges of the midway to guide drivers about the alignment ahead, particularly where it might be confusing. Guideposts can be of metal, concrete, cut stone, amber or plastic. The posts can be made of Circular, Rectangular or Triangular Cross-section but the side facing traffic should be at least 10 cm wide.

SAFETY CONES

Safety cones are 500 mm, 750 mm, and 1000 mm high and 300 mm to 500 mm in diameter. They are usually made of plastic, rubber, HDPE, PVC and have retro reflectors red and white bands. Safety cones would be displaced or blown unless their bases are anchored or loaded with ballast. This can be avoided by, using sandbag rings to provide increased stability, heavier weighted cones, cones with special weighted bases and or doubling the cones to provide added weight.

Figure 7-5: Road Traffic Signals



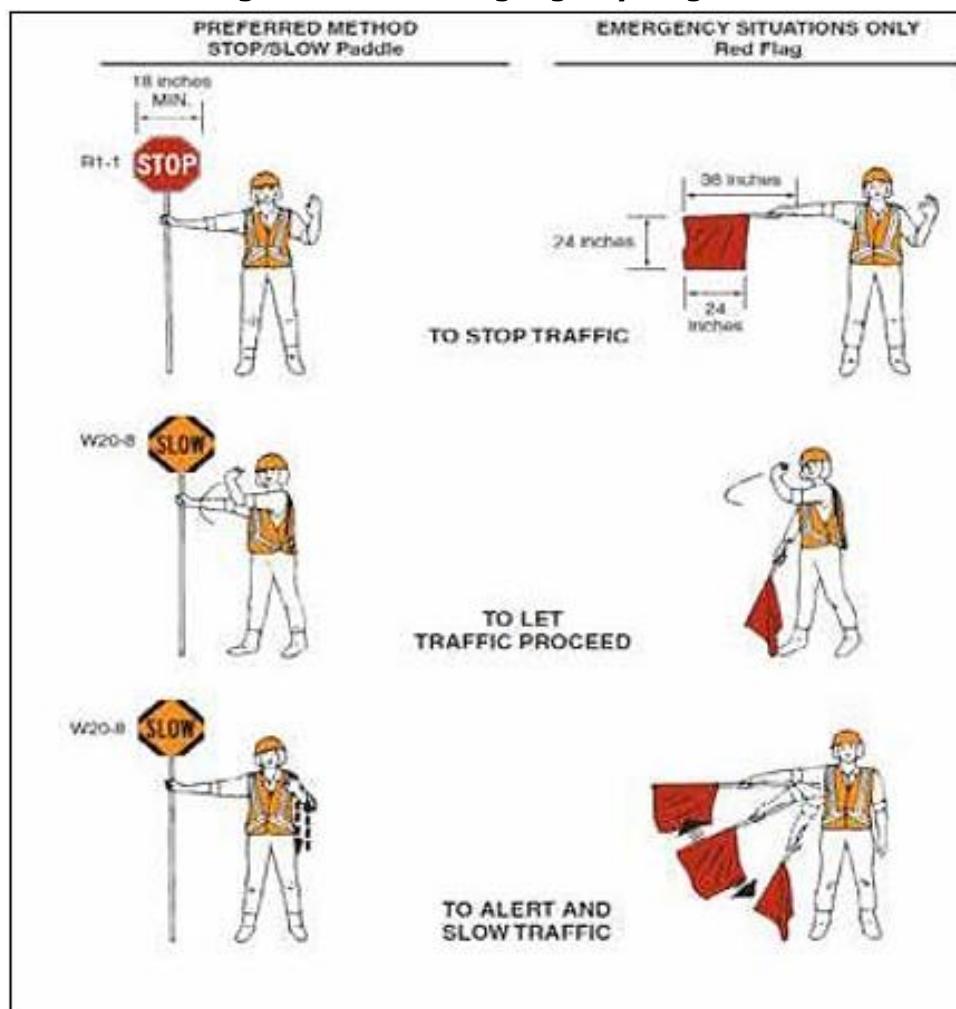
FLAGMEN

- An authorised personnel at least average intelligence be mentally alert and good in physical condition be selected, since flagmen are responsible for public and workmen safety.
- Flagmen should be equipped with yellow helmet with green reflective sticker fixed around and reflective jacket along with hand signalling devices such as flags and sign paddles.
- Flagmen need to maintain the flow of traffic continuous past a work zone at relatively reduced speeds by suitably regulating the traffic. He shall stop the traffic for a short while whenever required (e.g., for entry and exit of construction equipment in to work zone)
- Flagman should be positioned in a place where he is clearly visible to approaching traffic and at a sufficient distance to enable the drivers to respond for his flagging instructions. A flagman never leaves his post until properly relieved.
- The standard distance shall be maintained at 60 – 100 m but can be altered depending upon the approach speed and site conditions. In urban areas this distance shall be taken as 20 m to 50 m.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.
URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Figure 7-6: Warning Sign by Flagmen



BARRICADES

Barricades are intended to provide containment without significant deflection or deformation under impact and to redirect errant along the barrier. Standard barricades shall be used. They are designed to be easily relocated and have four specific functions to:

- Prevent traffic from entering work areas, such as excavations or material storage sites.
- Provide protection to workers.
- Separate two-way traffic; and
- Protect construction such as false work for culverts and other exposed objects.

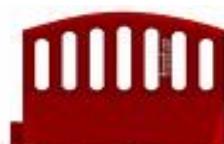
Figure 7-7: Safety Barricades



Euro Barrier



Dominator Barrier



Barricador - 1500



Barricador - 1000



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



FRB-1



FRB-2 ST + FRB-3 ST



Fence Barrier 15K



Fence Barrier 20K



Mini Barrier



Kart Barrier



Eco Barrier



Bullnose Barrier

7.4.8 Traffic Management Practices

DEFINITIONS

Road traffic control involves directing vehicular and pedestrian traffic around a construction zone, accident, or other road disruption, thus ensuring the safety of emergency response teams, construction workers and the public.

WORKING ZONE

The Plant Site, construction zone of road etc. at which workmen will be working.

WORKING SPACE

The space around the works area that will require storing tools, excavated material and other equipment. It is also the space to allow workmen, movement, and operation of plant, (e.g., swing of jibs, excavator arms) to move around to do the job. Materials and equipment must not be placed in the zone either. Workmen will only need to enter the zone to maintain cones and other road sign.

SAFETY ZONE

The zone that is provided to protect workmen from the traffic and to protect from them.

APPROACH TRANSITION ZONE

This will vary with the speed limit and the width of the works.

LONGITUDINAL BUFFER ZONE

This is the length between the end of the lead-in taper of cones (T) and the working space. It will vary with the speed limit.

LATERAL BUFFER ZONE

This is the width between the working space and moving traffic. It will vary with the speed as given in table (Traffic Control zone). The lateral buffer zone safety clearance is measured from the outside edge of the working space to the bottom of conical sections of the cones on the side nearest to the traffic.

WORKS ON STRENGTHENING OF EXISTING CARRIAGeway

- The construction zone shall be barricaded with barricade.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Approached diversion would be taken out of the works zone for the movement of construction supervision vehicles.
- The 'works traffic' shall be governed by the location of base camp where workmanship less than 20, a flagman shall be kept for controlling traffic, public and workmen safety or more than 20 in addition to that a safety steward shall be kept for continuous monitoring to identify and removal of unsafe acts and conditions.

Figure 7-8: Traffic Signages

WARNING	RIGHT HAND CURVE	LEFT HAND CURVE	RIGHT ← HAIR PIN BEND →	LEFT ← HAIR PIN BEND →	RIGHT ← REVERSE BEND →	LEFT ↗	STEEP DESCENT	STEEP ASCENT	NARROW ROAD AHEAD
	ROAD WIDEN AHEAD	NARROW BRIDGE	CYCLE CROSSING	PEDESTRIAN CROSSING	SCHOOL	FALLING ROCKS	CROSS ROAD	RIGHT ← SIDE ROAD →	LEFT ↗
	GAP IN MEDIAN	Y-INTERSECTION			SOURCES RLY CROSSING	UNPREDICTED RLY CROSSING	DUAL CARRIAGE WAY ENDS	SPEED BREAKER	DANGEROUS DEEP
INFORMATORY	ADVANCE DIRECTION SIGN	RE ASSURANCE SIGN	1 km	PUBLIC TELEPHONE	PETROL PUMP	HOSPITAL	FIRE AND FLOOD	DRIVING ON THE SIDE	PARKING BODY SIDE
	DESTINATION SIGN	GURGAON		EATING PLACE	REFRESHMENT	RESTING PLACE	NO THROUGH ROAD	CYCLE STAND	TAXI STAND
	NO THROUGH SIDE ROAD								E CYCLE RICKSHAW STAND
MANDATORY	STOP	STOP	NO ENTRY	↑↓	← ONE WAY →	VEHICLES PROHIBITED IN BOTH DIRECTIONS	ALL MOTOR VEHICLES PROHIBITED	TRUCK PROHIBITED	BULLOCK CART & MAN CART PROHIBITED
	BULLOCK CART PROHIBITED	TONGA PROHIBITED	HAND CART PROHIBITED	CYCLE PROHIBITED	PEDESTRIAN PROHIBITED	RIGHT TURN PROHIBITED	LEFT TURN PROHIBITED	U TURN PROHIBITED	OVERTAKING PROHIBITED
	LENGTH LIMIT	LOAD LIMIT	AXLE LOAD LIMIT	SPEED LIMIT	WIDTH LIMIT	HEIGHT LIMIT	HORN PROHIBITED	NO PARKING	NO STOPPING
	RESTRICTION ENDS	COMPULSORY TURN LEFT	COMPULSORY AHEAD ONLY	COMPULSORY TURN RIGHT	COMPULSORY AHEAD OR TURN RIGHT	COMPULSORY AHEAD OR TURN LEFT	COMPULSORY KEEP LEFT	COMPULSORY CYCLE TRACK	COMPULSORY SOUND HORN



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)



7.4.9 Traffic Management on Road Junction

CONSTRUCTION TRAFFIC MEETS LIVE TRAFFIC FROM QUARRY/PLANT/BORROW PIT

- Where vehicles are more to the approach junction from the side road, permission shall be required for providing speed breaker at junction from local traffic police and road-authority.
- Flag man shall be kept in the peak time provided with the traffic circle painted with red and white at the corner at a height of 500 mm, clearly visible to approaching traffic for a distance provided with white gloves and STOP, GO Paddle and night-time flagman should use LED Batons.
- Spillage of earth / Gravel / Aggregates / Bituminous mix from the tipper shall be cleaned on regular basis, if required 2 labourers to be permanently posted for boozing
- All Construction vehicles must follow lane discipline and road signs.

ACTIVITIES INSIDE MEDIAN / ISLAND

- The traffic would discontinue from plying temporarily on the carriageway; for 2 min for reversing and dumping earth / stones / etc. under the direction of helper and the flagman.
- The construction zone shall be barricaded.
- One Flagman shall be appointed at traffic coming side of the transition zone.
- No personnel shall be allowed to come out of the safety zone, unless under flagman guidance.

7.5 Disaster Management Manual

Primarily disasters are triggered by natural hazards or human-induced or result from a combination of both. In particular, human-induced factors can greatly aggravate the adverse impacts of a natural disaster. Even at a larger scale, globally, the UN Inter-Governmental Panel on Climate Change (IPCC) has shown that human-induced climate change has significantly



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

increased both the frequency and intensity of extreme weather events. While heavy rains, cyclones, or earthquakes are all natural, the impacts may, and are usually, worsened by many factors related to human activity. The extensive industrialization and urbanization increase both the probability of human-induced disasters, and the extent of potential damage to life and property from both natural and human-induced disasters. The human society is also vulnerable to Chemical, Biological, Radiological, and Nuclear (CBRN) disasters.

7.5.1 Natural Hazards

The widely accepted classification system used by the Disaster Information Management System of DesInventar classified disasters arising from natural hazards into five major categories (DesInventar, 2016).

- **Geophysical:** Geological process or phenomenon that may cause loss of life, injury or other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage. Hydro-meteorological factors are important contributors to some of these processes. Tsunamis are difficult to categorize; although they are triggered by undersea earthquakes, and other geological events, they are essentially an oceanic process that is manifested as a coastal water-related hazard.
- **Hydrological:** Events caused by deviations in the normal water cycle and/or overflow of bodies of water caused by wind set-up
- **Meteorological:** Events caused by short-lived/small to meso-scale atmospheric processes (in the spectrum from minutes to days)
- **Climatological:** Events caused by long-lived meso- to macro-scale processes (in the spectrum from intra-seasonal to multi-decadal climate variability)
- **Biological:** Process or phenomenon of organic origin or conveyed by biological vectors, including exposure to pathogenic micro-organisms, toxins and bioactive other health impacts, property damage, loss of livelihoods and services, social and economic disruption, or environmental damage.

A brief description of these five major categories of the disasters arising from natural factors with the sub-categories is given in Table below. The below classification is not a watertight one. In real life situations, many disasters are a combination of different types of disasters. In addition, secondary disasters may occur after a disaster has occurred.

Table 7-11: Categories of Natural Hazards

S. No.	Family	Main Event	Short Description/ Secondary Disaster
1	Geophysical	Earthquake/Mass movement of earth materials	Landslide following earthquake. Urban fires triggered by earthquakes. Liquefaction - the transformation of (partially) water-saturated soil from a solid state to a liquid state caused by an earthquake. Mass movement of earth materials, usually down slopes. Surface displacement of earthen materials due to ground shaking triggered by earthquakes.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Family	Main Event	Short Description/ Secondary Disaster
		Tsunami	A series of waves (with long wavelengths when traveling across the deep ocean) that are generated by a displacement of massive amounts of water through underwater earthquakes, volcanic eruptions, or landslides. Tsunami waves travel at very high speed across the ocean but as they begin to reach shallow water, they slow down, and the wave grows steeper.
2	Hydrological	Flood, Landslides and Wave Action	Coastal Erosion- The temporary or permanent loss of sediments or landmass in coastal margins due to the action of waves, winds, tides, or anthropogenic activities Coastal flood- Higher-than-normal water levels along the coast caused by tidal changes or thunderstorms that result in flooding, which can last from days to weeks Flash Flood Hydrological - Heavy or excessive rainfall in a short period of time that produce immediate runoff, creating flooding conditions within minutes or a few hours during or after the rainfall. Flood Hydrological- A general term for the overflow of water from a stream channel onto normally dry land in the floodplain (riverine flooding), higher-than normal levels along the coast and in lakes or reservoirs (coastal flooding) as well as ponding of water at or near the point where the rain fell (flash floods). Wave Action- Wind-generated surface waves that can occur on the surface of any open body of water such as oceans, rivers, and lakes, etc. The size of the wave depends on the strength of the wind and the travelled distance (fetch).
3	Meteorological	Hazard caused by short-lived, micro-to meso-scale extreme weather and atmospheric conditions that may last for minutes to days	Cyclone, Storm Surge, Tornado, Convective Storm, Extratropical Storm, Wind Lightning, Heavy Rain.
4	Climatological	Unusual, extreme weather conditions related to long-lived, meso- to macro-scale atmospheric	Extreme hot/cold conditions Subsidence



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Family	Main Event	Short Description/ Secondary Disaster
		processes ranging from intra-seasonal to multi-decadal (long-term) climate variability	
5	Biological	Exposure to germs and toxic substances	Epidemics: viral, bacterial, parasitic, fungal, or prion infections Insect infestations

7.5.2 Human-Induced Disasters

The NPDM (2009) notes that rise in population, rapid urbanization and industrialization, development within high-risk zones, environmental degradation, and climate change aggravates the vulnerabilities to various kinds of disasters. Due to inadequate disaster preparedness, communities, and animals are at increased risk from many kinds of human-induced hazards arising from accidents (industrial, road, air, rail, on river or sea, building collapse, fires, mine flooding, oil spills, etc.). Chemical, Biological, Radiological, and Nuclear (CBRN) hazards rank very high in among the human-induced risks. Terrorist activities and secondary incidents add to these risks and call for adequate preparedness and planning.

7.5.3 Levels of Disasters

The disaster management and its planning at various tiers must consider the vulnerability of disaster-affected area, and the capacity of the authorities to deal with the situation. Using this approach, the High-Power Committee on Disaster Management, in its report of 2001, categorized disaster situations into three 'levels': L1, L2, and L3. The period of normalcy, L0, should be utilized for disaster risk reduction.

- **Level-L1:** The level of disaster that can be managed within the capabilities and resources at the district level. However, the state authorities will remain in readiness to aid if needed.
- **Level-L2:** This signifies the disaster situations that require assistance and active mobilization of resources at the state level and deployment of state level agencies for disaster management. The central agencies must remain vigilant for immediate deployment if required by the state.
- **Level-L3:** This corresponds to a nearly catastrophic situation or a very large-scale disaster that overwhelms the State and District authorities.

The categorization of disaster situations into levels L0 to L3 finds no mention in DM Act 2005. Further, the DM Act does not have any provision for notifying any disaster as a national calamity or a national disaster.

7.5.4 Project Specific Provisions for Disaster Management Plan

NODAL OPERATION CONTROL ROOMS

Nodal Control Centres should be equipped with the latest Communication facilities and will be manned 24 x 7 during the Construction and Operations Phase. During the Construction Phase, these rooms will be manned by the Contractor's personnel along with the Supervisory staff of the Disaster Management Cell. These Nodal Operation Control Rooms will always maintain effective communication with the various agencies listed in Disaster Management Plan viz.

- Police Commissionerate



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Traffic Police
- Municipal Corporation
- Home Guards and Civil Defence
- District Collectorates (City and Suburban)
- Indian Meteorological Department (Regional Office)
- Railways (Central and Western)
- Fire Brigade
- Telecom Service Providers
- Hospitals
- Radio and TV Centre

STANDARD OPERATING PROCEDURES DURING ROAD CONSTRUCTION

Standard Operating Procedures (SOPs) as stipulated in MORT&H Specifications – Revision 5, a document which is largely used in India for construction of Highways, shall be used during the Construction Phase. These also include precautions to be taken for safeguarding the environment. A summary of provisions is given below.

Table 7-12: SOP requirement

S. No.	Description	Reference Clause No. of MORT&H Specification
1	Borrow Pits for Embankment Construction	111.2
2	Quarry Operations	111.3
3	Control of Soil Erosion, Sedimentation and Water Pollution	111.4
4	Pollution from Plants and Batching Plants	111.5
5	Substances hazardous to health	111.6
6	Use of Nuclear Gauges	111.7
7	Environment Protection	111.8
8	Occupational Health and Safety of the Workforce	111.9
9	Control and Disposal of Waste	111.10
10	Transport of hazardous materials	111.11
11	Emergency Response	111.12

It is expected that the Contractor will prepare an exhaustive project specific Health and Safety Management Plan before commencement of Construction activities and implement the same rigorously.

7.5.5 Mitigation Measures Undertaken

Relief measures shall be taken with co-ordination of all Departments.

Table 7-13: Role and Action Plan of Various Departments

S. No.	Department	Disaster Specific Action Plan
1.	Disaster Management and Relief	<ul style="list-style-type: none">• Ensure coordinated movement of all departments, officials, and agencies for combating the disaster.• Issue necessary directions and ensure effective and coordinated response of all departments.• Arrange regular meetings for updating the apex body daily.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Department	Disaster Specific Action Plan
		<ul style="list-style-type: none">• Provide inputs to concerned departments for effective implementation of the rehabilitation plans.• Document the experiences and best practices.
2.	Animal Husbandry	<ul style="list-style-type: none">• Prepare contingency plan.• Constitute veterinary mobile teams with required resources like medicines, doctors, subordinate staff, laboratories, protective gears, antibiotics, vaccines, and antitoxins, etc. in abundance.• Constitute technical groups at state, zone, and district levels.• Identification of affected areas.• Safe disposal of dead carcasses.• Focused attention to veterinary health.• Mass vaccination programme of animals in affected areas Decide for rescue and evacuation of stranded livestock.• Pool in sufficient doctors for treatment of sick animals/ poultry.• Control spread of animal disease.• Carry out epidemiological surveillance to evade biological disasters.• Promote awareness through IEC activities.
3.	Public Health Engineering Department (PHED)	<ul style="list-style-type: none">• Prepare Contingency plan.• Enforce ground water legislation.• Strict monitoring and vigilance on water for drinking purpose only.• Identify additional sources of water for maintenance of regular supply.• Ensure supply of sufficient water through tankers for habitats and cattle camps.• Provide household water purification tablets.• Augmentation of existing Resources• Hiring of Private Wells• Hand Pump repair programme• Installation of New Hand Pumps and Tube wells• Transportation of water through road tankers and by Rail• Earmark water for drinking purpose available in the tanks and ensure no illegal pumping takes place.• Provide adequate quantity of bleaching powder to PRI, especially Gram Panchayats to protect spread of water and vector borne diseases.• Promote awareness on safe hygienic practices and sanitation.
4.	Department of Health and Family Welfare	<ul style="list-style-type: none">• Health and epidemiology surveillance• Constitute mobile teams with required resources like medicines, doctors, paramedics, subordinate staff, laboratories, protective gears, antibiotics, vaccines, etc. in abundance.• Mobile clinics for health check-ups• Organise regular rural health camps and keep public informed of such camps.• Check and monitor the nutritional status of affected people especially for women and children and give treatment.• Check samples of food grains, cooked food in community kitchens, etc.• Promote general awareness of health and hygiene.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Department	Disaster Specific Action Plan
		<ul style="list-style-type: none">• Manning of control room 24x7.• Maintain regular contact with EOC.• Keep all ambulances, mobile teams, specialists, blood, medicines, paramedics, etc. in a state of readiness.• Carry out triage.• Provide first aid to minor injuries.• Evacuate injured to hospitals.• Constitute and effectively deploy mobile teams having Doctors paramedical,• Set up health centres in relief camps and assure hygiene and sanitation.• Prevention/ control of epidemics and vaccination, availability of adequate x-ray machines and orthopaedic, neurology equipment.• Availability of stretchers, blood, medicines, ambulances.• Arrange additional beds and medical treatment in local and nearby hospitals as required.• Psychosocial counselling to distressed people.• Maintain continuous supply of medicines and emergency services till normalcy is restored.
5.	Disaster Management and Relief	<ul style="list-style-type: none">• Ensure coordinated movement of all concerned departments, officials, and agencies for combating Drought.• Make sufficient funds available for Drought response.• Arrange regular meetings for updating the apex body and issue directions to all concerned departments regularly.• Document experiences and best practices.
6.	Public Works Department (PWD)	<ul style="list-style-type: none">• Listing of works that could be done as under relief programmes as per the priority.• Carry out sudden checks and supervise the relief works.• Provide temporary employment opportunity to employable people from affected families.• Manning of control room 24x7• Maintain regular contact with EOCs at district / state levels.• Keep all resources in the state of readiness.• Assessment of damage to infrastructure, roads, bridges and buildings and commencement of restoration work.• Carry out search, rescue, evacuation, relief operation.• Clearance of roads and debris of collapsed infrastructures.• Identification and demolition of unsafe buildings/ infrastructures.• Barricade the disaster site and unsafe areas.• Identification and demarcation of safe areas and preparation of temporary shelters for relief camps.• Prepare temporary roads and bridges, helipads, and air strips on the need basis for effective relief operations.• Deployment of heavy equipment like dozers, excavators, cranes, pulleys, power saws, gas cutters, L&Ts, JCBs and other specialist equipment and vehicles.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Department	Disaster Specific Action Plan
		<ul style="list-style-type: none">Restoration of buildings, roads, bridges, and other Government buildings.Ensure close monitoring of response and rehabilitation operations and relief camps.
7.	Civil Supplies and Public Distribution System (PDS)	<ul style="list-style-type: none">Distribution of food packets, dry rations, fuel, oil, and other essential itemsTake precautionary steps against hoarding and profit mongering and ensure normal prices of commodities in the market.Adequate supply and reserves of FOL and coordinate with all the national agencies for smooth transportation of food and civil supplies.Supply daily necessities of food items, stock position and ensure continuous supply, in relief camp too.Coordination with FCI/ warehouses.Make public aware through media about food distribution and about the availability of items at subsidized rates.
8.	Municipal Corporation	<ul style="list-style-type: none">Coordination and supply of safe drinking water using tankers, etc.Manning of control room 24x7.Issue warnings to all Fire Service stations.Keep all resources in a State of readiness.Assist in evacuation, search, and rescue operations.Ensure availability of all types of extinguishers for fire following earthquakes.Appoint labourers for excavation works; dismantle unsafe buildings, disposal of solid garbage and liquid waste, disposal of dead persons and carcasses.Control other potential hazardous situations that might arise from oil, gas, and hazardous material spills.Organise relief camps wherever required; ensure pure drinking water, Sanitation, food, temporary shelters, basic relief materials as per requirements and needs.Assist in post disaster response and rehabilitation work
9.	District Administration	<ul style="list-style-type: none">Prepare Drought Contingency Plan.Issue necessary directions/ instructions to all concerned departments to be proactive to combat the upcoming situation in an effective and coordinated manner. Ensure effective coordination with all departments, agencies, NGOs, and stakeholders.Arrange/mobilize equipment and resources like water tankers, trucks/ vehicles to transport food supply, fodder, mobile medical vehicles, ambulances, etc.Arrange for disposal of dead carcasses.Generate daily reports of relief activities and disseminate.Organise relief camps wherever required; ensure pure drinking water, Sanitation, food, temporary shelters, basic relief materials as per requirements and need.Media Management



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Department	Disaster Specific Action Plan
		<ul style="list-style-type: none">• Procure tents, sanitation block, essential materials, etc. for relief camps.
10.	Department of Information and Public Relation	<ul style="list-style-type: none">• Information dissemination, issue periodic bulletins to media.• Ensure information given to media are facts and true to avoid rumours. Arrange visit for media personnel in affected areas.• Information dissemination, update public on various relief interventions.• Operate the Control Room round the clock.• Nodal person to be designated as spokesperson for the Government.• Information dissemination, issue periodic bulletins to media.
11.	Emergency Operation Centre (EOC)	<ul style="list-style-type: none">• Coordinate and issue direction to all concerned stake holders/ departments regularly• Brief the Disaster Management and Relief Commissioner regularly.• Coordinate the relief and rescue operation.• EOC to function as control room where all SDMA members and experts from various departments are available and take charge for effective coordination monitoring and implementation of rescue operations.• Prepare, forward and compile reports and returns from time to time.• Brief media regularly about the situation'• Brief/ Update the Government
12.	Police	<ul style="list-style-type: none">• Manning of control room 24x7.• Maintain regular state of readiness.• Communication to EOC and stakeholders instantly.• As first responder assume command for security and law and order.• Demarcate entries and exits for rescue and relief operation and proper traffic management.• Support SDRF, Civil Defence, Home Guard, Army, Sainik Kalyan and other first responders for search and rescue.• Take necessary actions to avoid rumours.• Ensure prevention of theft and loot. Deployment of lady police personnel in relief camps for Gender concerns.
13.	Electricity Board	<ul style="list-style-type: none">• Issue direction to all officials/ staff.• Manning of control room 24x7.• Keep all resources in a state of readiness.• Immediately shut down the supply of electricity in the area• Start restoration work of the damaged lines.• Simultaneously, make electricity arrangements at the rehabilitation, relief camp areas.
14.	Rural Development Department (RDD)	<ul style="list-style-type: none">• Issue warnings to all officials/ staff.• Manning of control room 24x7.• Keep all resources in a state of readiness.• Distribution of relief materials• Relief equipment, tractors, labour, digging/ excavation tools, etc. to be arranged to mobilise and support in organizing relief camps wherever required.• Ensure pure drinking water, Sanitation, food, temporary shelters, basic relief materials as per requirements and needs.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Department	Disaster Specific Action Plan
		<ul style="list-style-type: none">• Arrangement of Rural relief camps• Arrangement of community kitchens.• Assist in post disaster response and rehabilitation work
15.	India Meteorological Department	<ul style="list-style-type: none">• Transmit updated information to EOC.• Mass media publicity/ issue bulletins at regular intervals.
16.	Railways and Transport Department	<ul style="list-style-type: none">• Manning of control room 24x7.• Alert officials/ staff and keep all resources in a state of readiness.• Search, rescue and evacuate injured persons to safer places.• Assess the situation for appropriate actions.• Regulate the movement of all trains and passenger buses.• Carry out inspection of railway bridges and lines.• Deployment of equipment like generators sets, pump sets, cranes pulleys, dozers, gas cutters, earthmovers, labourers for clearance of fallen bogies, electricity Poles, damaged tracks, etc.• Transport and provide emergency tents, water, medicines, food, etc. to the accident site.• Adequate arrangement of specialized trains, truck, and buses for transportation of rescue and relief material.• Restoration of damaged railway lines, electricity poles to restart services as soon as possible.
17.	NGOs	<ul style="list-style-type: none">• Provide first aid, health services, arrangement and distribution of food and relief materials, assistance to authorities, financial assistance, etc.

7.6 Code of Conduct for Contactor and Labour

A Code of Behaviour governing appropriate behaviour in the accommodation facilities will be developed and to be strictly enforced. The labour contractor shall ensure implementation of the "code of conduct" between labourers living in campsite and community and shall be implemented for all engaged labourers.

7.6.1 Code of Conduct for Contractors and Workers

The Project should be committed to implemented appropriate Occupational Health and Safety (OHS) standards, creating, and maintaining an environment in where Gender-based Violence (GBV) and violence against children (VAC) have no place, and where misconduct will not be tolerated by any employee, associate, or representative of the contractor.

The purpose of these Codes of Conduct for implementing EHS and OHS Standards should be to introduce a set of key definitions, core Codes of Conduct, and guidelines that:

- Clearly define obligations on all project staff (including sub-contractors and day workers) about implementing the Project's environmental, social, health and safety (ESHS) and occupational health and safety (OHS) requirements.

The application of these Codes of Conduct will help ensure the Project meets its EHS and OHS objectives, as well as preventing and/or mitigating the risks of any Gender Based issue on the Project.

Key Points of Code of Conduct- Following are the key points of code of conduct, which shall be kept in mind by all in all times:



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Zero Tolerance to unsafe, illegal, or unethical working practices, violence and aggression and discrimination. Project activities will comply with applicable National and Company laws, policies, rules, and regulations (including policy on sexual harassment).
- Compliance with applicable health and safety requirements to protect the Local Community (including vulnerable and disadvantaged groups), the Employer's Personnel, and the Contractor's Personnel (including wearing prescribed personal protective equipment, preventing avoidable accidents and a duty to report conditions or practices that pose a safety hazard or threaten the environment).
- Ensure the workplace safety of workers, sub-contractors and suppliers, each employee/worker to play their part in making workplace safer and ensure their team has the right equipment, training, and knowledge to guarantee a safe working environment.
- Zero-tolerance approach to harassment and intimidation. Contractor, sub-contractors, and suppliers should respect and behave with public specially women and children and respect their dignity by soft speaking and good behaviour.
- Contract, sub-contractors, and suppliers will be fully responsible to protect and conserve the environment at workplace and nearby areas.
- Contractors, sub-contractors, and suppliers will ensure alcohol and drug-free workplace. While at work and attending business-related activities in any location project staff and project workers will be strictly prohibited from using or being under the influence of alcohol or illegal drugs.
- No food or drink, except for water, is to be taken and consumed anywhere throughout the site. All food and drink must be stored and consumed in the allocated canteen facilities if provided or in the designated rest shed inside the boundaries of the site.
- All workers must practice basic hygiene, that is, (a) Hand washing before eating, drinking, smoking and before, as well as after, using the toilets. (b) Proper food storage in the canteen/designated rest places and (c) Careful disposal of food leftovers in the bin so as not to attract vermin which may carry disease.
- The use of mobile phones will be restricted to during break times and after shifts to minimise worker's distraction and maximise concentration. This ensures quality of work, productivity and promotes teamwork. Most importantly it will reduce the amount of accidents on sites, particularly falls, and minimizes damage to phones, which may be needed in an emergency.
- It is expected from contractor, subcontractors that, workers are responsible for maintaining a clean and safe working environment, free from unnecessary waste materials and packaging.
- It is expected from all suppliers, sub-contractors, and workers to treat and regard one another and public around work areas respectfully, courteously, and professionally always in order to achieve and maintain a positive working environment.
- While working in villages between local communities, all suppliers, sub-contractors, and workers will refrain themselves from misbehaviour, ill-treating, quarrelling, usage of abusive language with any of the community member.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- All workers will be trained to respect the dignity of all women present near to any worksite or work camp. Workers should use language that conveys respect for the dignity of women and other public and should not engage in any form of harassment or exploitation. Worker should also recognize that the interests and welfare of children/young persons are paramount and therefore given precedence over other considerations.

7.6.2 Code of Conduct for Occupational Health and Safety

Following are the key points of code of conduct, which shall be kept in mind by all in all times:

- Ensure that all the provisions of relevant Acts and Rules and conditions referred in contract agreement with sub-contractor are conformed to.
- Ensure that a well-documented safety program exists.
- Ensure that a work permit system exists for all construction activities, especially for- (i) Any work at hazardous locations such as at height or at depth; (ii) All hot jobs, fabrication works and electrical repairs and maintenance works; (iii) All concreting works; and (iv) Under high noise and high dust environment.
- Ensure that all employees are informed of the hazards involved in their work and are provided with adequate protective equipment.
- Ensure that the work environment and the neighbourhood is free from debris, muck, insects and any unhygienic conditions at any time and proper access and illumination is ensured at the workplace.
- Ensure that a detailed schedule for periodic calibration and preventive maintenance of all the machinery and equipment is being implemented.
- Ensure that periodic medical examination of all employees and workers are carried out to the extent required as per the work environment.
- Assess the potential hazards and dangerous occurrences at the workplace and examine the effectiveness of the safety and control measures.
- Ensure that various processes of construction and disposal of debris and effluents are safe to ensure conformance to the Environmental Protection Act, 1986.
- Discuss accidents and dangerous occurrences at the workplace and examine root causes of accidents and suggest to the management necessary improvements.
- Attend safety pep-talks, toolbox and arrange mass safety gatherings for developing safety culture.
- Investigate complaints received from anybody about the risks or dangers.
- Promote safety and health by organizing accident prevention programs, campaigns, and meets on continual basis by organizing safety weeks, safety competitions, safety talks and film shows on safety, displaying posters and other promotional activities to stimulate interest among staff and workers about safety.



8 PROJECT BENEFITS

8.1 Introduction

The proposed economic corridor project is a linear project aimed to provide faster transport to vehicular traffic. The Project shall benefit the commuters travelling between Urga and Pathalgaon. The current route between Urga and Pathalgaon measures about 106 km which shall be reduced to 87.535 km i.e., 17.5% reduction. Thus, the Project shall save fuel and time of commuters. The areas through which the proposed road passes is highly remote and thus the implementation of the Project shall enhance connectivity of the villagers to the highly developed cities of the Chhattisgarh, Jharkhand, and Odisha. Therefore, the Project will act as the key route for the economic flow into the region and will bring significant benefits to the local population, including uninterrupted flow of traffic, enhance economic development through improvements in the physical and social infrastructure, develop employment opportunities for skilled, semi-skilled and unskilled labours, strengthen tourist development, ensure road safety, and provide better transportation facilities and other tangible improvements.

Some of the positive impacts associated with the proposed project are discussed in the following section of this Chapter.

8.2 Improvement in Physical Infrastructure

The proposed project shall enhance and improve the current route between Urga and Pathalgaon which is narrow and zigzag and thus needs to be straightened, widened, and improved geometrically to mobilize the heavy traffic and the commuters commuting through the route shall also save both time and fuel. The Project will have following benefits:

High-speed connectivity and access: The proposed economic corridor will avoid traffic congestion and reduce the travel time and thereby speed-up the freight movement within project districts.

Aiding economic growth: The seamless connectivity will provide better access to vehicles. The reduce travel time will boost to trade, tourism and commerce linked to the regions.

Decongestion of existing National and State Highways: The proposed corridor will take away traffic pressures from existing SH and NH passing through various cities. Also, long-distance traffic will shift to the proposed highway, thereby reducing traffic and congestion on the existing NH and SH for regional and local usage.

Growth of backward areas: The biggest strength of the alignment is that it plans to cover backward districts of Chhattisgarh. As a result of connectivity and access to other parts of the country, these backward areas will be aided to integrate with rest of the world. Further, freight and passenger traffic on the economic corridor will help promoting ancillary economy of these regions.

Improved safety: Due to access control, the road and travel safety of the traffic connecting the region will be enhanced as there will be minimum distractions and conflict zones.

Support to industry: Different types of industries like Tourism, Manufacturing, warehouse facilities, etc. along the proposed corridor will be facilitated in their business operation and reachability.



8.3 Generation of Employment Opportunities

Proposed development is expected to generate direct employment for about 1500 persons both skilled and unskilled labour during construction phase the Project and considerable indirect employment opportunities in form of transportation of construction materials, greenbelt development, ancillary facilities like canteens, community kitchens etc.

Influx of construction workers may bring opportunities for the women in the neighbouring villages if taken with positive approach, as local population including women can initiate small income generating activities such as preparing and selling of food and other basic goods to the construction workers. This will have an overall impact on reducing poverty and gender empowerment.

During operations phase, the Project will largely have indirect employment benefits in form of highway amenities and through economic and social hubs developed around the Economic Corridor. Efficient reach and connectivity to distant markets will further enhance economy of the districts and create employment opportunities.

8.4 Efficient and Safe Connectivity Option

The Project will provide a reliable infrastructure with good riding quality, better safety, and reduction in accidents. Installation of proper road safety system through signage, barricades, and crash barriers will add to be safety to the traffic. Bus bays, lay byes, rest areas, underpasses, service roads are proposed in the Project, which shall enhance the road safety. Fast and safe connectivity will result in savings in fuel, vehicular efficiency improvement resulting in savings in total transportation cost.

8.5 Health and Education

Improved quality of life for people and better approach to medical and educational services. Faster connectivity and accessibility to other districts and big cities will help in better connectivity with higher education institutes, tertiary healthcare such as hospitals and specialized treatments within the state. Reduction in travel time will allow patients to avail OPD/other medical services from the national or state capital region.

8.6 Movements of Goods

The Project corridor will provide better opportunities for transporting, processing, and marketing of agricultural products by quicker movement of agricultural commodities, perishable goods like fruits, vegetables, and dairy products to the consumption centres thereby, helping in the overall development of the region.

8.7 Benefit to Local Trade and Economy

There will be need of large quantities of materials required for construction of the Project. The majority of which will be sourced locally and from surrounding areas. This will eventually offer a ready market and provide the business opportunities to suppliers in the vicinity of the Project area. A better connectivity between the districts will increase the business within the region. Further, improved road connectivity will help in better implementation and management of government schemes. Therefore, the Project will result in overall development of backward areas through development of agriculture and handicrafts and access to distant markets.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

8.8 Benefits to Environment

Faster transportation will ultimately lead to massive savings in the form of reduced wear and tear of vehicles, reduced vehicle operating costs (VOCs) and total reduction in transportation costs etc. Further, due to the Project the traffic congestion due to obstructed movement of vehicles will be minimized and thus wastage of fuel emissions from the vehicles will be reduced therefore, the Project will result in reduced vehicle maintenance and fuel saving, reduction in pollution and lesser carbon footprint.

The compensatory plantation and roadside plantation of tree all along RoW of the proposed project will improve the aesthetics value of the region.



9 ENVIRONMENTAL MANAGEMENT PLAN

9.1 General

Environmental Management is an integral part of the planning process for development of any project activities. Environmental planning and sustainable development approach are essential to maintain balance between "supportive" and "assimilative" capacities of a region and hence to stay within the carrying capacity. The Management Plan for construction and operation phases of the development of the proposed road would include measures that minimize adverse impacts to the environment.

Environmental Management Plan (EMP) is required to ensure managing environment impacts within acceptable limits in addition to environmental enhancement during construction and operational phases. EMP is location and time specific. In general, NHAI (with assistance from Contractor/Concessionaire and Project Monitoring Consultant (PMC) / Supervision Consultant (SC) / Authority Engineer (AE) is the responsible entity for ensuring that the mitigation measures are carried out. Impact mitigation measures are provided as Environment Management Matrix in **Annexure 9.1**. The list provides reference (MoRT&H specification), implementing organization and responsible entity.

9.2 The Objective and Scope for EMP

The objectives of the development of Environmental Management Plan for the proposed project activities would be to reduce the negative impacts to acceptable level and enhance the positive impact to achieve "Sustainable Development in the region". The Environmental Management Plan (EMP) has been designed within the framework of various regulatory requirements on environmental and Socio-economic aspects aiming at the following:

- Minimize disturbance to native flora and fauna, if any.
- Prevent and to attenuate air, water, soil, and noise pollution, if any.
- Encourage the socio-economic development.

To achieve these objectives, some suggested measures include:

- Enhancement of roadside facilities (bus stops, rest areas, etc.)
- Improvement of aesthetic qualities along the proposed highway.
- Improvement of the local natural resources for local population.

9.3 Environmental Management Plan for the Project

The Environmental Management Plan for the proposed project activities envisage to outlines the key environmental management and safeguards that will be initiated by the Project proponent to manage the key environmental issues associated with the construction and operation of the proposed project. The major concerns for the EMP of the proposed project activities would be:

- Delineation of mitigation and compensation measures for all the identified significant impacts.
- Delineation of unmitigated impacts.
- Physical planning including work programme, time schedule and locations for putting mitigation and compensation systems in place.

The environmental management plan (EMP) would, therefore, consists of following main components:

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

- To integrate potential impacts (positive or negative), environmental mitigation measures, implementation schedule, and monitoring plans.
- To describe the potential environmental impacts and proposed management associated with each stage of the Project development.
- To control environmental impacts to levels within acceptable standards, and to minimize possible impact on the community and the workforce of foreseeable risks during the construction and subsequent operational phases of the Project.
- To highlight that the environmental mitigation measures shall be used in consonance with good management practices and good engineering design, construction, and operation practices.

The EMP would, hence, be a working document that concerned stakeholders need to both understand environmental concerns and to address associated issues to facilitate environmental management.

9.4 Specific Activities by Concessionaire / Contractor

The activities to be performed by the Concessionaire / Contractor to implement the EMP shall comprise the following:

- Selection, design and layout of construction areas, hot mix and batching plants, labour camps etc., obtain all necessary approvals and permissions including permission of change of land use from respective authorities.
- Confirm the Tree Cutting Schedule based on the final design and provide the same to NHAI.
- Felling of trees only after NHAI secures Forest Department's/ District Administrative Department's permissions.
- Selection of material sources (quarry, water, sand, etc.) and obtain approval.
- Obtain Prior EC for new quarries areas from MoEF&CC / SEIAA as applicable.
- Obtain Consent to Establish and Operate from State Pollution Control Board (SPCB).
- Apply for and obtain all the necessary clearances from the agencies concerned including but not limited to handling of hazardous waste from SPCB, permission for use of water, labour permits, permission for disposal of construction wastes and blasting permits.
- Planning traffic diversions and detours including arrangements for temporary land utilization on lease basis.

9.5 Site Specific Management Plan

Based on the environmental baseline conditions, planned project activities and impacts assessed for the Project, the set of mitigation measures to be adopted to minimize the identified adverse impacts due to the Project are listed in following sections.

9.5.1 Air Quality Management

During the construction phase, certain amount of dust shall be generated due to the mobilization of labour, machinery, and materials. The processes, which causes pollution includes land clearing, excavation, levelling of land, operation of construction machinery/equipment, foundations, paving and other requisite infrastructure etc. in the proximity to the construction site. The impacts may be temporary in nature and can be managed by ensuring following measure:



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

- Topsoil removed shall be preserved for later reinstatement purposes by piling it along the boundary of the site.
- Construction dust materials shall be sprayed with water for dust suppression prior to any loading, unloading or transfer operation so as to maintain the dusty materials to avoid dispersion. Stockpiles of aggregate or spoil shall be covered band water applied.
- Vehicles involved in transportation of loose and fine materials like sand and fine aggregates shall be covered to reduce spills on roads.
- Open burning of waste shall not be permitted.
- The height from which excavated materials are dropped shall be controlled to a minimum practical height to limit fugitive dust generation from unloading.
- High dust generating activities to be avoided in conditions of very high wind.
- Earth moving equipment, typically a bulldozer with a grader blade and ripper shall be used for excavation work.
- Only limited vehicular movement to be permitted on disturbed soil. Vehicle speed shall be restricted to 25 kmph on unpaved roads.
- LPG cylinders to be provided in labour canteens and use of fuel wood to be discouraged.
- Housekeeping of the area to be maintained by deputing sweepers to remove dirt/debris from the floors/ sites on daily basis.

All vehicles, equipment and machinery used for construction shall be regularly maintained to ensure that the pollution emission levels conform to the CPCB norms. Another source of gaseous emissions is the DG sets, which may be used as back-up for power generation for pumping stations. The DG sets shall be properly maintained to fulfil the statutory requirements. The periodical ambient air quality monitoring shall be done to ensure that the significant impacts are being mitigated adequately.

9.5.2 Noise Management

The noise and vibration shall be generated mainly due to operations of machinery/equipment/DG Sets used for construction and transportation of materials to the site. The impacts due to high noise can be minimize by ensuring following measure:

- Existing villages and local community to informed about high noise activities.
- Adequate planning to avoid high noise activities to be undertaken.
- Acoustic enclosures, noise barriers to be provided in areas of high noise generating sources such as DG Sets, Compressors for drills and Rock Cutters if needed.
- All personnel exposed to noise levels beyond threshold limits will be provided with protective gears such as earplugs, muffs, etc. especially construction personnel involved in pile driving operations. Rotation of personnel will also be adopted.
- Movement of vehicles during nigh time to be limited.
- Regular maintenance of vehicles and repair of equipment.
- Noise barriers will be provided between the activities and the receptors.
- Restriction on use of equipment generating high noise during night-time.

Ambient noise level monitoring shall be conducted at suitable locations at periodic intervals during construction phase to conform to the stipulated standards both during day and night-time. Data shall be reviewed and analysed by the Project manager for adhering to any strict measure.

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)****9.5.3 Vibration Mitigation**

During the construction activities, vibrations may be envisaged. The vibrations could be result of activities like excavation, piling, material transportation and movement of heavy equipment, etc.

- The effects of vibrations will be minimized by ensuring construction works take place mainly during daytime.
- Rubber padding shall be provided for vibration control where needed.
- Movement of vehicles shall be limited during night-time.

9.5.4 Water Source Protection Management

Water source protection will involve the protection of surface water sources and groundwater sources to avoid water pollution by reducing risks by preventing exposures to contamination due to project activities.

- Minimising the disturbance of standing water.
- Clearing the vegetation only from the area that needs to be exposed to construction.
- Equipment and vehicle wheel washing will be carried out in a designated area of hard standing located away from any watercourse or surface water drain.
- Demarcation and offsets for labour camp and storage locations and field activities will be at least 100m from natural watercourses where possible.
- All the debris resulting from the site shall be disposed of separately.
- Managing stockpiles to avoid sediment run-off by minimising the amount of time stripped ground and soil stockpiles are exposed to air and rains.
- Preventing water from entering excavations, by using cut-off ditches.
- No untreated discharge is to be made to water courses.
- To prevent contamination from accidental spillage of oil, the storage areas shall be isolated and will be inspected and cleaned at regular intervals.

Raw water quality shall be checked on regular basis for essential parameters as per BIS guidelines. Water availability to the construction staff should be fit for drinking purpose. Code to ensure drinking water quality is Indian Standard Specification for Drinking Water Quality IS 10500,2012.

Water conservation initiatives will be undertaken with the aim to limit the water consumption during the construction activities, like the water use for sprinkling to mitigate air pollution due to dust suspension during construction.

9.5.5 Soil and Land Management

The following measure shall be adapted to prevent/ reduce the soil contamination:

- Solid waste (building material, metal scrap, plastic etc.) generated due to the Project shall be properly segregated. The recyclable plastic, metal etc. waste should be separately stored. Other material will be used for land filling or the designated Solid waste disposal sites by authorised vendors.
- Construction debris will be collected and suitably used on site as per construction waste management plan. The Project proponent will take prior permission from the competent authority for disposal of construction waste on landfill site in the Project area.
- Lubricates, waste oil, other materials deemed hazardous shall be collected separately in HDPE drums and shall be disposed of as per standard practice.

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

- All storage facilities to be designed with paved surface, provided with covered shed and adequate containment facility at the construction.
- Dust bins shall be placed at requisite locations.

9.5.6 Site Restoration and Green Belt Development

After completion of the construction work project area along the roadside will be restored with plantation of local plants. Greenbelt development will not only act as a dust absorber and reduce the fugitive emissions, but it will also act as Noise Barrier reducing the noise generated by the vehicles plying on the road when the highway is operational. The plants to be used for plantation will be selected based on following criteria:

- The species should be fast growing and providing optimum penetrability.
- The species should be wind-firm and deep rooted.
- The species should form a dense canopy.
- As far as possible, the species should be indigenous and locally available.
- Species tolerance to air pollution like SO₂ and NO₂ should be preferred.
- Ability to withstand conditions like inundation and drought.
- Soil improving plants (Nitrogen fixing rapidly decomposable leaf litter).
- Attractive appearance with good flowering and fruit bearing.
- Bird and insect attracting tree species.
- Sustainable green cover with minimal maintenance.

9.5.7 Traffic Movement Management

To minimize impact of Traffic Movement, all vehicle movements will be planned to ensure the minimal use of public road and help in reducing the adverse impacts, if any.

- Detailed plan for signage around the construction areas to be prepared to facilitate traffic movement.
- Exclusive entry and exit points to be provided at construction site.
- Dedicated parking area to be provided for project vehicles.
- Material transportation route and movement heavy machinery schedule to be communicated clearly to the local inhabitants. Prior consultation/permission from local Police and local Panchayat to be undertaken.

9.5.8 Community and Cultural Properties

The relocation and mitigation of affected community resources and cultural properties directly or partially impacted shall be undertaken as per the Rehabilitation and Resettlement Plan (R&R). Wherever possible the concessionaire / contractor shall try to enhance the aesthetic of the cultural properties.

9.5.9 Project Specific Occupational Health and Safety Measures:

To ensure the health and safety of construction workers, project proponent would advise construction contractors to envisage adequate steps, as described below:

CLEAN WATER FACILITY:

Adequate water will be provided to the workers and staff for drinking, cooking, and domestic use. For drinking and cooking purpose potable water will be provided and water will be tested for quality before use conforming to the IS 10500:2012 standard so that workers should not get exposed to water borne diseases. Separate bathing area will be provided for the use of male and



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

female workers. Water will be stored in a suitable place away from wastewater/sewage drain or other source of pollution.

FIRST AID FACILITY:

To provide first-aid facilities in the proximity of the construction sites and to work on the modalities for providing immediate ambulance services in the event of any major injury to facilitate workers to avail hospital services well in time.

WORK PERMIT SYSTEM:

"Work permit is an essential document that categorically spells out the task, equipment involved, its location, personnel involved, time limitations, precautionary measures to be taken together with likely hazards to be encountered if any". Objectives of the permit system at the construction site are:

- To consider all possible hazards and remove those before allowing work to proceed.
- Inform the personnel carrying out the work of procedures and precautions they must use to carry out the work safely.
- To eliminate the risk of unauthorized persons of entry in the restricted areas,

Suitable permits will be issued before proceeding with any work at site. The concerned Safety Person must ensure this at construction site.

ELECTRICAL SAFETY:

As on one hand electricity is very useful for us on other hand it gives rise to other types of industrial accidents. The danger associated with the use of electricity may be classified as:

- Injury from direct contact:
- Physical injury from false starting of machine, failure of crane controls, explosion of switch gear etc.
- Injury from fire and explosion from electric ignition of flammable vapours, gases, liquids, and solids etc.
- Burn due to metallic object in close contact with local parts of the body.

PROTECTION

- All apparatus and conductors should be sufficient size and power for the work they are intended to do.
- All conductors of electricity should be covered with insulating material.
- Electrical joints and connections should be of proper construction as regards conductivity, insulation, mechanical strength, and protection.
- Efficient and suitably located means should be provided for cutting off from every part of the system these are- Switches, Switch fuses, Isolating link, or circuit breakers.
- All machines to be used in the construction will conform to the relevant Indian Standard Codes and will be kept in good working order. These would be regularly inspected and properly maintained as per the provision of standard.

HOUSEKEEPING AND MATERIAL HANDLING:

There are many injuries associated with the various types of construction. While hazards are varied, many can be reduced or eliminated completely with proper site inspection and adequate housekeeping practices. Keep the work area and all equipment tidy and plan disposal of scrap,



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

waste, and surplus materials before commencement of the construction. Keep all work areas well-lit especially at evening hours or if the night work is required.

WORKING AT HEIGHT:

Any work at height of 1.8 meter or more from the ground level or floor pose a risk e.g., working on ladders, scaffolds, slope etc. Elevated working positions where the hazard of a fall exists and where there is no physical protection such as handrails.

MATERIAL STORAGE AND HANDLING:

Adequate safety measures will be ensured for workers during handling of materials at site. The contractor will adhere to all regulations regarding safe scaffolding, ladders, working platforms, gangway, stairwells, excavations, and safe means of entry and exit.

Chemicals, which might react together, to give off dangerous fumes or cause fire or explosion, should be stored remote from one another. Volatile chemicals, oils, lubricant, and diesel for DG sets should not be stored near electrical and heat sources or place of direct sunlight.

PERSONNEL PROTECTIVE EQUIPMENT:

Personnel Protective Equipment (PPE) are the last line of defence. If the hazard cannot be removed or guarded, then the person working should be protected with PPE. The use of PPE is also required while doing the job where any hidden danger is anticipated.

All workers are required to be provided necessary safety gadgets like helmets, protective footwear, and gloves. Workers will be provided with extra PPE's required as per their specific jobs like personnel engaged in the work of mixing, cement, lime mortars, concrete etc. to be provided with masks to reduce the impact of direct exposure. Persons to be engaged in welding activities to be provided with protective eye-shields to ensure safety during welding. Earplugs are to be provided to workers exposed to high noise areas. Labours working on elevated platforms to be provided with safety belts.

FIRE SAFETY:

Fire is a chemical reaction in which a combustible material combines with oxygen in the atmosphere to give out heat and flame.

There are three components which are necessary to cause a fire:

- Fuel (Combustible material)
- Oxygen (Combustion support)
- Ignition source or heat (Combustion initiator)

If any one of these is absent, fire cannot take place. It can be represented by a triangle known as triangle of combustion.

COMMUNITY SAFETY:

The contractor would ensure that no danger or inconvenience to be caused to any person or the public by placing or stacking the material for construction.

9.5.10 Management of Ecology

No construction camps, stockyards, concrete batching, or hot mix plants shall be located within the natural habitat or within 500m from its boundary.

Procurement of any kind of construction material (as quarry or borrow material) from within the natural habitat shall be strictly prohibited. No water resources within the natural habitat shall be tapped for road construction.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Extensive plantation shall be carried out in form of greenbelt development and compensatory afforestation. Species shall be chosen which are native to the local area and no new alien species shall be introduced.

9.6 Implementation of EMP

The key issues that require special attention along with the mitigations and enhancement measures to be implemented have been detailed in **Annexure 9.1**. It is presumed that for effective implementation for the Project, the proponent shall be dividing the section into number of construction packages. A construction package shall have a single contractor or a JV of contractors. A single or multiple PMC / SC / AE shall be appointed either package wise or for the entire section who shall supervise and monitor the works of the contractor. The PMC / SC / AE shall be headed by a Team Leader who shall ideally be assisted by a Resident Engineer along with other key and sub key professionals including an Environmental expert. In turn the PMC / SC / AE shall be reporting to the NHAI's Project Implementation Unit, headed by a Project Director. Depending on the work's status and exigencies, the Project proponent may decide to entrust the monitoring works to one or multiple Project Implementation Units. The physical, financial and the environmental compliance status of the works of the Project Implementation Units shall be monitored at the Head office of the NHAI at New Delhi.

For effective implementation and management of the EMP, the individual contractor / lead contractor (for JV) for each package shall establish an Environment, Health and Safety cell headed by an Environment Officer to deal with the environmental issues of the Project and implement the various environmental mitigation and enhancement measures. The Environmental Officer of the Contractors shall be primarily responsible for compliance of EMP and should be available for the entire duration of the Project. The environmental officer of the Contractor shall be assisted in his daily endeavour by safety and health officers besides other environmental assistants. The Environmental officer shall interact with NHAI, AE / SC / PMC and other line departments to ensure that the mitigation and enhancement measures mentioned in the EMP are adhered.

The designated environmental expert of the PMC / SC / AE based on the periodic reports received from the contractor and site visits shall apprise the Project Director on the status of the compliance of the EMP. In the absence of the Environmental Expert of the PMC / SC / AE, the responsibility shall be entrusted with the Resident Engineer and the Team Leader of the PMC / SC / AE. The Project Director of NHAI or his legal representatives shall be the official responsible for the compliance of the EMP from the Project proponent's side at the site level.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

9.7 EMP Budget

The EMP cost has been presented in below table. The budgeted cost of EMP is nearly INR 46.22 crore.

Table 9-1: Project Environmental Budget

Item No.	Component	Description	Unit	Quantity	Unit cost (INR)	Total cost (INR)						
						Detail Cost	Crores					
1 MITIGATION / ENHANCEMENT COST												
1.1 Pre-construction Stage												
1.1.1	Land acquisition					Covered in RAP Budget						
1.1.2	Water	Relocation and construction of affected hand pumps, water storage tanks, open wells, water taps, OHT etc. as per directions of the Engineer.				Covered in Utility Shifting Budget						
1.2 Construction Stage												
1.2.1	Horticulture	Compensatory Afforestation in double degraded forest area in lieu of forest land being diverted for the Project. The approx. Cost of per ha CA land @7.5 lakhs.	Ha	365	750000	27,37,50,000.00	27.38					
1.2.2		Net Present Value (NPV) of forest land being diverted. The approx. Cost of per ha NPV @8 lakhs.	Ha	182.5	803000	14,65,47,500.00	14.65					
1.2.3		Avenue plantation with flowering, shade, medicinal, ornamental and fruit bearing trees @ 998 numbers per Km as per IRC SP21:2009 and Green Highways (Plantation and Maintenance) Policy-2015 including compensatory plantation to offset the loss of trees due to clearing of proposed RoW at locations and as per directions of the forest department	No.	87325	-	-	0.000					
1.2.4		Planting of flowering, medicinal, ornamental shrubs in the median @ 666 numbers per Km as per IRC SP21:2009 and Green Highways (Plantation and Maintenance) Policy-2015	No.	58275	-	-	0.000					
1.2.5		Circular tree guard /other for protection of plantation	No.	87325	-	-	0.000					

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Item No.	Component	Description	Unit	Quantity	Unit cost (INR)	Total cost (INR)	
						Detail Cost	Crores
1.2.6		Transplantation of suitable existing trees as per directions and guidelines of the engineer including transportation, replantation, and maintenance of trees	No.	0	-	-	0.000
1.2.7		Landscaping and aesthetics of junctions and at other locations as per design, drawings, and direction of the Environmental Engineer / Environmental Specialist of the Engineer	LS	-	-	-	0.000
1.2.8	Slope / Embankment protection	Turfing of embankment with grasses and herbs.	Covered in Engineering Cost				
1.2.9	Soil & Ground Water	Providing Oil Interceptors as per design and drawing at vehicle parking areas and as per directions of the Environmental Specialist / Environmental Engineer of the Engineer.	Nos.	5	30,000.00	1,50,000.00	0.015
1.2.10	Surface Water	Silt Fencing for Water Bodies adjacent to the road	running m	1000	1,100.00	11,00,000.00	0.110
1.2.11	Ground Water	Rainwater Harvesting Structures complete in all respect and confirming to the relevant specifications as directed by the Engineer and as per drawing approved by Engineer.	Covered in Engineering Cost				
1.2.12	Flora	Cost of transport and distribution of cooking fuel to construction workers to prevent indiscriminate felling of trees	Months	24	20,000.00	4,80,000.00	0.048
1.2.13	Air	Dust Management with sprinkling of water, covers for vehicles transporting construction material	Km	87.500	30,000.00	26,25,000.00	0.263
1.2.14	Noise	1) provision of and 2) Dismantling and new construction of compound wall of noise sensitive features up to a height of total 2m above ground level complete in all respect as per	running m	1000	8,000.00	80,00,000.00	0.800

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Item No.	Component	Description	Unit	Quantity	Unit cost (INR)	Total cost (INR)	
						Detail Cost	Crores
		Technical Specifications and as per the direction of the Engineer.					
1.2.15	Solid Waste Disposal	Disposal of Sewage and other wastes in the construction yard and labour camps as per directions of the Environmental Specialist / Environmental Engineer of the Engineer.	Month	24	15,000.00	360000.00	0.036
1.2.16	Cultural properties	Relocation of cultural properties			Covered in RAP Budget		
1.2.17	Roadside amenities	Construction of Bus Bays, truck bays, bio toilets, mini rest areas and other structures			Covered in Engineering Cost		
1.2.18	Wildlife	Signage – Information including lettering as per IRC code			Covered in Engineering Cost		
1.2.19		Structures for Wildlife/Domestic Crossings			Covered in Engineering Cost		
TOTAL MITIGATION / ENHANCEMENT COST						43,30,12,500.00	43.301
2	MONITORING COST						
2.1	Construction Stage						
2.1.1	Air	Sampling and monitoring ambient Air Quality and gaseous pollutants as per CPCB Standard Procedures at 10 locations including approved hot mix plant locations, sensitive area, and chainages as per direction by Environmental Specialist / Environmental Engineer of the Monitoring Consultant for three season a year for 2 years as per the Monitoring Plan given in EMP	No. of Samples	540	2,000.00	10,80,000.00	0.108
2.1.2		Analysis charges of Ambient air from samples collected for parameters as per AAQ Standards Notification, 2009 and CPCB manual.	No. of Samples	540	4,000.00	21,60,000.00	0.216

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Item No.	Component	Description	Unit	Quantity	Unit cost (INR)	Total cost (INR)	
						Detail Cost	Crores
2.1.3	Water Quality	Collection of grab samples of water quality at 12 locations at chainages identified by the engineer for 2 years (twice a year) in pre and post monsoon seasons as per the Monitoring Plan given in EMP /as per direction of Environmental Specialist / Environmental Engineer of the Monitoring Consultant	No. of Samples	48	400.00	19,200.00	0.002
2.1.4		Analysis of water quality at locations in the monitoring plan for pH, Turbidity, total solids, turbidity COD, BOD, DO, Chlorides, Hardness, Oil and Grease, TSS, TDS, Total Coliform, Iron, Fluorides, Nitrates, E. coli, Total coliform and faecal coliform as specified in "Standard Methods for Examination of Water and Wastewater" published by WEF, AWWA and APHA as per direction of Environmental Specialist / Environmental Engineer of the Engineer and as per MoEF rate list.	No. of Samples	48	6,000.00	2,88,000.00	0.029
2.1.5	Noise	Monitoring Noise level at Equipment Yards, Sensitive area and Settlements using handheld noise meters at 10 locations at chainages identified by the Engineer as per directions of Environmental Specialist / Environmental Engineer of the Monitoring Consultant for three seasons in a year for 2 years as per the Monitoring Plan given in EMP	Nos.	40	1,500.00	60,000.00	0.006
2.1.6	Soil	Monitoring Soil at 8 locations at chainages identified by the Engineer as per directions of Environmental Specialist / Environmental Engineer of the Monitoring Consultant for twice a year for 2 years as per the Monitoring Plan given in EMP	Nos.	32	2,000.00	64,000.00	0.006
2.1.7	Transportation Cost	Transportation cost for monitoring of noise, air, and water during construction period.	L.S.	-	1,50,000.00	1,50,000.00	0.015

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Item No.	Component	Description	Unit	Quantity	Unit cost (INR)	Total cost (INR)	
						Detail Cost	Crores
2.1.8	Environmental Enhancement		LS		0.00	0.00	0.000
2.2	Operation Stage						
2.2.1	Air	Sampling and monitoring ambient Air Quality and gaseous pollutants as per CPCB Standard Procedures at 5 locations including sensitive area and chainages as per direction by Environmental Specialist of Consultant for three season a year as per the Monitoring Plan given in EMP	No. of Samples	150	2,000.00	3,00,000.00	0.030
2.2.2		Analysis charges of Ambient air from samples collected for parameters as per AAQ Standards Notification, 2009 in consultations and directions of the Consultant and PWD as per MoEF charges.	No. of Samples	150	4,000.00	6,00,000.00	0.060
2.2.3	Water Quality	Collection of grab samples of water quality at 6 locations at chainages identified by the engineer, twice a year in pre and post monsoon seasons as per the Monitoring Plan given in EMP /as per direction of Environmental Specialist / Environmental Engineer of the Monitoring Consultant	No. of Samples	120	400.00	48,000.00	0.005
2.2.4		Analysis of water quality at locations in the monitoring plan for pH, Turbidity, total solids, COD, BOD, DO, Chlorides, Hardness, Oil and Grease, TSS, TDS, Total Coliform, Iron, Fluorides, Nitrates, E. coli, Total coliform and faecal coliform etc. as specified in "Standard Methods for Examination of Water and Wastewater" published by WEF, AWWA and APHA as per direction of Environmental Specialist / Environmental Engineer of the Consultant and as per MoEF rate list.	No. of Samples	120	6,000.00	7,20,000.00	0.072
2.2.5	Noise	Monitoring Noise level at Equipment Yards, Sensitive area and Settlements using handheld noise meters at 5 locations at chainages identified by the Engineer as per directions of	Nos.	50	1,500.00	2,25,000.00	0.023

**FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT**

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/ CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Item No.	Component	Description	Unit	Quantity	Unit cost (INR)	Total cost (INR)	
						Detail Cost	Crores
		Environmental Specialist / Environmental Engineer of the Monitoring Consultant for once a year as per the Monitoring Plan given in EMP					
2.2.6	Soil	Monitoring Soil at 4 locations at chainages identified by the Engineer as per directions of Environmental Specialist / Environmental Engineer of the Engineer for once a year as per the Monitoring Plan given in EMP	Nos.	40	2,000.00	80,000.00	0.008
2.2.7	Transportation Cost	Transportation cost for monitoring of noise, air, and water during operation period.	L.S.	-	5,00,000.00	5,00,000.00	0.050
TOTAL MONITORING COST						62,94,200.00	0.629
3	MISCELLANEOUS COST						
3.1	Training	Training	L.S.	-	2,50,000.00	2,50,000.00	0.025
3.2	Advocacy and Policy Making	Holding meetings for policy planning and subsequent review meetings with Revenue Department, Forest Department, local representatives, NGOs, etc. regarding development controls.	Year	12	15,000.00	1,80,000.00	0.018
3.3	Administrative Charges including logistics	Maintenance of vehicle with the Environment Cell, Data processing, administrative support, stationery etc.	Month s	12	35,000.00	4,20,000.00	0.042
3.4	Miscellaneous Items	Digital Camera for the Environment Cell	No.	1	15,000.00	15,000.00	0.002
TOTAL MISCELLANEOUS COST						8,65,000.00	0.087
TOTAL COST						44,01,71,700.00	44.017
Contingency @ 5% on Total Environmental Cost						22008585.00	2.201
GRAND TOTAL						462180285.00	46.218
Rate per kilometres						5282060.40	0.53



10 SUMMARY AND CONCLUSION

10.1 Introduction

The Government of India has taken up development of Economic Corridors, Inter Corridors, Feeder Corridors and National Corridors to improve the efficiency of Freight Movements in India under Bharat Mala Pariyojana.

National Highway Authority of India has been appointed as Nodal Agency for proposed development of Urga Pathalgaon section of NH-130A which is a part of Raipur - Dhanbad Economic Corridor under Bharat Mala Pariyojana, Lot 3/ Package-1.

10.2 Description of the Project

The Project highway is a Greenfield Highway alignment with 4 lane configuration dual carriageway with central raised median and shall follow the 4 lane standards as per IRC SP 84-2019.

The Project Road starts from Bhaisma village at Ch. 8/150 of State Highway-04 and terminates near Turua Ama village, 10 km away from Pathalgaon along NH-43 towards Jharkhand border. The total length of the proposed alignment will be 87.535 km.

The proposed alignment runs through nearby villages of Gidhauri, Dongdarha, Dongama, Nonbirra, Srimar, Sakdukanan, Kotmer, Kartala, Champa, Chachiya, Katkona, Jilga, Narkalo, Bayasi, Dharamjaigarh Colony, Ganeshpur, Sisringa, Bhalupakhana, Saskoba, Charkhapara, Tildega, Pathalgaon, Kumekela. bypassing all major/minor built-up areas.

As per seismic zoning map of India, project district falls under Seismic Zone II and III, which is a moderate risk zone.

10.3 Analysis of Alternatives

Detailed analyses of the alternatives have been conducted considering both with and without project scenarios. The proposed development of greenfield highway is likely to have a positive impact on the economic value of the region. However, there are certain environment and social issue, these needs to be mitigated for sustainable development.

Three alternative options were studied for the proposed project and the Option 1 was found out to be most suitable as the forest area diversion for the Project is less in Option 1, there is no Sensitive Feature within the required RoW further, the Option 1 will impact least number of settlements.

10.4 Baseline Environmental Profile

10.4.1 Physical Environment

CLIMATOLOGY

The proposed alignment area is endowed with sub-tropical monsoon climate with three distinct seasons i.e., summer, monsoon, and winter.

The summer extends from March to mid-June. The southwest monsoon starts from June and continues till middle of September. Winter season spreads from October and lasts till end of February.

PHYSIOGRAPHY

The landform along the stretch of project road is plain to undulating with highly varying elevations as low as 261m amsl to 582m amsl.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

GEOLOGY

Project region is dominantly occupied by Indo-Gangetic plain region. The geological structure of the region is formed of Alluvium rocks of Recent period containing deposits of clay, silt, sand, and loose gravels.

LAND- USE PATTERN

The land use within 500 m buffer of the proposed project stretch is mainly agricultural land with 50.7% followed by area cover with patches of natural vegetation including forest while, in 10 km buffer of the proposed project stretch, forest is the major land cover.,

DRAINAGE

The proposed alignment crosses Major Rivers/canals at the following locations –

- Pansari Nala at 82+560.
- Kortimasara Nala at 89+165.
- Chuiya Nadi at 99+825.
- Maand River at 106+375.
- Chikatwani Nala at 120+470.
- Bharari Nala at 145+500.

SOIL QUALITY

The soil of the Project affected area is found to be Silty to Silty Clay in nature. Soil samples were collected from 08 representative locations for assessment of soil characteristics of the proposed alignment. pH of soil in the study area were found in the range between 7.34 to 8.06. Conductivity of the soil ranges from 99 to 208 $\mu\text{S}/\text{cm}$. Since the EC value is less than 4000 $\mu\text{S}/\text{cm}$, the soil is saline in nature.

AMBIENT AIR QUALITY

Ambient air quality monitoring was carried out at 08 locations along the proposed alignment at a frequency of two days per week at each location for three months. The results indicates that overall concentrations of all air quality parameters i.e., PM10, PM2.5, SO₂, NO₂ and CO were observed within the standards specified in the NAAQS in absence of any major pollution generation activities near study area.

AMBIENT NOISE QUALITY

Noise monitoring has been carried out once during the entire study period at 08 locations along the alignment for a period of 24 hours. Day and night-time Leq has been computed from the hourly Leq values as per standards. The Noise quality results indicates that all noise level values during daytime and night-time were within prescribed limits as per CPCB Guidelines.

WATER QUALITY

SURFACE WATER

The pH value of the collected ground water in the study area found to be in the range from 7.14 to 7.72 and conductivity observed in the range 276 $\mu\text{S}/\text{cm}$ to 342 $\mu\text{S}/\text{cm}$. TDS values were observed to be in range from 188 mg/L to 224 mg/ L. Total alkalinity is found to be the range from 60 mg/L to 175 mg/L and Total Hardness ranges from 60.0 to 130 mg/L. The values of Chloride, Fluoride, Nitrate and Sulphate etc, were observed within permissible limit. Most of the metals are observed to be within the detection limit while, total Coliforms were absent.



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

GROUND WATER

The pH value of the collected ground water in the study area found to be in the range from 5.9 to 7.34 and conductivity observed in the range 90 $\mu\text{S}/\text{cm}$ to 987 $\mu\text{S}/\text{cm}$. TDS values were observed to be in range from 58 mg/L to 612 mg/L. Total alkalinity is found to be the range from 14.0 mg/L to 320 mg/L and Total Hardness ranges from 20.0 to 430 mg/L. The values of Chloride, Fluoride, Nitrate and Sulphate etc, were observed within permissible limit. Most of the metals are observed to be within the detection limit while, total Coliforms were absent.

10.4.2 Biological Environment

PROTECTED AREAS

Bird International's IBAT (Important Bird Area Tool) was used to check the presence of any Eco sensitive biodiversity area within the Project study area. It is found that no eco-sensitive zone such as National Park, Wildlife Sanctuary, Bio-sphere Reserve of Wildlife sanctuary or national park located within 10 km from project stretch. However, the proposed alignment passes through the Elephant Corridor.

FOREST

There will be diversion of 169.0231 ha of forest land for the Project therefore, necessary clearances shall be obtained as per requirements under Forest (Conservation) Act, 1980.

FLORA AND FAUNA

The natural vegetation of project study area includes Sal, Teak, Banyan, Mahua, Neem, Peepal, Arjuna, Kadam, Sal, Amaltas, Bargad, Jamun, Fig, Palm, Sagwan, Tamarind, Mango and Ber etc. The Fauna in the study area comprises of Jackals, Monkeys, Deer, Buffalos, Barasinghas, Nilgai, Sambar, Chinkara, Dhole (Wild Dog), Striped Hyena, Muntjac, Wild Boar, Flying Squirrel, Porcupine, Pangolin, and crocodiles.

The commonly found reptiles in the study area are Monitor Lizard, Indian Chameleon, Common Krait, Indian Rock Python, Cobra, Russell's Viper etc.

The species of avifauna include partridges, cattle egret, pond heron, babblers, parrots and parakeets, blue jay, wagtails, quails (both black and grey varieties), Bulbul, Koel, Fly catchers, Woodpeckers, Sun bird and Weaver bird.

10.4.3 Social Environment

CENSUS PROFILE

The Project corridor area comprises of 23 villages of Korba, Raigarh and Jashpur Districts. As per Census of India 2011, the total population of the study area is 210518 in which 104855 (49.81%) are males and 105663 (50.19%) are females. An average gender ratio of the study area is 1078, which shows that the composition of male and female is balanced. 14.11% of population belongs to 0-6 age group. Average literacy rate of the study area is approximately 52.96%, of which male literacy is 62.07% while female literacy rate is 43.92%. The composition of Schedule Caste (SC) in total population is 9.23% and Schedule Tribe (ST) is 65.97%.

- Work Participation Rate of the study area is 56.56% in which males are 60.90% and females are 52.25%, creating a gender gap of 8.65%. Among the total workers 71.59% are main workers and rest 28.41% are marginal worker.
- A total of 108 numbers of project affected families (PAFs) among the categories of titleholders (land and structures losers), squatters, and tenants (non-titleholders) and a

**URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)**

total of 671 project affected persons with 337 (50.22%) males and 334 (49.78%) females are likely to be affected due to the Project.

- Out of the total 108 PAFs, 48 (44.44%) belong to General caste, 13 (12.04%) are OBC, 3 (2.78%) and 44 (40.47%) are ST.
- There are no identified archaeological structures within the Project study area.

10.5 Potential Environmental Impacts

The environmental components are mainly impacted during the construction and operational stages of the Project and must be mitigated for and incorporated in the engineering design. Environmental mitigation measures represent the Project's endeavour to reduce its environmental footprint to the minimum possible. These are conscious efforts from the Project to reduce undesirable environmental impacts of the proposed activities and offset these to the degree practicable. Enhancement measures are project's efforts to gain acceptability in its area of influence. They reflect the pro-active approach of the Project towards environmental management. Slight change in the micro-climate of the area is expected due to heat island effect as unpaved area will be converted into the paved road. However, Impact on the climate conditions from the proposed road project will not be significant in long run as removal of vegetation will be compensated by compensatory plantation.

10.5.1 Impact on Air Quality

There will be rise in PM levels during the construction activities, which shall again be within prescribed limit after the construction activities are over. The level of CO is likely to be increased, however, level shall remain within prescribed standards.

10.5.2 Impact on Noise Levels

The area is likely to experience an increment in noise level due to increase in vehicle density after road strengthening. Construction camp shall be established at least 1000m away from nearest habitation and forest area. Temporary noise barriers should be provided surrounding the high noise generating construction equipment during work near to settlement area. Avenue plantation have been proposed on either side of the highway to control the associated air and noise pollution.

10.5.3 Impact on Water Resources and Quality

The construction and operation of the proposed project roads will not have any major impacts on the surface water and the ground water quality in the area. Design made to avoid physical loss to the water bodies to the extent possible. Contamination to water bodies may result due to spilling of construction materials, oil, grease, fuel, and paint in the construction camp. This will be more prominent in case of locations where the Project Road crosses drains, ponds, etc. Silt fencing shall be provided along the major canals and pond. Oil interceptors are proposed near fuel handling areas.

10.5.4 Impact on Ecology

Nearly 33,685 number of trees in forest are likely to be felled due to the proposed development which will cause temporally loss of micro ecosystem. However, on the long run the impacts will be compensated in terms of compensatory and avenue plantation. The proposed alignment is passing through forests land and diversion of 169.0231 ha forest land is required.



URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

10.5.5 Impact on Land

During the construction of the proposed project, the topography will change due to cuts and fills for project road and construction of project related structures etc. Provision of construction yard for material handling will also alter the existing topography. The change in topography will also be due to the probable induced developments of the Project.

10.5.6 Social Impacts

The Project is a greenfield requiring a total of 707.541 Ha of land is to be acquired for the Project. Out of total 707.541 Ha of land, 2.29 Ha of land is available with NHAI, 162.330 Ha of Government land will be transferred, and 542.921 Ha of private land will be acquired. In total, 23 villages will be affected due to land acquisition.

10.5.7 Impact on Properties

Nearly 110 structures, including 106 private structures, will be affected due to the proposed Project Road. As per the survey, total 108 household comprising of 671 people will be affected due to the Project.

10.6 Mitigation Avoidance and Enhancement Measures

Mitigation and enhancement measures have been planned for identified adverse environmental impacts. The construction workers camp will be located at least 1000 m away from nearby habitations. Hot mix plants, batching plants, etc. will also be located more than 1000 m away from habitations and towards downwind directions. Existing cross drainage structures have been planned to maintain for proper cross drainage. To compensate negative impacts on flora due to cutting of trees the Project plans compensatory plantation in the ratio of 1:10 i.e., for every tree to be cut, ten trees will be planted.

The Project will also provide environmental enhancement measures to improve aesthetics and shade in the Project area. The planned environmental enhancement measures will include avenue plantation in available clear space within RoW, enhancement of water bodies etc. To avoid contamination of water bodies during construction Silt Fencing and Oil Interceptors at storage areas and at construction yard have been proposed. The affected households shall be compensated as per the entitlement matrix prepared according to Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013.

10.7 Institutional Requirements and Environmental Monitoring Plan

The responsibility of implementing the mitigation measures lies with environment team duly appointed by the Contractor/Concessionaire. The overall supervision of Environmental monitoring works during construction and operation stage shall be carried out by NHAI with the help of the Monitoring Consultant / Supervision Consultant / Authority Engineer. To mitigate the potential negative impacts of proposed development and measurement the performance of mitigation measures, an Environmental Monitoring and Management Plan is developed. The formulation of an appropriate environmental monitoring plan and its diligent implementation are keys to overall success for the Project.

10.8 Environmental Monitoring

Regular monitoring of important and crucial environmental parameters is of immense importance to assess the status of environment during operation of the proposed project. With the knowledge



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

of baseline conditions, the monitoring program can serve as an indicator for any deterioration in environmental conditions due to operation of the Project and suitable mitigating steps could be taken in time to safeguard the environment. Monitoring is as important as that of control of pollution since the efficacy of control measures can only be determined by monitoring.

10.9 Additional Studies

The various additional studies have been undertaken for the Project including Public Consultation, Risk assessment and Social Impact Assessment/ R&R Action Plans.

Public consultation is a continuous process and has been carried out at all stages throughout the Project Road. To ascertain the views of the affected families to be recorded and has been included in the Social Impact Assessment report.

10.10 Project Benefits

The benefits of the Project are multi-fold. The Project will substantially benefit the commuters travelling between Urga and Pathalgao. The current route between Urga and Pathalgao measures about 106 km which shall be reduced to 87.535 km i.e., 17.5% reduction.

In addition to the improved connectivity, proposed development is expected to generate direct employment for about 1500 persons both skilled and unskilled labour during construction phase of the Project and considerable indirect employment opportunities in form of transportation of construction materials, greenbelt development, ancillary facilities like canteens, community kitchens etc.

10.11 Environment Management Plan

Project specific environmental management plan have been prepared for ensuring the implementation of the proposed measures during construction phase of the Project, implementation, and supervision responsibilities. The cost for environmental management during construction has been indicated in EMP. The Project impacts and management plan suggested thereof are summarized in Environment Impact and Management Matrix provided in **Table** below.

Table 10-1: Environment Impact and Management Matrix

Particulars	Stages	Potential Impacts	Mitigation Measures
Physiographic Environment			
Topography	Preconstruction and Construction	<ul style="list-style-type: none">Slight changes are expected due to development of the roadImpacts are marginal, but permanent.	<ul style="list-style-type: none">Proper planning to keep the land reformation upto bare minimumNo new quarry for the Project
Geology	Preconstruction and Construction	<ul style="list-style-type: none">Impacts are moderate because of extraction of sand	-
Climate			
Temperature / Rain fall / Humidity	Preconstruction and Construction	<ul style="list-style-type: none">Tree felling will have an impact of micro-climate of the areaHeat island effect due to increase in paved roadsLow spatially restricted short-term impact	<ul style="list-style-type: none">Compensatory plantation in 1:10 ration of the trees to be cutWith the proposed avenue plantation scheme, the micro climate of the Project corridor will be smoothed
Land			



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Particulars	Stages	Potential Impacts	Mitigation Measures
Loss of Other Land	Design, Preconstruction and Construction	<ul style="list-style-type: none">Loss of Property and Livelihood	<ul style="list-style-type: none">Compensation as per LARR, 2013
Induced Development	Preconstruction and Construction	<ul style="list-style-type: none">Insignificant change in the land use pattern	<ul style="list-style-type: none">Civil authorities to plan and guide any induced development under regulatory framework
Soil			
Soil Erosion	Preconstruction, Construction and Operation	<ul style="list-style-type: none">In Road slopes and spoilsErosion in excavated areas	<ul style="list-style-type: none">Embankment protection through pitching and turfingRegular water sprinkling in excavated areas
Contamination of Soil	Preconstruction, Construction and Operation	<ul style="list-style-type: none">Scarified bitumen wastesOil and diesel spillsEmulsion sprayer and laying of hot mixProduction of hot mix and rejected materialsResidential facilities for the labour and officers	<ul style="list-style-type: none">Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016Oil Interceptor will be provided in storage areas for accidental spill of oil and dieselRejected material to be laid as directed by monitoring consultant.Septic tank to be constructed for waste disposal.
Water			
Impact on Water Resource	Design, Preconstruction, Construction and Operation	<ul style="list-style-type: none">Depletion of ground water rechargeContamination from fuel and lubricants and waste disposal in camp areaContamination of surface water system due to run-off from road construction area	<ul style="list-style-type: none">Provision of Storage/harvesting structure of water, wherever feasibleOil Interceptor and Septic tank in construction campEnforcement of Hazardous and Other Wastes (Management and Trans-boundary Movement) Rules, 2016Both side drain facility to suitably divert the run-off from roads.
Air			
Dust generation	Preconstruction and Construction	<ul style="list-style-type: none">Shifting of utilities, removal of trees and vegetation, transportation of material	<ul style="list-style-type: none">Regular Sprinkling of WaterFine materials to be completely covered, during transport and stocking.Hot mix plant to be installed in down wind direction with at least 1000m distance from nearby settlement.Regular monitoring of particulate matter in Ambient Air



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Particulars	Stages	Potential Impacts	Mitigation Measures
Gaseous pollutants	Preconstruction, Construction and Operation	<ul style="list-style-type: none"> Operation of Hot mix plant and vehicle operation for material transportation 	<ul style="list-style-type: none"> Air pollution Norms will be enforced. Only PUC certified vehicle shall be deployed Labourers will be provided with mask. Regular gaseous pollution monitoring in ambient air
Ambient air quality	Operation	<ul style="list-style-type: none"> Air pollution from traffic CO level is likely to increase 	<ul style="list-style-type: none"> Compliance with statuary regulatory requirements
Noise			
Pre-Construction Activity	Pre-Construction	<ul style="list-style-type: none"> Man, material and machinery movements Establishment of labour camps, onsite offices, stock yards and construction plants 	<ul style="list-style-type: none"> No Horn Zone sign, Speed Barriers near sensitive receptors Camps will be setup more than 1000m away from settlements.
Construction Activity	Construction	<ul style="list-style-type: none"> Operation of high noise equipment like hot mix plant, diesel generators etc. Community residing near to the work zones. 	<ul style="list-style-type: none"> Camp will be setup more than 1000m away from the settlements, in down wind direction. Noise pollution regulation to be monitored and enforced.
Operation Stage	Operation	<ul style="list-style-type: none"> Indiscriminate blowing of horn near sensitive area 	<ul style="list-style-type: none"> Restriction on use of horns No Horn Zone sign.
Ecology			
Flora	Preconstruction, Construction	<ul style="list-style-type: none"> Loss of vegetation cover Felling of 33,685 nos. of trees 	<ul style="list-style-type: none"> Felling of only unavoidable trees Compensatory Plantation in the ratio of 1:10
Fauna	Preconstruction, Construction and Operation	<ul style="list-style-type: none"> Loss of insect, avian and small mammalian species due to felling of trees Impact on elephant crossings Accidental run over 	<ul style="list-style-type: none"> Compensatory Plantation Speed breaker, Signage and limit in sensitive areas provision of 11 Elephant Under Passes and 01 Elephant Over pass
Social			
Socio Environment	Design, Preconstruction and Construction	<ul style="list-style-type: none"> Loss of Property and Livelihood Loss of CPRs, Religious Structures 	<ul style="list-style-type: none"> Compensation as per LARR, 2013 Relocation of CPRs, Religious Structures to suitable place
Public Health and Road Safety			
Health and safety	<ul style="list-style-type: none"> Preconstruction, Construction and Operation 	<ul style="list-style-type: none"> Psychological impacts on project affected people Migration of worker may lead to sanitation problem creating congenial condition for disease vectors Discomfort arising of air and noise pollution Hazards of accident 	<ul style="list-style-type: none"> Continued consultation with PAPs and the competent authority for speedier settlements of appropriate compensation package and resettlement. Ensuring sanitary measures at construction camp to prevent water borne disease and vector borne disease. Provision for appropriate personal protective equipment like earplugs, gloves



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT

DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

Particulars	Stages	Potential Impacts	Mitigation Measures
			<p>gumboot, and mask to the work force.</p> <ul style="list-style-type: none">Safe traffic management at construction area.Drive slow sign and speed barriers near community facilities like school, hospital, etc.

The total cost of EMP is estimated to be nearly **INR 46.22 crore**.

10.12 Conclusion

Based on the EIA study and surveys conducted for the Project, it can be safely concluded that associated potential adverse environmental impacts can be mitigated to an acceptable level by adequate implementation of the measures as stated in the EIA Report. Adequate provisions shall be made in the Project to cover the environmental mitigation and monitoring requirements, and their associated costs as suggested in the environmental budget. The proposed project should improve trade efficiency and bring economic growth. In terms of air and noise quality, the Project shall bring considerable improvement to possible exposure levels to population.



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

11 DISCLOSURE OF CONSULTANT

11.1 Declaration by Consultant

Declaration by the experts contributing to the preparation of **Final Environmental Impact Assessment Report Development of Economic Corridors, Inter Corridors, Feeder Routes to Improve the Efficiency of Freight Movement in India (Lot-3/Chhattisgarh/Package-1) Under Bharat Mala Pariyojana by M/s National Highways Authority of India. Urga-Pathalgaon Section of NH-130A (Raipur- Dhanbad Economic Corridor)**. The total length of the proposed alignment will be 87.535 km. I hereby, certify that I was a part of the EIA team in the following capacity that developed the above EIA.

Signature

Name of the EIA coordinator Mayank Kumar

Date 05.06.2023

Name of the EIA Consultant / Organization P and M Solution,
C-88, Sector-65, Noida 201301, Uttar Pradesh
NABL Approved Laboratory Haryana Test House and Consultancy Services
QCI/NABET Accredited EIA Consultant at S.No.142 as per List of Accredited consultant Organizations/ (Alphabetically), April 6, 2023.

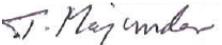
Table 11-1: List of Experts Involved

S. No.	Functional Areas	Name of the Experts	task	Signature & Date
1	Air pollution Monitoring, prevention, and control- AP	Mr. Amit Kumar	<ul style="list-style-type: none">Identification of Air Quality Monitoring NetworkSupervision of ambient air quality monitoringReview of primary air quality monitoring report and analysisAddressing air quality issues in EIA Report and suggesting mitigation measures for impacts due to air pollution and review.Review and analysis of primary meteorological data	
2	Water pollution Monitoring, prevention, and control- WP	Mr. Rahul Kumar	<ul style="list-style-type: none">Identification of water sampling locations, their time and frequency pertaining to site conditionsCounter checking of analysis of data by literature study and consultation with local people and concerned departmentsIdentification of water quality by analysis report study and detection of	



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Functional Areas	Name of the Experts	task	Signature & Date
			<p>potential hazards due to developmental activity</p> <ul style="list-style-type: none">• Checking of water availability by literature study and by interacting concerned Govt. Officials like GWB and irrigation dept.	
3	Solid and Hazardous waste- SHW	Hussain Ziauddin & Amit Kumar	<ul style="list-style-type: none">• Estimated the waste generation quantity due to various construction activity• Devising measures to minimize wastes; recycle and disposal• Identification methods of recycling and reuse Ensured incorporation of the same into the EIA report.	
4	Socio-Economic- SE	Mr. Abhay Nath Mishra	<ul style="list-style-type: none">• Design and develop format/questionnaire for baseline survey, social changes arising out of development projects and assessment of data so collected.• Evaluation of socio-economic status of tribal/ non- tribal areas• Assessment of social impact• Collection of secondary information Survey tool design• Reconnaissance study, transect walk.• Community participation, Mitigation plan• Stakeholder consultation	
5	Ecology and Biodiversity- EB	Manoj Kumar Pandey	<ul style="list-style-type: none">• Visited site to identify the ecological condition of project area by direct field study and identification of major floral and faunal species• Identification of potential impact due to the project interventions and developing mitigation measures by direct field study and consulting the stakeholders like forest and wildlife officials, local people etc.	
6	Hydrology, Ground water and water conservation- HG	Mr. Tapan Majumdar	<ul style="list-style-type: none">• Identification of the water sources and drainage pattern• Analyze them to identify the likely impacts	



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Functional Areas	Name of the Experts	task	Signature & Date
			<ul style="list-style-type: none">• Devise mitigation measures and assisted in preparation of the EIA report.	
7	Geologist-GEO	Mr. Tapan Majumdar	<ul style="list-style-type: none">• Identification of nature of geology of the project area• Identification of areas likely to be affected by soil erosion• Devised protection measures for embankment slope and water bodies	<i>T. Majumdar</i>
8	Soil Conservations- SC	Jatin Kumar Srivastava	<ul style="list-style-type: none">• Identification of soil quality and soil type for establishing the baseline conditions• Assessing the impact on soil due to various activities of the project• Suggest mitigation measures to control the adverse impact• Preparation of report for incorporation in the EIA	<i>Jatin Kumar</i>
9	Meteorology, Air quality and modelling and prediction- AQ	Mr. Rahul Kumar	<ul style="list-style-type: none">• Analysis of air quality data, meteorological data, traffic data etc. as per the requirements of Pollution Dispersion model (Caline 3)• Assessment of secondary data requirements for modeling, collection of secondary data like mixing height, stability class etc.• Predict air quality using pollution dispersion model (Calaine 3)• Interpretation, analysis and presentation of predicted results of pollution dispersion modeling• Review and finalization of report.	<i>Rahul Kumar</i>
10	Noise and Vibration- NV	Jatin Kumar Srivastava	<ul style="list-style-type: none">• Identification of Noise Quality Monitoring Network and noise sensitive location along the project stretch• Supervision of ambient noise quality monitoring• Review of noise quality monitoring report• Addressing noise related issues in EIA report and suggesting measures for impacts due to noise pollution.	<i>Jatin Kumar</i>



FINAL ENVIRONMENTAL IMPACT ASSESSMENT REPORT
 DEVELOPMENT OF ECONOMIC CORRIDORS, INTER CORRIDORS, FEEDER ROUTES
 TO IMPROVE THE EFFICIENCY OF FREIGHT MOVEMENT IN INDIA (LOT-3/
 CHHATTISGARH/ PACKAGE-1) UNDER BHARATMALA PARIYOJANA.

URGA-PATHALGAON SECTION OF NH-130A (RAIPUR- DHANBAD ECONOMIC CORRIDOR)

S. No.	Functional Areas	Name of the Experts	task	Signature & Date
			<ul style="list-style-type: none"> • Analysis of noise quality data, traffic data etc. as per the requirement of mathematical model of Dhwani pro. Interpretation, analysis, and presentation of predicted results. 	
11	Land Use- LU	Mrs. Poonam Kumari Mangalam	<ul style="list-style-type: none"> • Identification and collection of satellite images and other associated maps for the project area • Creation of GIS data base and processing of satellite imageries • Devised measure to save sensitive and productive land uses by suggesting option of realignment, bypass, and eccentric widening. • Analysis of land use map and incorporation of land use details into EIA 	
12	Risk & Hazard - RH*	Dr R. K. Tewari	<ul style="list-style-type: none"> • Identification of the potentially hazardous material and events that might occur during various phases of the project. • Devising contingency plan for each type of hazard • Incorporation of the same in the EIA report 	

11.2 Declaration by the Head of the Organization

I, Rahul Kumar, hereby, confirm that the above-mentioned experts prepared the Final Environmental Impact Assessment Report Development of Economic Corridors, Inter Corridors, Feeder Routes to Improve the Efficiency of Freight Movement in India (Lot-3/Chhattisgarh/Package-1) Under Bharat Mala Pariyojana by M/s National Highways Authority of India. Urga-Pathalgaon Section of NH-130A (Raipur- Dhanbad Economic Corridor). The total length of the proposed alignment will be 87.535 km. I also confirm that I shall be fully accountable for any misleading information mentioned in this statement.

Name: Rahul Kumar

Designation: CMD

Name of the EIA Consultant Organization: P and M Solution, C-88, Sector-65, Noida 201301, Uttar Pradesh

NABET Certificate No. & Issue Date: S.No.142 as per List of Accredited consultant Organizations/ (Alphabetically), April 6, 2023.