PRE-FEASIBILTY REPORT (PFR)

for

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) AND ENVIRONMENTAL MANAGEMENT PLAN (EMP)

for

Proposed New National highway -NH-965D (Inter Corridor Route of Bharatmala Project Route 2 starting from Lonand, in Satara district to Kedagaon, in Pune district approximately 51.375 km)

Submitted by

NATIONAL HIGHWAYS AUTHORITY OF INDIA

(Ministry of Road Transport & Highways Government of India)

1. Executive Summary

The proposed project is a part of the Bharat Mala Project which has been envisaged as an umbrella program under the Ministry of Road Transport and Highways. The project involves constructions or improvement of national highways/ newly declared National Highways with an aim to improve road connectivity to border areas, ports, backward areas, religious and tourist sites. The project has identified 44 economic (freight) corridors, inter-corridors and feeder-routes for development.

The Bharatmala Project consists of connecting National Highways by improvement of State Highways in 3 states viz.

- Telangana – 2 packages
- Madhya Pradesh – 7 Packages
- Maharashtra – 5 Packages

Out of 5 packages in Maharashtra, there are 3 Inter Corridor stretches & 2 Feeder Routes. The details are as follows:

Sr. No	Route	Stretch	Start & End locations of Corridor	Length in km (approx.)
1	Inter Corridor	Banda – Madhkhol – Sankeshwar section	Banda - Sankeshwar	103.60 km
2	Inter Corridor	Sangamner – Nira – Pune – Kedgaon section	Lonand - Kedgaon	51.375 km
3	Inter Corridor	Devmogra – Shree Mangal Harchand Nagar – Patan	Songir-Nandurbar-Visarwadi	114.50 km
4	Feeder Route	Nandur Shingote – Ahmednagar section	Kolhar – Nandur Shingote	48.70 km
5	Feeder Route	Ulwe – Raigad section	Padeghar – Barapada(JNPT)	26.50 km

The project corridor is proposed for development to 4-lane access-controlled roads depending upon traffic and the Right of Way available. In this regard, NHAI has been entrusted with the assignment of Development of Economic Corridors, Inter-Corridors, Feeder Routes and Coastal Roads primarily to improve freight movement in the Country. NHAI has invited proposal from Technical consultants for carrying out detailed project report.

Bharatmala Route 2:

The Pre-feasibility Report is for Route 2 (Lonand to Kedagaon) of approximately 51.375 km length, which passes through Satara and Pune District. The alignment passes through approximately 21 villages.

Components of the Project

- The project corridor is proposed for development to 4 - lane access-controlled roads depending upon traffic and the Right of Way available;
- Provision of basic amenities like toll plazas, administrative buildings, rest areas, etc., and other ancillary structures;
- Three bypasses are proposed at Lonand, Nira and Morgaon and these proposed bypasses will be 2+2 lane, access-controlled road, with service roads on either side;
- Avenue plantation shall be provided as per Green Highway (Plantation and Maintenance) policy and Green Highways (Plantation Trans-plantation beautification and Maintenance) policy 2015.

Need and Importance of the Project:

Cities have concentrated educational infrastructures, employment opportunities, skilled work force, financial independence and the infrastructure to keep the demand-supply cycle intact. Thus, for a young developing nation, exposure of the youth to the industries and business opportunities in the cities plays a very important role in deciding the future and its demography. Transport infrastructure forms the backbone of a country's economy and provides a vital linkage between the urban and the rural areas.

- The project corridor is one of the identified inter-corridor route which interlinks the different Highways.
- The improvement will especially speed up the freight movement and provide a better access to freight vehicles to the Lonand MIDC situated in Mariachiwadi.
- Connectivity with the remote and sensitive areas will enhance, it will also ensure faster road vehicular and train movement and also reduce accidents.
- It also connects the rural areas to better prospects of medical support for humans as well as cattle. Apart from that, it promises to revive the agriculture, tourism, education in and around the district.
- Temporary employment generation
- An important aspect which may not be always thought about is the frequency and impact of accidents. Improving highway geometry and widening it from 2-lane to 4-lane will reduce probability of accidents.
- The Project will substantially reduce the existing transport bottleneck to trade and will foster regional economic cooperation, especially for the Lonand MIDC area.

Thus, this will not only reduce travel time but also improve the district's economic growth. The entire region will be benefitted from the Project, while the project area will gain through economic development and increased access to markets and social services.

2. Introduction of the Project / Background information

i. Identification of Project and Project Proponent

Project name: Proposed New National highway -NH-965D (Inter Corridor Route of Bharatmala Project Route 2 starting from Lonand, in Satara district to Kedagaon, in Pune district approximately 51.375 km) in the state of Maharashtra.

Project Proponent: National Highway Authority of India (NHAI)

ii. Brief Description of nature of the Project

Proposed New National highway -NH-965D (Inter Corridor Route of Bharatmala Project Route 2 starting from Lonand (Ch 0+000) in Satara district and ends at Kedagaon (Ch 51+375) in Pune district approximately 51.375 km) 4-lane access-controlled roads from 2-lane, depending upon traffic and the Right of Way available. This proposed alignment passes through two districts viz Satara district and Pune district in the state of Maharashtra and is a project by M/s. National Highway Authority of India, PIU Kolhapur.

There are three bypasses proposed along the alignment, at village Morgaon, Nira and Lonand. The ROW of the bypass is 60 m and the bypass are proposed to be upgraded into 2 + 2 Lane, access-controlled road, with service roads on either side.

The proposed project passes through 21 villages (approx.), namely Lonand– Nira– Morgaon– Supe– Kedagaon. The part of proposed expansion of State Highway 118 is abutting Mayureshwar Wildlife Sanctuary at village Supe and another part of the project alignment is passing through 9 Ha of forest area near Brahmandara village.

Village
Lonand
Padegaon
Pimpare Bk
Nira
Shivathkar (Nira) Ct
Gulunche
Khandobachi Wadi
Bramhandara
Chaudharwadi
Modhave
Murti
Morgaon
Khandukhairewadi
Bhondvewadi

Kalkhairewadi
Kutwalwadi
Supe
Padvi
Deulgaon Gada
Boripardhi- Kedagaon

There are three bypasses proposed along the alignment, at village Lonand, Nira and Morgaon. The bypass alignments run through the side with minimum habitation to keep the bypass length optimum. At some places the alignment passes straight through some of the areas so as to meet the design speed, hence the curvature is avoided. The alignment also passes through 9 Ha of forest area, near Brahmandara and Part of the alignment is abutting the Mayureshwar Wildlife Sanctuary at village Supe village.

iii. Need for the Project and its importance to the Country and or region

This projected corridor interlinks different State & National Highways. The improvement will speed up the freight movement and provide a better access to vehicles as a link to the National Highways. Apart from that, it promises to revive the agriculture, tourism, education as well as better connectivity in and around the district. Thus, this planning will not only reduce travel time but also improve the district's economic growth.

The projected corridor has proposed 2+2 lane, access-controlled bypasses with service roads on either side at major villages Lonand, Nira and Morgaon where the habitation is excessive. This will avoid traffic congestions. Another important aspect to be considered is the frequency of accidents. The widening and efficient planning on the geometrical aspects of the highways may reduce the probability of accidents.

The entire region will be benefitted from the Project, while the project area will gain through economic development and increased access to markets and social services.

iv. Demand Supply Gap

Not Applicable

v. Imports vs. Indigenous production

Not Applicable

vi. Export Possibility

Not Applicable

vii. Domestic / Export Markets

Not Applicable

viii. Employment generation (Direct and Indirect) due to the project

Highway construction broadly encompasses the process of construction and maintenance, including the design, contracting, implementation, supervision, and maintenance of highways and related structures, such as bridges and interchanges. The areas covered includes public works, private contracting of civil works, and labor-based construction techniques. For this purpose, 200 labours shall be employed per day.

Direct employment generation: During the construction phase manpower will be needed to take the part in various project activities. Skilled, semi-skilled and unskilled labors, will likely to get work. In the post construction phase, it is expected that the project will provide social benefits to local people in terms of direct employment by way of better commercial and industrial development of the area.

Indirect Employment: The project shall also induce indirect employment generation for cleaners, guards, local vendors, operation and maintenance workers etc. Local vendors, construction material traders, electrician, plumbers etc. will be benefitted through employment generated during construction and maintenance phase.

3. Project Description

i. Type of project including interlinked and interdependent projects, if any.

Not Applicable

ii. Location (map showing general location, specific location and project boundary and project site layout) with coordinates

Map attached as **Annexure 1**

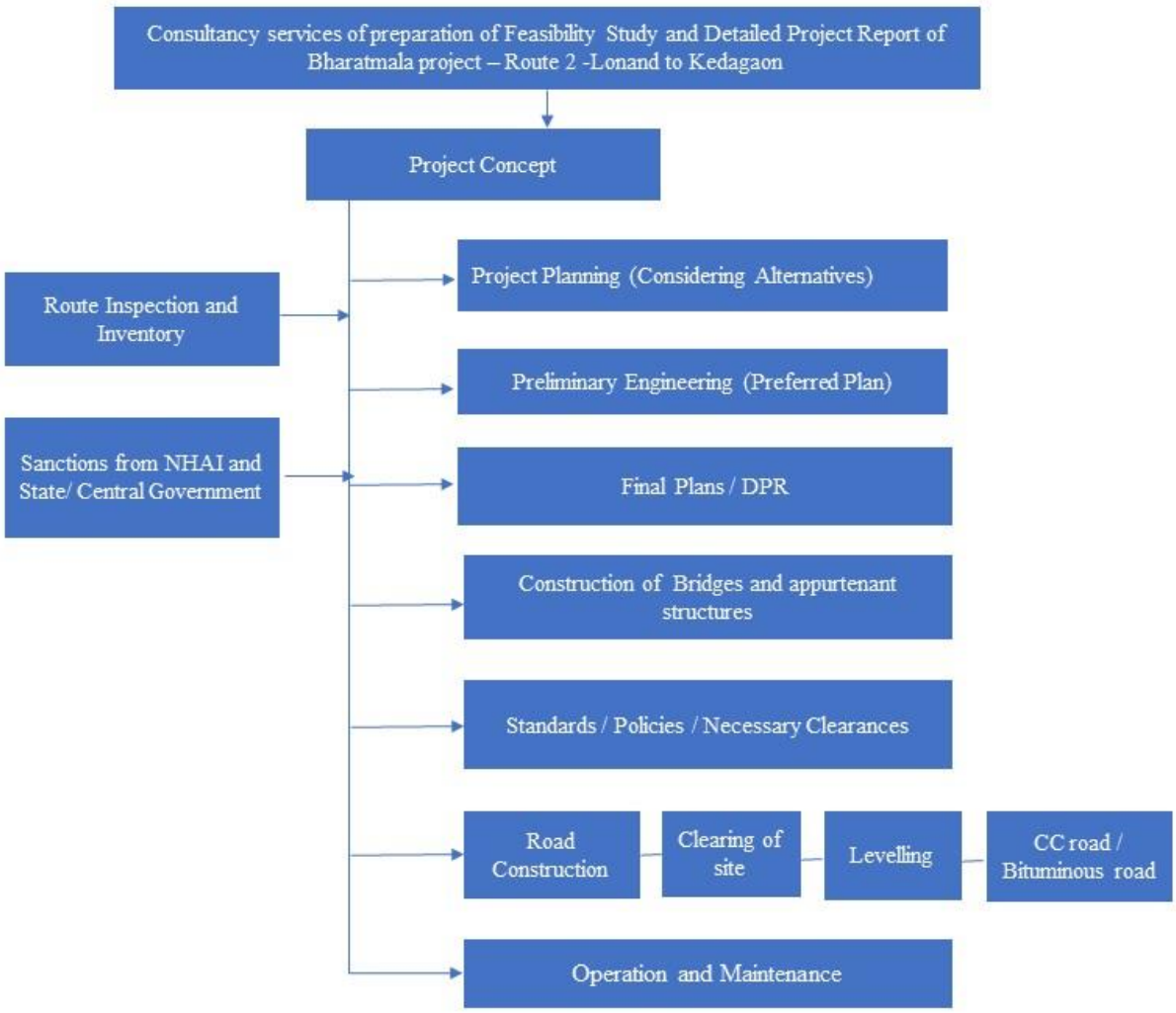
iii. Details of alternative sites considered and the basis of selecting the proposed site, particularly the environmental considerations gone into should be highlighted.

This PFR is prepared as per selected alignment. Comparison and detailed report on alternative alignment analysis will be furnished in EIA.

iv. Size of magnitude of operation

The total stretch of proposed route 2 of Bharatmala is 51.375 km (approx.) starting from Lonand in Satara District and ends at Kedagaon in Pune District. The Right of Way (ROW) proposed is 60 m with 4 lane (2+2) carriageway.

v. Project description with process (a schematic diagram / flowchart showing the project layout, components of the project etc. should be given.)



vi. Raw material required along with estimated quantity, likely source, marketing area of final product/s, Mode of transport of raw Material and Finished Product.

The material requirement during the construction phase of the project for a period of 24 months in broad view per kilometer is as below:

- Aggregate: 794568 (CUM)
- Steel: 6245 (MT)
- Cement: 51207 (MT)
- Bitumen: 17065 (MT)

The highway construction will require minor minerals like stones, gravel, ordinary clay, ordinary sand, limestone, boulders, kankar, murum, brick earth, bentonite, road metals. As per MINES AND MINERALS (DEVELOPMENT AND REGULATION) ACT, 1957, excavation of minor minerals during construction of roads shall be executed after prior permit.

vii. Resource optimization/ recycling and reuse envisaged in the project, if any, should be briefly outlined.

NA

viii. Availability of water its source, Energy/ power requirement and source should be given.

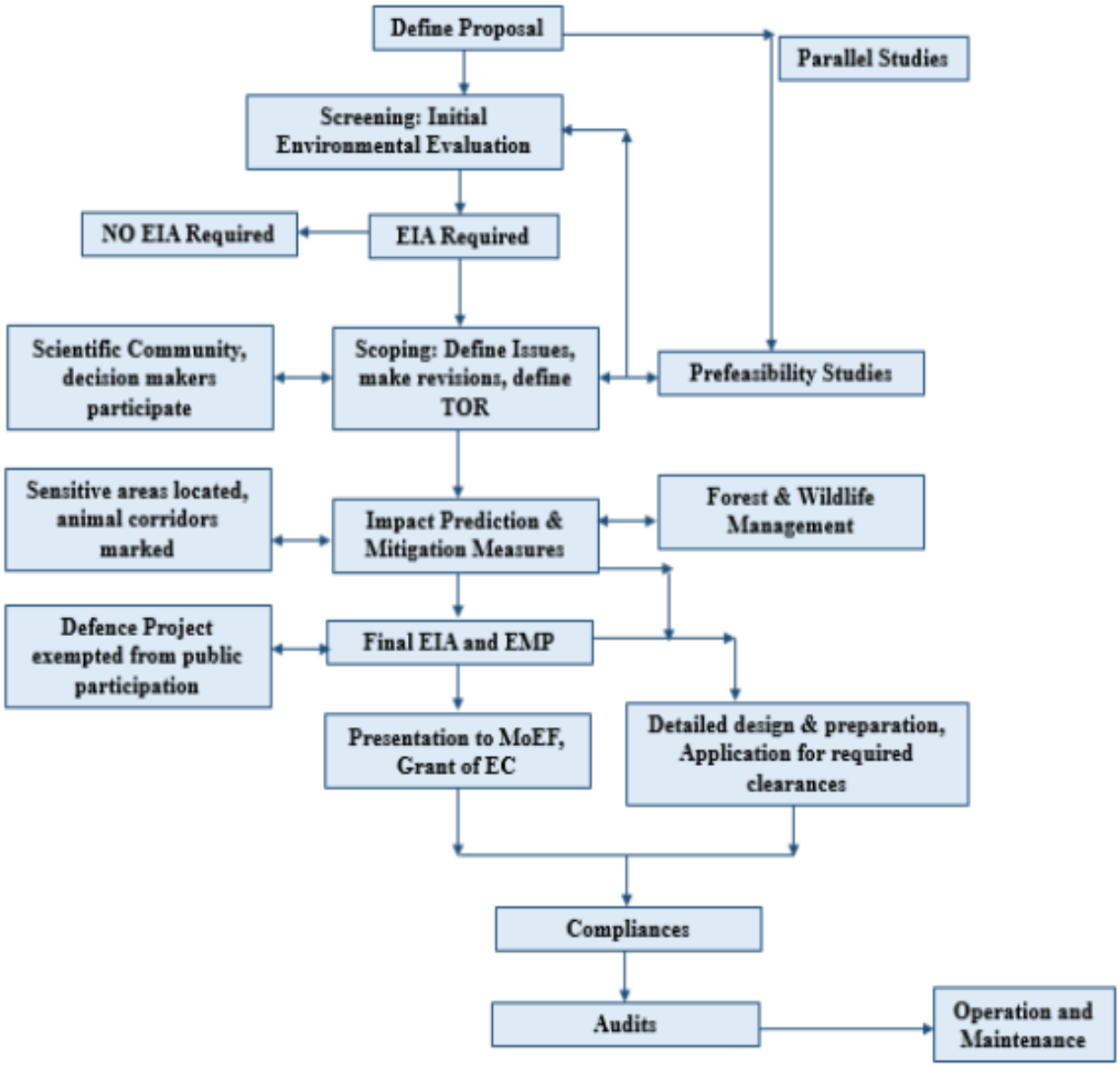
Water: Water will be purchased. Details will be furnished in EIA report.

Power: LSD D.G sets shall be used for power for onsite construction sites, wherever grid power supply is not available.

ix. Quantity of wastes to be generated (liquid and solid) and scheme for their Management/disposal.

Wastes generated within the site would be of food items, paints, cement, grit, bitumen, tar, cement, concrete, oil & grease etc. Waste shall be segregated and collected in separate bins and disposed-off according to MoEF&CC regulations.

x. Schematic representation of the feasibility drawing which give information of EIA purpose



4. Site Analysis

The latitude and longitude are 18° 3'31.69"N latitude, 74°10'27.63"E longitude at Lonand end, Satara district and 18° 27' 13.22"N latitude, 74° 22' 42.68"E longitude at Kedagaon end in Pune district.

i. Connectivity

The proposed project passes through several villages- Lonand – Nira – Morgaon – Supe – Kedagaon of Satara and Pune district. Several National Highways and State Highways cross the project alignment.

ii. Land form and land use

The general land use pattern is agriculture. Some of the habitant villages are developed along the project route. There is residential, commercial & institutional development of major villages like Lonand, Nira, Morgaon, Kedagaon, etc. along the road.

The area falling under the proposed Right of Way (ROW) and the proposed bypasses majorly passes through agricultural land, hence there will be permanent change in the landuse from agricultural to non-agricultural land. Near residential areas the landuse will change from private to Government land. Details of Land use breakup will be described in EIA.

iii. Topography

Most of the project road passes through plain terrain, whereas certain sections pass through low hilly terrains. There are major rivers like Nira and Karha and various canals crossing the route.

iv. Existing land use pattern (agriculture, non-agriculture, forest, water bodies (including area under CRZ), shortest distances from the periphery of the project to periphery of the forests, national park, wildlife sanctuary, eco-sensitive areas, water bodies (distance from the HFL of the river), CRZ. In case of notified industrial area, a copy of the Gazette notification should be given.

The area falling under the proposed Right of Way (ROW) and the proposed bypasses majorly passes through agricultural land, hence there will be permanent change in the landuse from agricultural to non-agricultural land. Near residential areas the landuse will change from private to Government land. Details of Land use breakup will be described in EIA. There are several villages and settlements located in the vicinity of the existing route. The proposed project passes through several villages- Lonand – Nira – Morgaon – Supe - Kedagaon.

Table 4-1: Village List

Sr.No.	Village
1	Boripardhi- Kedagaon
2	Deulgaon Gada
3	Padvi
4	Supe
5	Kutwalwadi
6	Kalkhairewadi
7	Bhondvewadi
8	Khandukhairewadi
9	Morgaon

10	Murti
11	Modhave
12	Chaudharwadi
13	Bramhandara
14	Khandobachi Wadi
15	Gulunche
16	Shivathkar (Nira) Ct
17	Nira
18	Pimpare Bk
19	Padegaon
20	Lonand
21	Mariachiwadi

- **Water Bodies**

The project crosses Nira River near Nira village, Karha river near Morgaon Village, and various canals. The project site is bounded by surface water reservoirs within 15 km.

Sr. No	Water body	Average aerial distance in km
1.	Veer Dam	12 km
2.	Tulshi Vrundavan Dam	2.76 km
3.	Warwand Lake	3.30 km
4.	Tambave Dam	5 km

- **Sanctuaries and Wildlife parks:**

The details of eco-sensitive and forest areas noted within 10 km from the project are listed below:

Sr. No	Particulars	Aerial Distance in km
1.	Mayureshwar Wildlife Sanctuary, Supe village	Abutting the proposed alignment

Detailed information shall be furnished in EIA Report.

v. Existing Infrastructure

Majority of the alignment traverse through agricultural areas with intermittent built-up patches at village like Lonand, Nira, Morgaon, Supe, Kedagaon, etc. The built-up patches comprise of settlements, market place, educational institutes, etc.

vi. Soil Classification

Soil profile of the State: The soil status of Maharashtra is residual, derived from the underlying basalts. In the semidry plateau, the black-cotton soil is clayey, rich in iron and moisture-retentive, though poor in nitrogen and organic matter. When re-deposited along the river valleys, the kali

soils are deeper and heavier, better suited for Rabi crops. Farther away, with a better mixture of lime, the morand soils form the ideal Kharif zone. The higher plateau areas have pather soils, which contain more gravel.

- **Satara District**

A variety of soils are found in Satara district ranging from deep black soils of the plains & scarcity zone to shallow, red or reddish-brown soils of sub mountain & western ghat zone. Soils of Satara district are categorized in to 5 types viz., Black (45 percent), Red (5 percent), Alluvial (8 percent), Sandy (12 percent) and Sandy loams (30 percent). *(Source: CGWB report for Satara district 2013*)

- **Pune District**

The soils of the district can be recognized as distinct weathering products of the bed rock which is predominantly compact massive fractured and amygdaloidal basalts of Deccan Trap and can be classified into three classes namely Black, Red and *Murrum*. The black soil in layers of several feet deep is found in eastern parts of Khed, Shirur, Daund, and Purandar blocks and the whole of Baramati and Indapur block. This soil is suitable for Rabi crops such as wheat, gram, jowar, and sugarcane, as it retains moisture for longtime. *Murrum* is shallower and coarser than black soil and is found in western parts of Shirur, Daund, and Purandar blocks. The red soil is found in Junnar, Ambegaon and Khed block bajara, groundnut and chilies are grown in this soil. Soil suitable for paddy is available in Maval, Mulsi, Bhor, Velhe and western parts of Khed, Ambegaon and Junnar blocks. *(Source: CGWB report for Pune district 2013)*

vii. Climatic data from Secondary sources

- **Satara district**

The winter season is from December to about the middle of February followed by summer season which last up to May. June to September is the south-west monsoon season, whereas October and November constitute the post-monsoon season. The mean minimum temperature is 14.40 ^{o} C and mean maximum temperature is 36.8^{o} C at Satara town in the district. (Source: CGWB report for Satara district 2013).

- **Pune district**

The climate of the district is on the whole is agreeable. The winter season is from December to about the middle of February followed by summer season which last up to May. June to September is the south-west monsoon season, whereas October and November constitute the post-monsoon season. The mean minimum temperature is about 12°C and mean maximum temperature is about 39°C. (Source: CGWB report for Pune district 2013).

viii. Social Infrastructure

This existing alignment is passes through villages like, Lonand – Nira – Morgaon – Supe. This villages mainly consist of Residential settlement and people mainly depends upon the agricultural for their income source. The basic social infrastructure of this villages is not well developed along the route. The villages on the proposed route have primary health care facilities, basic education,

markets, police station, transportation, roads etc., but for Higher education and Health Care facilities people have to go main city areas of Satara and Pune Districts.

5. Planning Brief

i. Planning Concept (type of industries, facilities transportation etc.) Town and Country Planning/ Development authority Classification

Not Applicable

ii. Population Projection

Not Applicable

iii. Land use planning (breakup along with green belt etc.)

Landuse change is partially applicable as there is 15-20 m of available Right of Way (ROW) which would require additional land acquisition and also the area falling under the proposed bypasses which majorly passes through agricultural land.

iv. Assessment of Infrastructure Demand (Physical & Social)

Not Applicable

v. Amenities / facilities

The amenities proposed during operation phase are toll plaza, administrative buildings, weighing stations, parking areas & rest areas and office cum residential complex of PIU. The toll plaza location will be selected based on the traffic studies and a study of the existing physical features including the availability of land & designed as per IRC 84.

6. Proposed infrastructure

i. Industrial Area (Processing Area)

The project route is having some industrial project within 5 to 10 km.

1. Jubilant Life Sciences which is 300 m (aerial distance) away from the propose alignment at Nira village.
2. Lonand MIDC near Village Lonand.

ii. Residential Area (Non-Processing Area)

Not Applicable

iii. Green Belt

Avenue plantation shall be provided as per Green Highway (Plantation and Maintenance) policy and Green Highways (Plantation Trans-plantation beautification and Maintenance) policy 2015.

iv. Social Infrastructure

Not Applicable

v. Connectivity

- **Road Infrastructure**

This alignment passes through villages like, Shivthar – Wathar – Lonand – Nira – Morgaon – Supe. The existing structures on the present alignment are minor/ major bridges, culverts, etc. The existing road condition is good and the carriageway ranges between 6-7 m throughout the alignment. The existing ROW (Right of Way) observed is from 15 m to 20 m.

- **Railway Stations**

1. Lonand Railway Station from Lonand: 0.50 km (aerial distance)
2. Nira Railway Station from Nira: 0.50 km (aerial distance)
3. Walha Railway Station from Nira: 11.2 km (aerial distance)
4. Daundaj Railway Station from Modhave: 18.9 km (aerial distance)
5. Jejuri Railway Station from Morgaon: 16.2 km (aerial distance)
6. Kedagaon Railway Station from Kedagaon: 7.2 km (aerial distance)

- **Bus Depots**

1. Lonand State Bus Depot from Lonand MIDC: 2.50 km (aerial distance)
2. Nira Bus Station at Nira village on Nira-Pune road.
3. MSRTC Bus Depot from Morgaon: 0.50 km (aerial distance).
4. Supe Bus Stand at Supe Village.

- **Airport**

Pune International Airport: 60.80 km from Kedagaon (aerial distance)

vi. Drinking Water Management (Source and Supply of Water)

Drinking water will be purchased. Details will be furnished in EIA report.

vii. Sewerage System

Mobile toilets with package STP will be provided for the workers in construction phase. Toilets and STPs shall be provided in the amenities area during the operation phase. Details will be furnished in EIA report.

viii. Industrial Waste management

Not Applicable

ix. Solid Waste management

50 kg of municipal waste is expected to be generated during construction considering 200 labours. During operation phase, the municipal solid waste generated from the amenities proposed along the alignment. Waste management during construction and operational phase shall be done as per Solid Waste Management Rules, 2016.

x. Power Requirement and Supply / Source

Power requirement during construction phase will be met with LSD D.G sets in case of non-availability of electric supply. For operational phase, electrical supply will be used wherever available.

7. Rehabilitation and Resettlement (R & R) Plan:

i. Policy to be adopted (Central/State) in respect of the project affected persons including home oustees, land oustees and landless laborers (a brief outline to be given).

Most of the land coming under the project area is agricultural and cultivated land. The land required for the construction of Bypass will be acquired by NHAI before the commencement of construction work and the R&R plan will be prepared and will be submitted in EIA.

8. Project Schedule & Cost Estimates

i. Likely date of start of construction and likely date of completion:

The project shall start its construction work as and when DPR is finalized and will get Environmental clearance from MoEF&CC. The completion period of the project construction is estimated about 24 months. The anticipated period of completion is in the year 2021.

ii. Estimated project cost along with analysis in terms of economic viability of the project.

The estimated Civil cost of the project is approximately Rs.555.85 Crores.

9. Analysis of proposal (Final Recommendations)

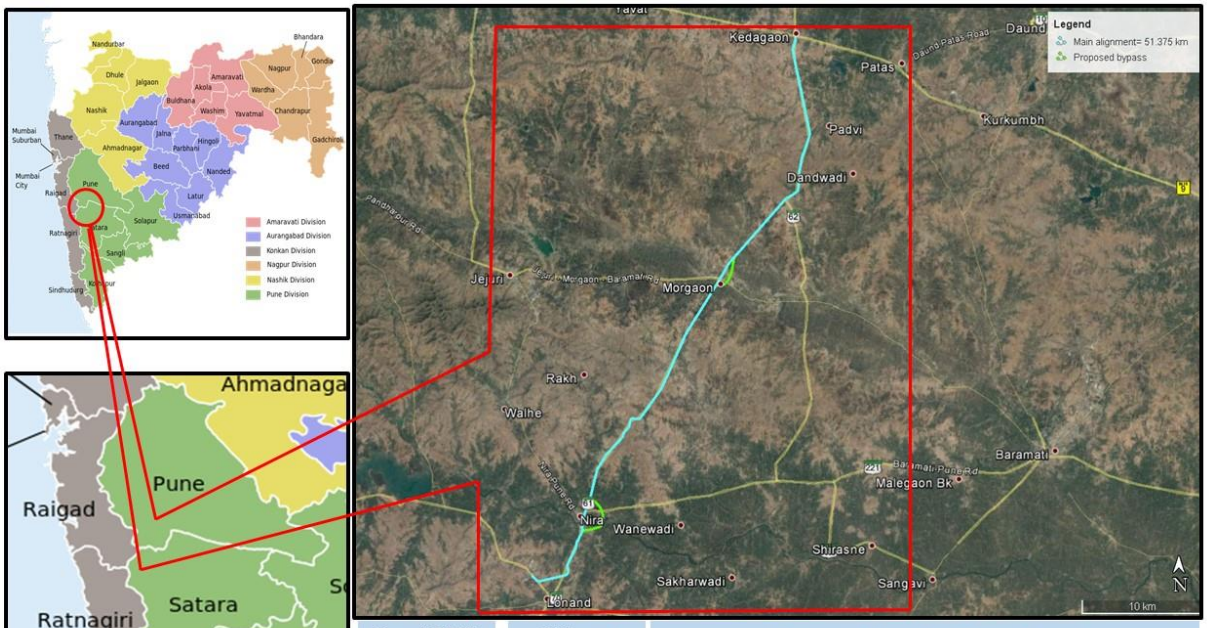
i. Financial and social benefits with special emphasis on the benefit to the local people including tribal population, if any, in the area.

The project will have multiple benefits. It will reduce the travel time substantially between Satara and Pune. Overall improvement will be expected in local area in following ways:

1. Development and improvement in transportation infrastructure facility will connect villages with the nearby cities
2. Better approach to Medical & Educational services and quick transportation of perishable goods like fruits, vegetables and dairy products.
3. Development of tourism and pilgrimage
4. Transporting, processing and marketing of agricultural products
5. Fast and safe connectivity resulting in savings in fuel, travel time and total transportation cost to the society
6. Reduction in accidents due to curve improvements at various sections of the alignment
7. Reduction in pollution due to reduction in congestion
8. Indirect and direct employment opportunity to people from all skilled, semiskilled and unskilled streams will act as social benefits

It is assumed that the overall Bharat mala project will boost socio-economic development in the entire central region of Maharashtra. Accordingly, Route 2 will contribute towards this objective.

Annexure I:



Lonand MIDC	Kedagaon	Alignment shown on Google Image
18° 03' 31.67"N 74° 10' 27.73"E	18° 27' 13.46" N 74° 22' 42.68" E	