कार्यकारी सारांश

रेती उत्खननाच्या पर्यावरणीय व्यवस्थापन आराखड्याचा मसुदा

जिल्हा नंदुरबार , महाराष्ट्र राज्य

(नंदुरबार जिल्ह्यातील प्रस्तावित ०३ रेती घाटांच्या पर्यावरणीय जनसुनावणीकरिता)

प्रकल्प प्रवर्तक

जिल्हा खनिकर्म अधिकारी,जिल्हाधिकारी कार्यालय, नंदुरबार

पर्यावरण सल्लागार

एन्व्हायरो टेकनो कंसल्ट प्रायव्हेट लिमिटेड
६८, महाकाली नगर -२
मानेवाडा चौकाजवळ ,
नागपूर ४४००२४.

एप्रिल २०२०

१.० प्रस्तावना

मा. जिल्हाधिकारी नंदुरबार यांनी रेती/वाळू निर्गमीतीचे धोरण दि. ०३.०९.२०१९ अनुसार ०३ रेती घाट उत्खननासाठी प्रस्तावित केलेले असून जिल्हा खनिकर्म अधिकारी नंदुरबार यांना विविध अनुमती घेणेकरिता प्रकल्प प्रवर्तक म्हणून नेमलेले आहे.

सदर ०३ रेती घाट तालुकास्तरावर मा. तहसीलदार यांच्या अध्यक्षतेखाली नेमलेल्या व भुवैद्यन्यानिक, म. प्र.नि.म.यांचे प्रतिनिधी, जलसंधारण विभागाचे प्रतिनिधी असलेल्या तालुका तांत्रिक समिती द्वारे ओपन कास्ट पद्धतीने घमेले,पावडे यांच्या साहाय्याने उत्खनन करण्याचे प्रस्तावित केलेले आहे.

पर्यावरण अनुमतीसाठी प्रस्तावित ०३ रेती घाटांची यादी खालील प्रमाणे आहे.

प्रस्तावित ०३ रेती घाटांची यादी खालील प्रमाणे आहे.

						घाटाची ला.*रु. *खोली. मी^{3}												
अ .क्र .	तालुका	रेती घाट	गावाचे नाव	नदी/नाला	जवळील गट न.	लांबी	रुंदी	खोली	क्षेत्र हे. मध्ये	रेती ब्रास मध्ये	हौलेज लांबी (मी)	हौलेज रुंदी (मी)	कामगार संख्या	ट्रॅक्टर संख्या	नदी किनारा झाड वृक्षारोपण	हौलेज रोड वृक्षारोपण	पाणी मी^{3} /दिवस	पर्यावरण व्यवस्थापन अंदाजे खरच रु. मध्ये
1	शहादा	कौठळ त.सा.	कौठळ त.सा.	तापी	1/1,1/2	325	60	2	1.95	13780	260	6	38	27	65	260	1.760	841000.00
2	शहादा	कु-हावद त.सा.	कु-हावद त.सा.	तापी	1/1,1/2,1/3	250	85	2	2.125	15017	740	6	38	28	50	300	1.760	934000.00
3	शहादा	टेंभे बु.	टेंभे बु.	तापी	303/1,303/2, 296/1, 296/2,296/3	308	75	2	2.31	16325	860	6	43	32	65	344	1.860	935500.00

- रेतीघाटांसाठी प्राप्त आवश्यक अनुमती/परवानग्या व गोषवारा.

प्रकल्प प्रवर्तक	जिल्हा खनिकर्म अधिकारी नंदुरबार.
प्रकल्प स्थिती	नवीन, प्रस्तावित रेती घाट
उत्खनन करावयाचे खनिज	रेती/वाळू (बांधकाम योग्य)
रेतीघाट प्रस्तावित करणारी समिती	मा. तहसीलदार यांच्या अध्यक्षतेखाली नेमलेल्या व भुवैद्यन्यानिक, म.प्र.नि.म. यांचे प्रतिनिधी, जलसंधारण विभागाचे प्रतिनिधी असलेल्या तालुका तांत्रिक समिती
ग्रामपंचायत ना हरकत	ग्रामपंचायतींकडून वाळू निर्गमीतीच्या धोरणानुसार प्राप्त
उत्खननाकरिता ठरवून दिलेला कालावधी	दि. १० जुन ते ३० सप्टेंबर पर्यंतचा मानसून कालावधी वगळता जास्तीत जास्त १ वर्ष.

- **प्रस्तावित उत्खनन पद्धत :**

रेती उत्खनन टोपले,पावडे द्वारे मजुरांकरवी करण्याचे प्रस्तावित आहे.

अ. मातीचे ढिगारा किंवा मातीचे उत्खनन करता येणार नाही.

ब. रेती उत्खनन टोपले,पावडे द्वारे मजुरांकरवी करण्याचे प्रस्तावित आहे.

क. उचललेली रेती ट्रॅक्टर द्वारे वाहण्याचे प्रस्तावित आहे.

ड . ट्रॅक्टर वगळता कोणतीही अवजड व यांत्रिक मशीनरी उपयोगात आणता येणार नाही.

इ. उत्खननाकरिता ठरवून दिलेला कालावधी हा दि. १० जुन ते ३० सप्टेंबर पर्यंतचा मानसून कालावधी वगळता जास्तीत जास्त १ वर्षाकरिता प्रस्तावित आहे.

● वायू प्रदूषण उपाय योजना

अ. क्र	प्रदूषणाचे स्रोत	अपेक्षित परिणाम	व्यवस्थापन योजना
१	ट्रान्सपोर्ट रोड/रेती वहन मार्ग	हवा गुणवत्ता /जमिन रास्ता मजबूती रस्त्याचा ऱ्हास	●वहन मार्गाचे मजबूती करण ● वहन मार्गाची देखभाल ● ट्रॅक्टर मध्ये मान्यताप्राप्त क्षमतेनुसार खनिज वहन ● उत्खनन कालावधी दरम्यान हवा दर्जा तपासणी
२	ट्रक/ट्रॅक्टर यांचे चलन	हवा दर्जा /गुणवत्ता	●मान्यता प्राप्त क्षमते पेक्षा ट्रॅक्टर मध्ये खनिज न भरणे ●रेती वाहन करणाऱ्या ट्रॅक्टर ट्रॉलीज टरपोलिन ने वहन दरम्यान झाकणे. ●वाहनांना गती नियंत्रक बसविणे. ●रेती घाटावर रेती ट्रॅक्टर मध्ये भरताना इंजिन बंद ठेवणे.
३	रेती घाट व रेती घाट मार्ग	उत्खनन प्रक्रिया	● रेतीघाट होलेज मार्गाची वारंवार दुरुस्ती व देखभाल ●कामगारांना डस्ट मास्क देणे. ● रेती उत्खनन व वहन दिवसाचं करणे
४	नदी किनाऱ्याचे व्यवस्थापन	नदी किनाऱ्याची झीज पूर रेषा व्यवस्थापन	● नदी किनाऱ्यावर झाडे लावणे ● नदी किनार्याच्या उतारावर हिरवळ(ग्रास) लावणे

● व्यवसाय, आरोग्य व सेवा योजना

१	धूळ कन श्वसन विषयी व्यवसाय सुरक्षितता, आरोग्य व सेवा योजना	कामगारांची सुरक्षितता व उत्खनन	●कामगारांसाठी पर्यावरण पूरक व सुरक्षित वातावरण तयार करणे. ●असे वातावरण व उपाययोजना अंमल बजावणीसाठी मान्यता प्राप्त निविदाधारक/ठेकेदार उपायोजना करेल. ●कामगारांना वैय्यक्तिक संरक्षण उपकरने प्रदान करण्याचे प्रस्तावित आहे. ●कामगारांना आवश्यक प्रशिक्षण देण्याचे प्रस्तावित आहे. ●प्रथोमपचार पेटी, पिण्या योग्य पाणी ,तात्पुरत्या निवार्याची सोय करण्याचे प्रस्तावित

● ध्वनी प्रदूषण

- कामगारांना कांन बुचे देण्याचे प्रस्तावित आहे
- ट्रॅक्टर/ट्रक व्यतिरिक्त कोणत्याही ध्वनी प्रदूषण करणाऱ्या मशीनरी प्रतिबंधित आहेत.
- ट्रॅक्टर चे एंजिने रेतीघाटावर रेती भरते वेळेस बंद ठेवण्यात येईल
- कामगारांची आरोग्य विषयक तपासणी करण्यात येईल.
- कामगारांना व अभ्यंगताना वैयक्तिक सरंक्षक उपकरणे देण्यात येईल.

•वाहतूक व्यवस्थापन

▪ खनिज वाहतूक करणारे वाहन फॉरेस्ट व महसूल विभागाकडे नोंदणीकृत करणे प्रस्तावित आहे.

▪ अश्या सर्व वाहनाकडे प्रदूषण नियंत्रण प्रमाणपत्र असण्याचे बंधनकारक असेल.

▪ अशी सर्व वाहने ध्वनी उत्सर्जन व धूळ/इतर उत्सर्जन संबंधी मानक द्वारे उच्च प्रतीच्या देखभाली खाली प्रमाणित असतील.

▪ असे सर्व वाहनचालक वाहतुकीसंबंधी नियमांचे पालन करण्यास बध्य असतील.

▪ अश्या सर्व वाहनांची गती नियंत्रित केलेली असेल.

▪ क्षमतेपेक्षा जास्त खनिजाचे वाहन करता येणार नाही.

▪ खनिज वाहन करणाऱ्या वाहनांचे खनिज टरपोलिन ने झाकण्याचे प्रस्तावित आहे.

▪ इतर रेती ठेकेदारांसोबत समनव्यय साधून रेतीचे वाहन करण्याचे प्रस्तावित आहे जेणेकरून वाहतुकीचा खोळंबा होणार नाही.

•वृक्षारोपण योजना

▪ मान्सून दरम्यान (दि. १० जून ते ३० सप्टेंबर) नदी किनाऱ्यावर व वाहन मार्गावर झाडे लावण्याचे प्रस्तावित आहे.

▪ नीम, पिंपळ, करंज,गुलमोहर अशी स्थानिक झाडे लावण्याचे प्रस्तावित आहे.

▪ मान्य निविदाधारक/रेती ठेकेदार ह्या पर्यावरण व्यवस्थापन योजनेचे टेबल करा. १ अनुसार दिलेल्या व्यवस्थापन अंदाजानुसार क्रियान्वयन करण्याचे प्रस्तावित आहे.

- मान्य निविदाधारक /रेती ठेकेदार सादर पर्यावरण व्यवस्थापन योजना क्रियान्वयनाचा अनुपालन अहवाल जिल्हा खनिकर्म अधिकारी , तत्सम तहसीलदार यांना सादर करेल.

- जिल्हा खनिकर्म अधिकारी/तत्सम तहसीलदार हा पर्यावरण व्यवस्थापन योजनेच्या क्रियान्वयनाची वेळोवेळी खात्री करतील व मा. जिल्हा अधिकारी यांच्या अध्यक्षतेखालील समितीला अहवाल वाळू निर्गमीती च्या धोरण मध्ये सुचविल्याप्रमाणे सादर करतील.

EXECUTIVE SUMMARY ON

DRAFT ENVIRONMENTAL MANAGEMENT PLAN

FOR

SAND GHATS

AT

NANDURBAR DISTRICT

STATE – MAHARASHTRA

FOR PUBLIC HEARING FOR 03 SAND GHATS

PROPONENT

DISTRICT MINING OFFICER, COLLECTOR OFFICE,NANDURBAR

CONSULTANT

ENVIRO TECHNO CONSULT PRIVATE LIMITED
68,MAHAKALI NAGAR-2
NEAR MANEWADA SQUARE
NAGPUR 440 024

APRIL 2020

Introduction :

District Collector, Nandurbar intends to auction sand ghats and appointed District Mining Officer Nandurbar as project proponent as per sand mining guidelines dated 03.09.2019. Total 03 sand ghats are identified by Taluka level Technical Committee chaired by Tahsildar and Dy. Engineer Irrigation, Junior Geologist, Directorate of Geology and Mining, Junior Geologist G.S.D.A., representative of Maharashtra Pollution Control Board for scooping of sand by manual method.

List of sand ghats proposed for auction prior environmental clearance are as below

Table 1.0 Details of Sand Ghat :

Table 1.0 Details of Sand Ghat :

Sr. No.	Taluka	Name of Sand Ghat	Name of Village	Name of River/Stream	Nearest Gut no.	Dimensions of Sand Ghat			Area of sand Ghat in Ha.	Sand Proposed for scooping in Brass	Length of Approach Road in m.	Width of Approach in m	No. of Workers	No. of Tractors	No of Trees along Bank	No of Trees along village Road	Water Requirement in cum/day	EMP cost in Rs.
						Length In m	Width In m	Depth In m										
1	Shahada	Kauthal Tasa	Kauthal Tasa	Tapi	1/1,1/2	325	60	2	1.95	13780	260	6	38	27	65	260	1.760	841000.00
2	Shahada	Kurhavad Tasa	Kurhavad Tasa	Tapi	1/1,1/2,1/3	250	85	2	2.125	15017	740	6	38	28	50	300	1.760	934000.00
3	Shahada	Tembhe bk	Tembhe bk	Tapi	303/1,303/2, 296/1, 296/2,296/3	308	75	2	2.31	16325	860	6	43	32	65	344	1.860	935500.00

- **Status of Statutory Clearances for Sand Ghat**

Name & Address of Allottee	District Mining Officer Nandurbar / Succesful Bidder Nandurbar District, Nandurbar
Status of the lease	New, Individual/ Project Proponent/Succesful Bidder for auction of sand ghat by District Collector Nandurbar.
Mineral for which lessee intends to mine	Ordinary Sand for Construction purpose
Name & Address of the Prospecting Agency	Taluka level Technical Committee chaired by Tahsildar and Dy. Engineer Irrigation, Junior Geologist, Directorate of Geology and Mining, Junior Geologist G.S.D.A., representative of Maharashtra Pollution Control Board.
Grampanchayat NOC	Received from Gramsabha as per public consultation procedure defined in sand mining guidelines of Maharashtra State dated 03.09.2019.
Plan Period for Activity	Up to one year from the date of allotment of sand ghat or up to scooping of Allotted/Permitted quantity mined out, whichever is earlier excluding stipulated monsoon period between 10 June -30 September

- **Method of Mining :**

The mining will be manual opencast mining method of scooping using simple tool like spade/pawdas.

a. Over burden/Soil Removal:

   No overburden/Soil is anticipated.

b. Scooping of Sand /Loading

   The ordinary sand will be loaded manually by labours.

c. Hauling

   Ordinary sand is transported through tractors /trucks with permissible quantity.

d. No machinery will be utilized.

e. Period of scooping of sand will be for one year excluding monsoon period of 10th June -30th Sept or as defined by district collector.

- About 28 labours per sand ghat will be required.

- The site services will be provided by allottee/Successful Bidder, Office, First Aid and Rest Shelters will be temporarily constructed 20m away from the bank of river.

- Applied area for sand extraction is covered by dark basalt and which has been derived/ transported from black basalt of surrounding flat and well tilled area. The sand of the applied area is found to be underlain by dark basalt of the river bed.

- Anticipated Environmental impacts and Management Plan

A summary of air pollution control measures is given below:

S. No	Impact Source	Impact	Control measure
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides & development of green belts • Proper maintenance. • Regular water spraying. • Avoiding over filling of tractor and consequent spillage on the roads • Air quality will be monitoring at impacted village.
2	Truck/ Tractor Movement	Air Quality	• No overloading of trucks. • Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Enforcing speed limit. • Regular monitoring of the exhaust fumes. • No Engine of tractor/truck will be kept on during the filling. • If possible entry be restricted to river bed
3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks. • Mining will be done during day time between fixed

			hours only.
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank.

- **Occupational Health and Services**

1	Occupational Health & Safety Measures to Control Dust Inhalation	Safety of Workers and Mining Operations	● Providing a working environment that is conducive to safety & health ● The management of occupational safety & health is the prime responsibility of mine owner. ● Provision of necessary personal protective equipments ● Ensuring employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities • Provision of First Aid and Drinking Water, Temporary rest Room

● Noise control measures will be provided in the proposed crushing and screening plant.

▪ In addition, personnel working near high noise level generating sources will be provided with ear muffs

▪ No equipment generating Noise excluding tractor/truck will be permitted.

▪ No tractor engine will be kept idle.

▪ Conduct periodic audiometric tests for employees working close to high noise generating areas such as compressors, the loading and unloading sections, etc

▪ Provision of PPE's will be made and their proper usage will be ensured for hearing protection of the workers as well as visitors.

● Traffic Management

▪The mineral transporting vehicles will be registered with the forest department/revenue department and only registered vehicles will be used for mineral transport.

▪ The PUC certificate for exhaust emissions for all the transport vehicles will be made mandatory.

▪ All the vehicles will be properly maintained to control emissions and noise generation.

▪ Drivers of all the vehicles will strictly follow traffic rules.

▪ Speeds of the mineral transport vehicles will be regulated.

▪ Overloading of the tractors will not be allowed

▪ The mineral transporting tractors will be properly covered with tarpaulin to avoid fugitive emissions.

▪ Batch transport system will be adopted in consultation with the other sand ghat operators in the area to avoid excess traffic at a time on the road.

▪ Mineral transportation will be done only during day time only.

▪ Strict action will be taken against any driver, who do not comply the traffic rules.

●Plantation program

It is proposed to plant local species during the monsoon period along bank of river and village roads.

List of Species Proposed for green Belt Development

Local species like Neem, peepal,subabhul, Karanj, Gulmohar etc will be planted.

● Successful Bidder/ Sand Ghat allottee will implement the Environmental Management Plan for the amount as per Table 1.0 on his own.

Successful Bidder/ Sand Ghat allottee will submit compliance to terms of conditions stipulated in the prior environmental clearance to the District Mining Officer and respective Tahsildar with

the expenses made on implementation of environmental management plan.

District Mining Officer/respective Tahsildar will monitor the implementation of approved environmental management plan along with District Level Committee headed by District Collector as stipulated in Sand Mining Rules 2019.

ENVIRONMENTAL MANAGEMENT PLAN

FOR

SAND GHATS

AT

NANDURBAR DISTRICT

STATE – MAHARASHTRA

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Latitude	Longitude
1	Tembhe Bk.	Shahada	Tapi	303/1,303/2, 296/1,296/2, 296/3	2.31	308 x 75 x 2.00	16325	21°24' 23.7127"N	74°34' 5.5797"E

PROPONENT

DISTRICT MINING OFFICER, COLLECTOR OFFICE, NANDURBAR

CONSULTANT

ENVIRO TECHNO CONSULT PRIVATE LIMITED

68,MAHAKALI NAGAR-2

NEAR MANEWADA SQUARE

NAGPUR 440 024

APRIL 2020

Sr. No.	Section No.	Section Description	Page No.
1	1.0	Introduction to Sand Ghat	4
2		1.0 Introduction	4
3	2.0	Project Description and Method of Mining	9
4	2.0	Project Description	9
5	2.1	Method of Mining	10
6	2.2	Period of Mining	10
7	2.3	Manpower Requirement	11
8	2.4	Amenities	12
9	2.5	Existing & Proposed Land Use Pattern	12
10	2.6	Existing Flora & Fauna	13
11	2.7	Local Geology	13
12	2.8	Mine Closure Plan	13
13	3.0	Baseline Environment ,Anticipated Impacts and Management	15
14	3.0	Baseline Air Quality	15
15	3.1	Anticipated Impacts and Management	17
16	3.1.1	Dust Generation and Control	17
17	3.1.2	Impact due to Noise Pollution and its Management	19
18	3.1.3	Impact due to Water Pollution and its Management	20
19	3.1.4	Impact on Land and its Management	21
20	3.1.5	Impact on Socio Economic Environment	22
21	3.1.6	Impact on Ground Water Level of Surrounding Area	22
22	3.1.7	Sand Replenishment Studies	23
23	3.1.8	Land use pattern in the buffer zone	28
24	3.1.9	Biological Environment	28
25	3.1.10	Socio economic Environment	30
26	3.1.11	Occupational Health	30

27	3.1.12	Final Mine Closure Plan	30
28	4.0	Implementation, Monitoring & Budgeting to implement	31
29	4.1	Environmental Management Plan	31
30	4.1.1	Air Quality Management	31
31	4.1.1.1	Controlling Dust Levels	31
32	4.1.2	Noise Pollution and Ground Vibrations	33
33	4.1.2.1	Noise Pollution Control	33
34	4.1.3	Traffic Management	34
35	4.1.4	Water Quality Management	34
36	4.1.4.1	Water Pollution Control Measures	34
37	4.1.5	Implementation of Final Mine Closure Plan	35
38	4.1.6	Plantation program	35
39	4.1.7	Occupational Health and Safety Management	35
40	4.2	Monitoring of Implementation of Environmental Management Plan with Budget	36

Section 1.0 : Introduction to Sand Ghat

1.0 Introduction :

District Collector, Nandurbar intends to auction sand ghats and appointed District Mining Officer Nandurbar as project proponent. Total 03 sand ghats are identified by Tahsil Level technical Committee, Shahada chaired by Tahsildar Shahada along with District Mining Officer, Nandurbar, representative of G.S.D.A., M.P.C.B., irrigation & Directorate of Geology and Mining Aurangabad. All three sand ghats were identified and explored as per procedure defined in Sand Auction Rules 2019 dated 3.09.2019 on recommendations of Tahsildar Shahada. Revenue of Rs 9.71 Cr is expected from the auction of these sand ghats.

Tembhe Bk. sand ghat proposed over river Tapi in Shahada Taluka is one of the three sand ghats proposed to cater infrastructural requirement of sand in the tahsil of Shahada and Nandurbar and other talukas. Details of Tembhe Bk. Sand Ghat is as below

Table 1.0 Details of Sand Ghat :

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum.	Available Sand in Brass	Location	
						LxBxD (m^3)		Longitude	Latitude
1	Tembhe Bk.	Shahada	Tapi	303/1,303/2, 296/1,296/2, 296/3	2.31	308 x 75 x 2.00	16325	21°24' 23.7127"N	74°34' 5.5797"E

Table 2.0 All corner Coordinates of Sand Ghat :

Sr. No.	**Latitude**	**Longitude**
BP-1	21°24' 23.7127"N	74°34' 5.5797"E
BP-2	21°24' 22.0183"N	74°34' 3.7057"E
BP-3	21°24' 29.2185"N	74°33' 56.2676"E
BP-4	21°24' 30.9129"N	74°33' 58.1416"E

Table 3.0 Environmental Sensitivity of Sand Ghat :

Sl. No.	Areas	Distance in kilometer / Details
1	Distance of project site from nearest rail or road bridge over the concerned River,Rivulet, Nallah etc.	Bridge on Tapi river -3.74 km NW
2	Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Shahada-17 Km NW 7.9 km SW NH3-32 Km SE SH4 – 5.9 Km N Sarangkheda Shahada Road– 3.75 Km NW Vil Rd-0.401 km NW 15 km Check dam – 3.55 Km NW 3.55 Km NW 3.55 Km NW
3	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Yawal wildlife santury-44 km E, Shoolpaneshwar santury-67 km NW
4	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No wetland is notified in district, Tapi river, Biosphere -Pachmadi 370 km NE Mountain- Satpuda Range
5	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Yawal wildlife santury-44 km E, Shoolpaneshwar santury-67 km NW
6	Inland, coastal, marine or underground waters	Tapi river , Coastal Area -420 Km West, Marine Water -410 Km West
7	State, National boundaries	Gujrat-26 Km NW
8	Routes or facilities used by the public for access to recreation or other tourist,pilgrim areas	Sarangkheda -4.22 Km NW
9	Defence installations	Varangaon Ordnance factory-135 Km SE
10	Densely populated or built-up area, distance from nearest human habitation	0.603 Km NW
11	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Shahada-17 Km NW

12	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism,minerals)	Tapi river ,
13	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Not within 5 km study area
14	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area.
15	Is proposed mining site located over or near fissure / fracture for ground water recharge	Not within 5 km study area
16	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	Not within 5 km study area
17	Forest land involved (hectares)	No
18	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	No

Table 4.0 Status of Statutory Clearances for Sand Ghat

2.1	Name of Sand Mine (Ghat)	Tembhe Bk. Sand Ghat Tq. Shahada Dist. Nandurbar
2.2	Name & Address of Allottee	District Mining Officer Nandurbar / Succesful Bidder Nandurbar District, Nandurbar
2.3	Status of the lease	New, Individual/ Project Proponent/Succesful Bidder for auction of sand ghat by District Collector Nandurbar.
2.4	Mineral for which lessee intends to mine	Ordinary Sand for Construction purpose
2.5	Name & Address of the Prospecting Agency	Taluka Level Technical Committee , Shahada
2.6	Mining Plan Approval	In Draft stage . MP is submitted for approval.
2.7	Grampanchayat NOC	Received from Gramsabha as per public consultation procedure

		defined in sand mining guidelines of Maharashtra State dated 03.09.2019.
2.8	Plan Period for Activity	Up to one year excluding monsoon period of 10th June to 30th September or Allotted/Permitted quantity mined out, whichever is earlier.

Google Image for Sand Ghat (600 m Area) :

Figure -1 : Google Image

Proposed Approach Road for Sand Ghat on Google Image

Approach Road Tractors will ply over 860 m over pandan road to connect Tembhe-Deur village road to approach Shahada.

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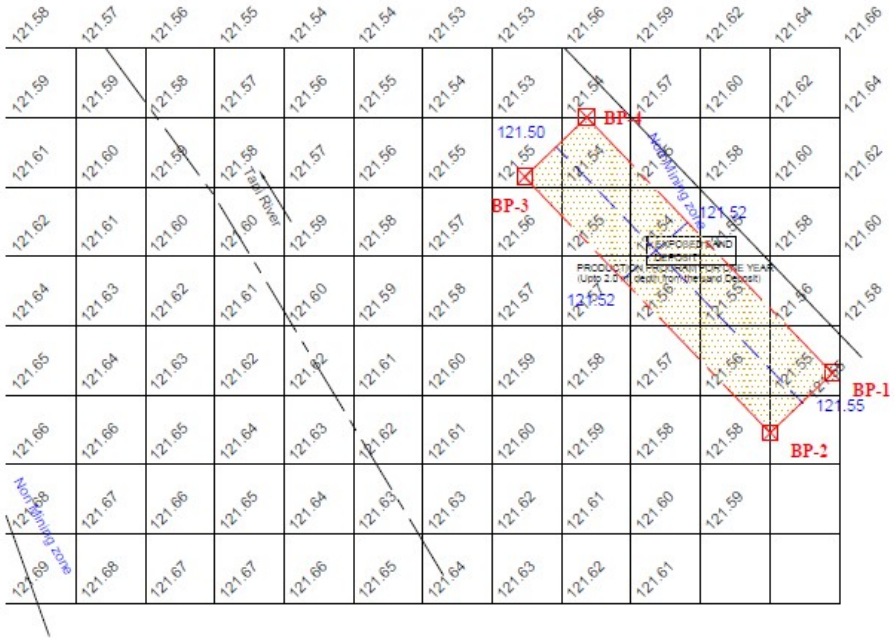
Section 2.0 : Project Description and Method of Mining

2.0 Project Description :

Need for the project: The sand ghat area has been selected in view of its existing demand for Building Grade sand for the area in and around Shahada & Nandurbar Tahsil. District Mining Officer Nandurbar has proposed for the production of 16325 Brass of sand by proposing to follow a systematic mining process with respect to the market scenario. The individual sand reserve at the ghats as per GSDA survey is as under.

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Longitude	Latitude
1	Tembhe Bk.	Shahada	Tapi	303/1,303/2, 296/1,296/2, 296/3	2.31	308 x 75 x 2.00	16325	21°24' 23.7127"N	74°34' 5.5797"E

Surface Plan for Tembhe Bk. Sand Ghat:



2.1 Method of Mining :

The mining will be manual opencast mining method of scooping using simple tool like spade/pawdas.

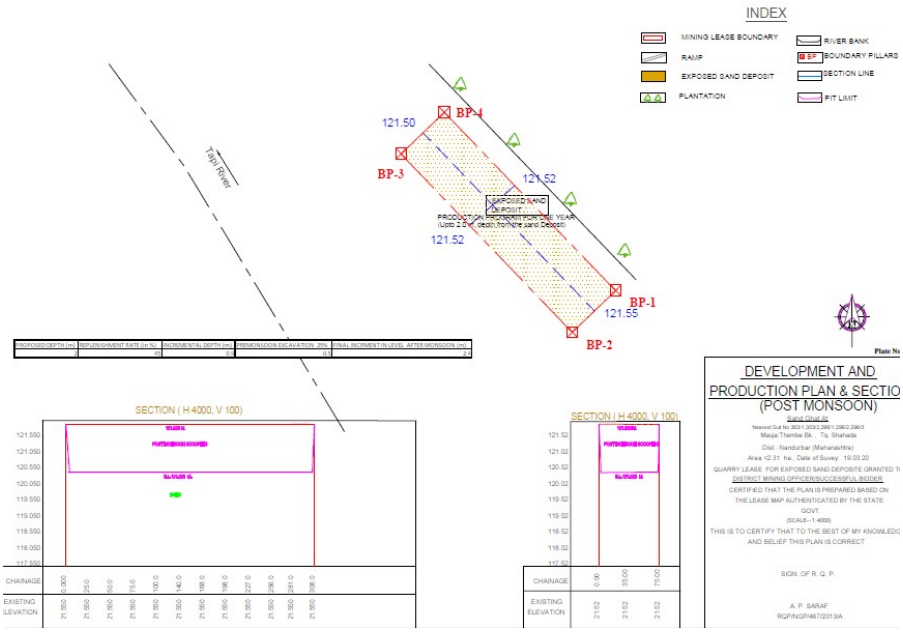
a. Over burden/Soil Removal:
   No overburden/Soil is anticipated.
b. Scooping of Sand /Loading
   The ordinary sand will be loaded manually by labours.
c. Hauling
   Ordinary sand is transported through tractors /trucks with permissible quantity.
d. No machinery will be utilized.

2.2 Period of Mining :

5.1 Year wise Production Plan:Period	Area x Depth (cu.m.)
Up to one year excluding monsoon period of 10th June to 30th September or Allotted/Permitted quantity mined out, whichever is earlier.	308 m x 75 m x 2.00 m

Appearance of Sand Ghat

Production Plan for Tembhe Bk. Sand Ghat :



2.3 Manpower Requirement :

About 43 labours are required to carryout the scooping activity.

Sr. No.	Category	Nos.
1	Mining Supervisor	3
2	Tractor Drivers and Helpers	10
3	Mining Labours	30
	Total	43

2.4 Amenities :

The site services will be provided by allottee/Successful Bidder, Office, First Aid and Rest Shelters will be temporarily constructed 25m away from the bank of river.
Facility of mobile toilet with water tank of 250 ltr. Will be provided at 150m away from river bank.
Arrangement for periodic disposal of collection tank of mobile toilet will be ensured or otherwise toilet will be acquired on rent for workers.

Requirement of Water for Dust Supression & Domestic Purposes

Total water requirement for various activities during sand scooping is estimated as 1.860m^3/day per sand ghat. The water will be required for dust suppression, plantation, domestic use. The activity-wise break up of the total water requirement is given below:

Purpose	**Qty Required m^3/day**
Dust suppression/ Plantation	1.0
Domestic Use	0.860
Total	**1.860**

Water will be sourced from Grampanchayat Borewells on payment litre cost basis. Drinking water will be provided from RO water suppliers.

2.5 Existing & Proposed Land Use Pattern :

Area	Existing Land Use sq. m.	Proposed Land Use sq. m.
Area under pits	00	23100
Area under dumps	00	00
Undisturbed Area	23100	00
Area under Roads	00	00
Area under Plantation	00	00
Area under Storage	00	00
Area under Office, etc.	00	00

2.6 Existing Flora & Fauna :

Local varieties of bushes like tarota, neem, grasses observed in the area. Mainly agricultural activity observed for Jowar Bajra,nung. Natural fauna like fishes observed in the course of water stream during the monsoon period. Mice, lizards etc found in the nearby farms find during survey whereas no endangered wild life observed. No turtle nesting observed or recorded during the survey and on records.

2.7 Local Geology :

Applied area for sand extraction is covered by dark basalt and which has been derived/ transported from black basalt of surrounding flat and well tilled area. The sand of the applied area is found to be underlain by dark basalt of the river bed.

2.8 Mine Closure Plan :

Sand scooping is permitted for a period of one year from the date of auction of sand ghatas per sand policy dated 03.09.2019 of Govt. of Maharashtra only. Before surrender of Sand Ghat to District Authority, mine closure is proposed which will help to replenish the sand during the monsoon period when there will be live flow of water in the river channel.

Guidelines As per Indian Bureau Of Mines for Final Mine Closure of Sand Ghat:

Mineral is replenish able during each monsoon. No manual reclamation is proposed.

Method of SandTraps Emplace Gabions (1m height) at 200 m intervals to function as sand traps during final closure of Mine is proposed as per Sand Mining Guidelines of IBM vide letter 296/7/2000/MRC dated 16May 2011.

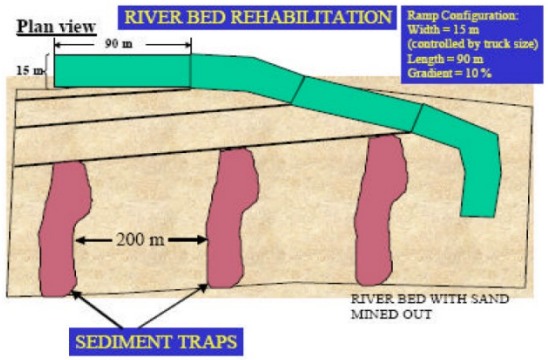


Figure -

Final Closure Action Plan for Sand Ghat

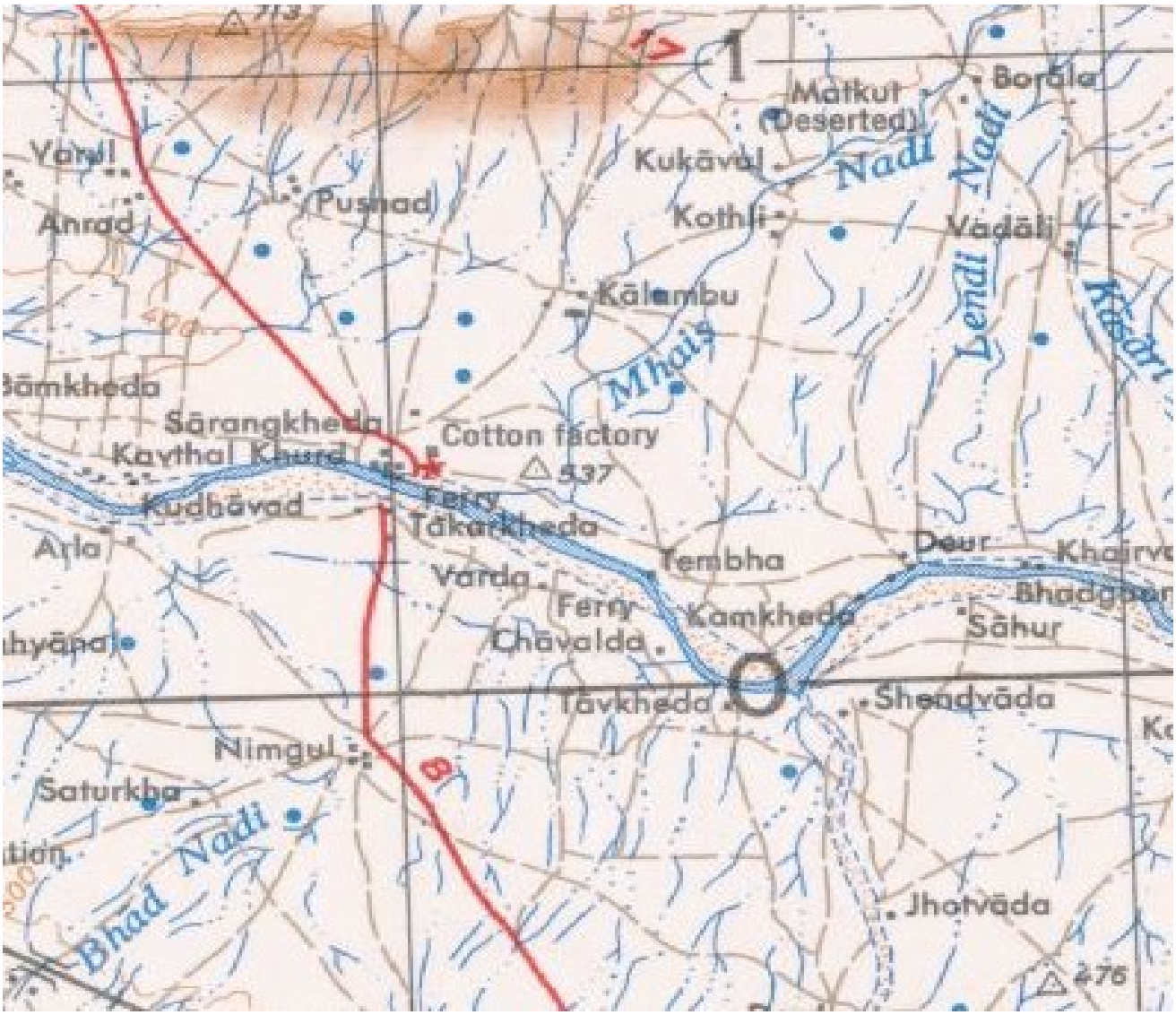
(1) Leave the area from which the sand has been extracted leveled and free of any foreign debris or materials.
(2) Re-vegetate indigenous plants which were removed from areas for the mining of sand as far as is reasonably practical.
(3) Plant trees along the riverbanks with no or minimal vegetation, irrespective of signs of erosion or not (ensure that species selected are indigenous species).

(4) The surface of stockpile and sand processing areas outside the riverbed to be scarified to a depth of 500 mm, graded evenly and the topsoil previously stored, returned to its original depth over the area.
(5) Prepare the area in such a way as to stimulate / ensure the re-growth of vegetation.
(6) Prepare Sand Traps Emplace gabions (1 m height) at 200 m intervals to functions as sand traps. Boulders dug out during mining should be used for this purpose. Gabions would have to be placed at one kilometer (at the maximum) intervals on the mined out areas. The shorter gabion intervals would induce faster rehabilitation. Gabions are preferred over concrete because they would allow water to flow through, are a more natural solution. Also additional gabions can be easily laid to increase the trap height. Figureis a drawing that illustrates river bed rehabilitation.
(7) Any access routes, especially if they are not beneficial to the local community would need to be ploughed and replanted with native species.
(8) Close and restore river bank where access ramps have been restored. Ensure river channel is not obstructed and that repaired bank is adequately fortified.

Section 3.0 : Baseline Environment ,Anticipated Impacts and Management

The Sand Ghat is a part of Toposheet 46K/7

3.0 Baseline Air Quality



Baseline air quality data is collected in between October 2-October 20, 2018 for the impacted village and summarized as

Sr. No.	Name of Village	Tahsil	Name of River	Permissible Limits as per NAAQ standards 2009	PM_{10}	$PM_{2.5}$	Sox	Nox
					$\mu gm/m^3$			
					100	60	80	80
1	Tembhe Bk.	Shahada	Tapi		42.4	12.9	11.7	13.0

Noise levels are recorded for the impacted village for day time. Maximum and minimum noise recorded is summarized as below

Time	**A1- Tembhe Bk.**
06:00	41.0
07:00	45.9
08:00	47.8
09:00	44.2
10:00	40.2
11:00	39.2
12:00	55.0
13:00	46.2
14:00	45.1
15:00	50.3
16:00	51.0
17:00	49.6
18:00	47.1

3.1 Anticipated Impacts and Management

The impacts envisaged due to mining activity are evaluated based on various factors. The emission inventory of the pollutants is as follows, the main air pollutant would be dust or particulate matter generated by handling and transportation of ore. The persons employed at the above areas are likely to get lung related diseases like silicosis, after prolonged exposure to the sand particles without protective measures. But the impact of mining operations on air quality is negligible as mining involved is only scooping of sand deposits from the river bed manually and not at large scale.

3.1.1 Dust Generation and Control

There is mere possibility of dust generation due to the proposed scooping of Building Grade sand from river bed manually. The maximum concentration recorded for the impacted village for PM_{10} was found to be 42.4 $\mu g/m^3$. There is a possibility of dust generation due to the frequent movement of public transport vehicles and tippers carrying the Building grade sand on haulage & transport road. The envisaged production of Building Grade Sand during the plan period is only 16325Brass/annum from the proposed sand ghat.

- Incremental GLC is predicted using USEPA equation considering pollution sources like transportation and mining and modeled using AERMOD-ISCST-3 model

Area Source Emission Factor Considered

Sr. No.	Activity	Emission Factor Kg/T
1	Loading & Transportation	@0.0005 Kg/T

Refer Chapter -11 19.2 of EPA emission manual.

Being all the sand ghats are nearby and on one stretch of river, average scooping is considered for prediction of incremental ground level concentration. Average production is calculated as 129359 Tonnes/Sand Ghat for 260 operational days

Area Source Emission-Production and Development

Description	**Statistics**
Quantity ,TPA	129359TPA
Operational Days per Year	260 Days
Lead (m)	860 m

Predicted Emission

Activity	**Emission rate gm/sec**
Transportation	0.74860706
Total	**0.74860706**

#Emission factor computed on wind speed of 1 m/sec, moisture 10% & Silt content 15 %

Accordingly Maximum incremental GLC is predicted as 0.6681µgm/cum.

Predicted Ground Level Concentrations due to Scooping of Sand is summarized as :

Sr. No.	Name of Village	Tahsil	Name of River	Permissible standard as per NAAQ 2009	PM_{10}	Predicted incremental GLC in terms of PM_{10}	Predicted PM_{10} values at Impacted Village
				µgm/m^3			
1	Tembhe Bk.	Shahada	Tapi		42.4	0.6681	43.0681

Predicted levels of PM_{10}were found to be within permissible limits as per NAAQ standards.
In order to mitigate fugitive dust emissions and other air emissions from the project activities, the following measures are proposed to be adopted.

- The mining haulage area will be wetted by water spraying and two 1 KL mobile sprinklers
- To avoid fugitive dust emissions at the time of Screening activity, Sand screening activity will be carried so as to prevent spreading of dust.

- Effective dust suppression arrangements will be made at the ground level sand bunkers at the mines.
- Sand is transported by road through trucks. The sand will be in wet condition however if dry sand is being transported it will be wetted after loading in to the truck and shall be covered by tarpaulin sheets.

To minimize the vehicular pollution from the sand transporting vehicles, the following conditions are insisted to permit the vehicles of the transporters:

- The vehicles should be with good engine condition and should maintain pollution control certificate issued by appropriate authorities.
- Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.
- Ambient Air quality Monitoring will be carried out at four stations on fortnightly basis to assess the air quality in and around the project for taking necessary control measures.
- Green belt development along the access roads at mine premises and near the sand mining site

3.1.2 Impact due to Noise Pollution and its Management

Noise environment in this project will be affected only by the equipment at the site and vehicular transportation. Since mining is done manually, increase in noise levels is marginal and only due to transport activities.

In order to mitigate noise generation from the project activities, the following mitigation measures are proposed:

Since the noise generating is only through movement of vehicles, strict compliance to periodical maintenance of the vehicle conditions will be insisted.

Noise monitoring at the work places shall be carried out on fortnightly basis to ensure the compliance.

3.1.3 Impact due to Water Pollution and its Management

As the project activity is carried out in the meandering part of the river bed, none of the project activities will affect the water environment. Sand is in exposed stage to scoop out and away from the river stream. In this project, it is not proposed to divert or truncate any stream. In the lean months, the proposed sand mining will not expose the base flow of the river and hence there will not be any adverse impact on surface hydrology and ground water regime due to this project. As per the Government recommendations the sand in riverbed will be extracted up to 2 m depth only keeping base layer of 2m in the bed.

Thus, the project activities will not have any adverse effect on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality.

In order to ensure that the project activities shall not affect the Water environment, the following measures will be taken up:

- Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed.
- Mining below subterranean water level will be avoided as safe guard against environmental contamination and over exploitation of resources.
- River stream will not be diverted to form in active channels.
- Ground water levels will be monitored regularly in and around sand mining project.
- Mining schedule is synchronized with the river flow direction and the gradient of the land.
- Mining at the concave side of the river channel will be avoided to prevent bank erosion.
- Meandering segment of river will be selected for mining in such a way to avoid natural eroding banks and to promote mining on naturally building meander components.
- Mining depth shall be maintained as per the guidelines and rules of Sand Mining Policy dated 03.019.2019 and recommendations of Taluka Level Technical Committee

comprising representative of M.S.. State Ground Water Department for extraction of sand during the lease period.

- Water Quality Monitoring for the ground waters, river water and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.

Mitigation Measures to improve River Health (Tapi River)

- Municipal authorities must arrest their solid, liquid discharge at their own treatment facilities and should avoid these hazardous matters to drain in to river.
- Awareness campaign in the local people must be floated implement river management.

3.1.4 Impact on Land and its Management

Movements of vehicles sometimes cause problems to agricultural land, human habitations, noise and movement of public and also cause traffic hazards. The impacts include damage of river bank due to access ramps to river bed, soil erosion, micro disturbance to ground water, possible inducement of changed river course, contamination of sand aquifer water due to ponding. However there may not be any direct impact on soil quality of the area as the scooping activity is restricted to exposed sand ghat keeping at safe distance of 20m from bank of the river.

Proposed Mitigation Measures

- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained. Access points to the river bed will be decided basing on least steepness of river bank and least human activity.
- Haulage roads parallel to the river bank and roads connecting access to river bed will be made away from bank, preferably 25 m away.
- Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, meandering segment of a river to be selected for mining in such a way so as to avoid natural eroding of banks

- Care will be taken to ensure that ponding is not formed in the river bed.
- Access roads from public roads and up to river bank will be aligned in such a way that it would cause least environmental damage.
- Green belt will be developed along the access roads near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.
- Villagers will be encouraged in the plantation activities by means of social forestry.

3.1.5 Impact on Socio Economic Environment

The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the sand mine lease area is not being used for any purpose by any section of the society in this region. Also the proposed sand ghat is away from public utilities like bridges, water supply schemes etc. There is no R & R involvement in this project. There is no land acquisition in this project.

The Project is expected to yield a positive impact on the socio-economic environment. It helps sustain the development of this area including further development of infrastructure facilities.

3.1.6 Impact on Ground Water Level of Surrounding Area

Scooping of sand beyond the proposed scooping depth may deplete the ground water level of the area. Hence the maximum scoopable depth of sand is restricted keeping sand bed of 2m. The scoopable limit of Sand for proposed Tembhe Bk. sand ghat is 2.0 m keeping 2.0m bed depth of sand. Total Sand depth available is 4.0m.

Survey Committee includes member from GSDA, Nandurbar and approved the depth by monitoring impact of proposed scooping of sand on ground water levels of the area.

3.1.7 Sand Replenishment Studies

Physical monitoring requirements of sand extraction activities should include surveyed channel cross-sections, longitudinal profiles, bed material measurements, geomorphic maps, and discharge and sediment transport measurements.

In addition to local monitoring for replenishment at specific mining sites, monitoring of the entire reach will provide information on the cumulative response of the system to sand extraction.

Because the elevation of the bed of the channel is variable from year to year, a reach-based approach to monitoring will provide a larger context for site-specific changes.

If long-term monitoring data show that there is a reach-scale trend of bed lowering the extraction could be limited.

Sand Replenishment

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Because the elevation of the bed of the channel is variable from year to year, a reach-based approach to monitoring will provide a larger context for site-specific changes.

If long-term monitoring data show that there is a reach-scale trend of bed lowering the extraction could be limited.

Stream guage station was installed at Tembhe Bk. over Tapi. Along with stream guage a silt sample was collected to ascertain siltation over the river.

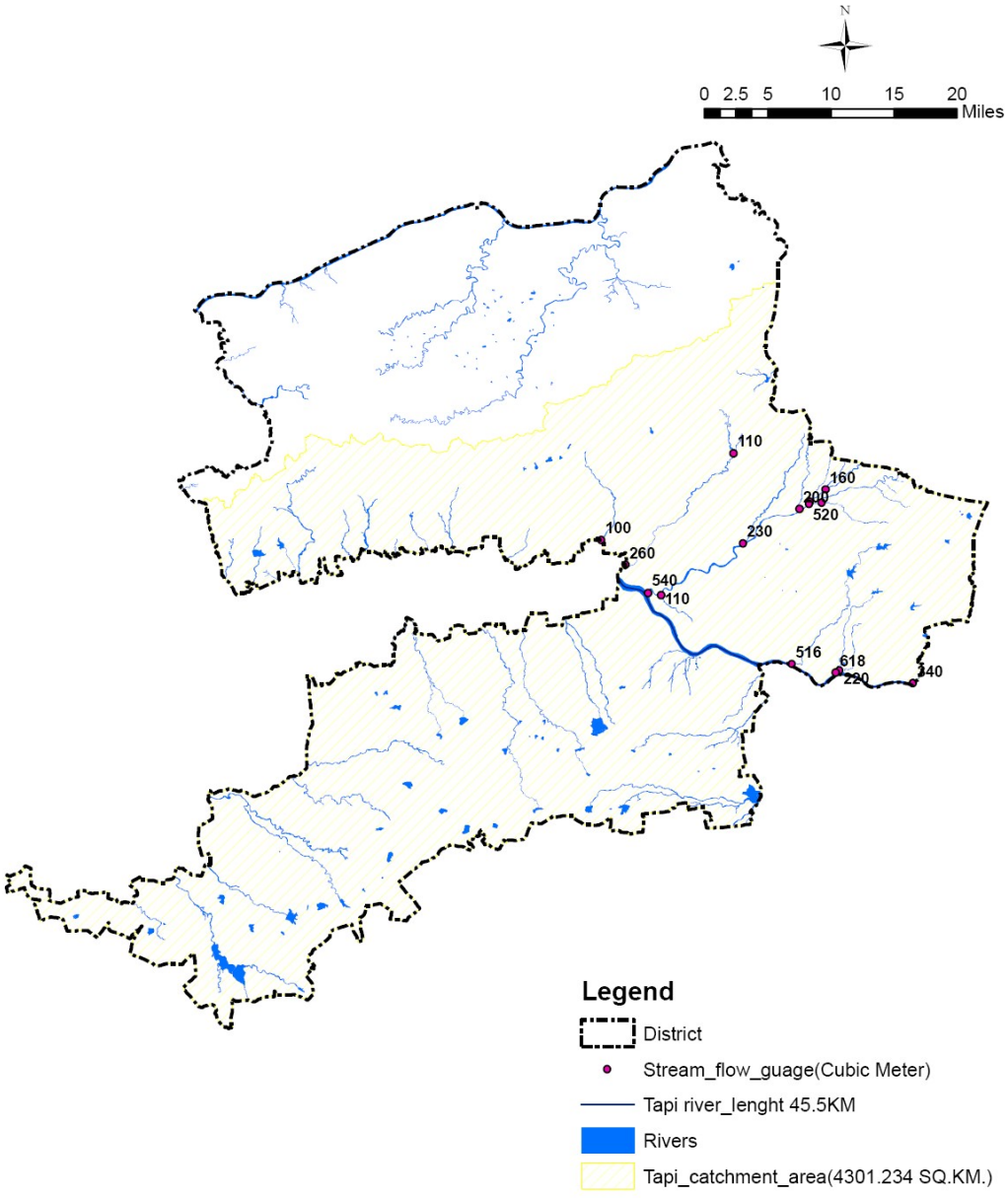
A concurrent type cup flow meter with fish weight of 10 kg with auto data logger is used to record the stream flow velocity.

A Punjab type silt sampler was used to collect the surface water sample for measuring the silt. Silt sample is calibrated to collect surface water sample of 1 ltr. with required arrangements to collect the surface water.

Average flow for both the rivers during the monsoon period was

A] Tapi River 3.0 m/sec.(Average flow velocity)/ Peak Velocity (11.9 m/sec)

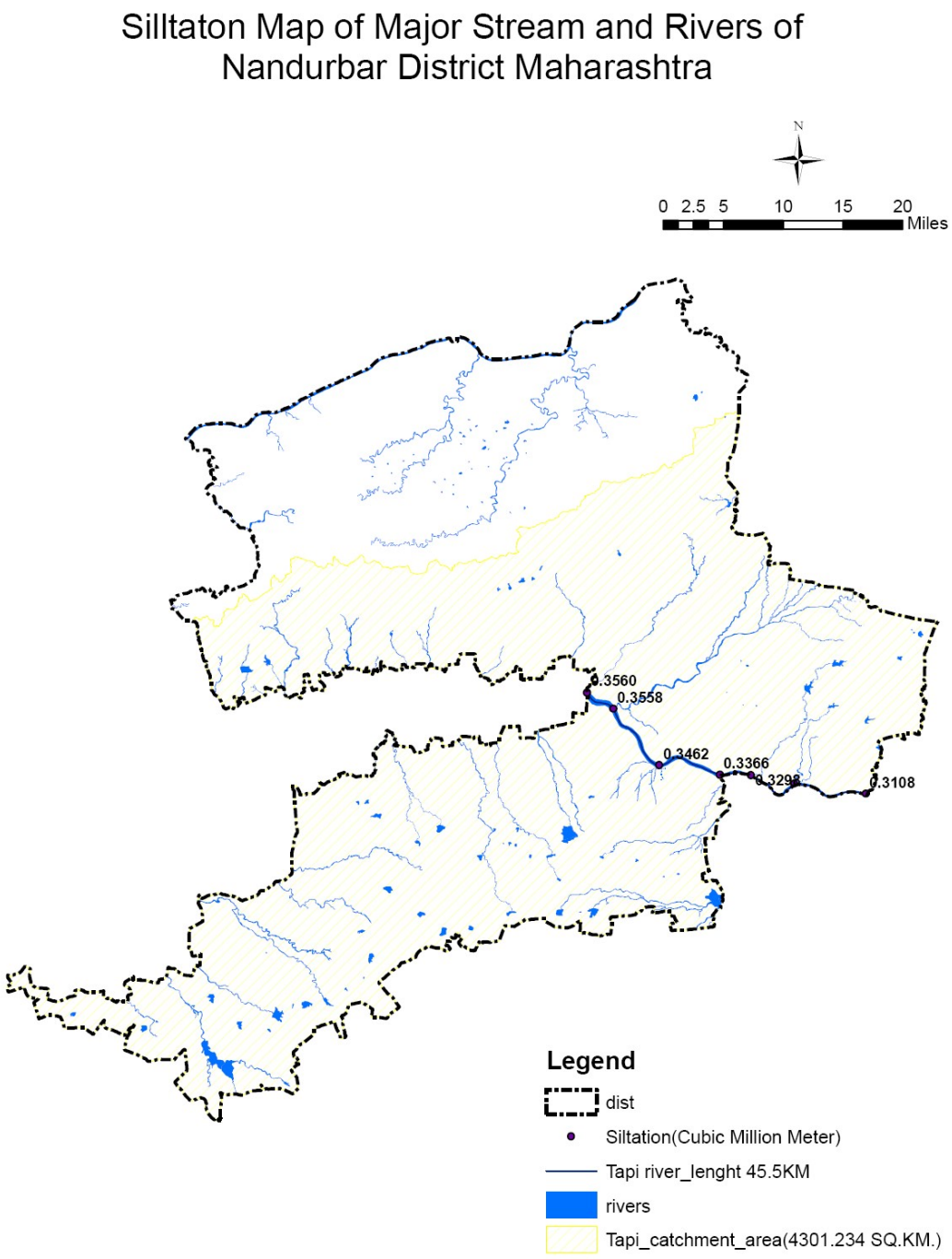
Stream Guage details over river at different locations are marked on drainage map as



cum/minute

Average silt measured for
A] Tapi River 4.8 gm/Lit
Form laboratory method

Siltation is mapped for the rivers using slope –discharge-silt formula as below



In Million Cum

Comparing theoretical methods with this year, last Year deposition

Sand Replenishment is tabulated at

Name of Sand Ghat	Method	Theoretical	Last Year Deposition	This Year Deposition
Tembhe Bk.	Data in brass	17000	Sand Ghat was not proposed for last 3 years	16325

Management plan for replenish sand ghat

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

3.1.8 Land use pattern in the buffer zone

The land use of the 5 kms radius study area is studied by analyzing the available secondary data like SOI Toposheet, field visits etc. Most of the lands are around the river body are agricultural lands. The major activity in the buffer zone is mainly agriculture. Agriculture is the main profession of people in the study area with nearly 2/3rd of the population engaged in one or the other form of agriculture.

Anticipated Impacts

As far as impact on the land use pattern is concerned, the buffer zone will not be affected as the mining operations are totally confined to the core zone.

Dump yards are not proposed as no waste is generated. The Building Grade sand mined will be temporarily stacked in a non mineralized area of the river bed. The proposed activity of sand mining is not envisaged to cause any impacts on the topography or the water drainage pattern as the excavation carried out is only manual scooping of Building Grade sand from the river bed.

The impact on soil quality is not likely to be more intensive than the present status and hence

degradation although inevitable, is not likely to affect soil quality. The loss of the fertile soil from the agricultural lands lying along side the river bank are observed during the floods due to differential lateral deposition of sand on the land surface.

As the proposed mining of Building Gradesand from the river bed is only during the pre monsoon season of the year, river erosion is not foreseen and hence control measures are not proposed. However as a preventive measure afforestation in terms of herbs and shrubs are proposed all around the lease area.

Ground water pollution is not envisaged as the proposed activity is not generating any kind of waste such that there can be seepage of pollutants to cause any impacts.

The mining activity proposed is a manual scooping of Building Gradesand and hence no impact is envisaged on the local biodiversity.

Since no agricultural or common property lands are involved in the proposed activity action plan for abatement and compensation for the same is not proposed.

Proposed Mitigation Measures

Since the project site is a river bank mining activities will not have any major impact and since the deposits are replenished naturally. No reclamation is proposed. The proponent will plan to plant about 409 saplings every year to enrich the existing biodiversity. Local varieties available will be suitably planted so that bio-diversity is further enriched.

Avenue plantation are proposed to be carried out all along the roads connecting the mine site; the lessee has proposed to carry out plantations on either side of the village roads as a social responsibility towards the community in restoring the ecological balance in the surrounding area.

A green belt shall be developed by planting a suitable combination of trees which can grow fast and also reduce the noise levels from aesthetic point of view which will also have a positive impact.

To prevent the sand deposition on the agricultural lands various preventive measures like planting bushes all along the river bank which have extensive root system will be carried out. They will act as a barrier preventing the sand from depositing on the lands thus preserving its fertility.

3.1.9 Biological Environment

Baseline Status

The general observation shows moderate green cover and agricultural lands in the buffer zone. Ecological survey was carried out by field visits in the study area of 5kms radius to observe the species and to assess the status of dominance, density, frequency, abundance, etc. Besides, personal enquiries & discussion with local people and forest department officials were also conducted to get a fair idea of the existing ecological status.

Biodiversity: In the buffer zone area common varieties of crops like Soyabean, cotton, Tur are seen. No floral species, which are rare or of medicinal variety have been observed in the study area. The fauna found in the area are of common variety and no endangered species are found in the study area. There are no National Parks, Sanctuary or a Biosphere Reserve within 10 kms radial distance from the mining area.

Aquatic flora and fauna: In order to study the aquatic flora and fauna of River, water samples were collected from the selected locations of the river course and were analyzed. The river harbors a variety of fishes from rohu, sipnas, wagur, etc. It is observed that there no fauna dependant on the river bed or area nearest for its nesting The river also cradles various species of aquatic flora.

Anticipated Impacts

There is no loss of forest resources like medicinal plants, endangered & rare species as no deforestation takes place since mining is done on the banks of a river.

There will be no impact on the terrestrial biodiversity as there is no air & noise pollution due to the proposed mining activity.

Since there is no pollution of the river water due to the proposed activity the aquatic biodiversity is not affected & hence no mitigation measures are suggested. There will be no habitat fragmentation or blocking of migratory corridors as the proposed mining.

Proposed Mitigation Measures

Mitigative measures proposed are in terms of afforestation over the mined out areas. Delineation of the same will be carried out as the mining activity proceeds. It is proposed to

have a green belt along the bank. For which appropriate species of plants that suits the geo-climatic conditions are selected. The species selected have deep roots, fast growth and optimum penetrability to withstand the wind shall be selected, which otherwise will act as wind tunnels.

Since the project site is a river bank, mining activities will not have any major impact and since the deposits are replenished naturally no reclamation is proposed.

Afforestation

The afforestation is proposed all along the river bank for the proposed plan period, every year it is proposed to afforest about 409 saplings will be planted. Avenue plantation will also be undertaken in a phased manner over the next 4 months . Villagers will be involved for all the afforestation activities. Care shall be taken for the protection and growth of these saplings for better survival.

As there is no proposal for deforestation, compensatory afforestation is not envisaged. But afforestation in terms of a social responsibility towards a better environment with economically beneficial plantation is proposed to be grown. A green belt i.e. varieties of herbs & shrubs all along the cultivable area of the river banks is proposed thus creating a better biotic environment.

For afforestation the species to be planted are considered keeping in view the following conditions:

Adaptation to the geo-climatic conditions of the area .

A mix of oblong and conical canopies (hts ranging 4m – 20m) Preferably evergreen trees.

The species that have history of good survival and growth under similar site conditions are preferably selected.

Avenue plantation are proposed to be carried out all along the roads connecting the mine site; the lessee has proposed to carry out plantations on either side of the village roads considering it has a social responsibility towards the community in restoring the ecological balance in the surrounding area. Based on the above Neem, Peepal, Bamboo will be planted.

3.1.10 Socio economic Environment

Baseline Environment

Socio-economic study is an integral part of the environmental study; existing as well as upcoming sand scooping will have both adverse & beneficial impacts on the environment.

It is revealed that the proposed area is well connected to the nearby major towns and cities, the public services and utilities like Medical facilities, Electricity, Drinking water requirement. Transportation & communication etc need to be organized for ready availability.

The basic socioeconomic needs of villages are fulfilled at large from the 25 % of royalty collected from village sand ghat. These funds are available in the District Mineral Foundation specifically for village road development, drinking water scheme to fulfill socio economic upliftment.

3.1.11 Occupational Health

Baseline Status

There is no remarkable environmental pollution due to the proposed mining as it is proposed to be a manual mining/scooping of Building Gradesand on the banks of River Tapi. Hence there will be no major occupational health hazards.

Medical & Health Facilities

First-aid facility is to be provided at the mines. The proponent will further provide related safety equipments & facilities at the proposed mine site. Medical checkups, pathological tests and medicines will be provided to all employees. Each person being employed in the mine will undergo initial medical examination with periodical examinations till they are employed at the mines.

3.1.12 Final Mine Closure Plan

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

Section 4.0 : Implementation, Monitoring & Budgeting to implement

4.1 Environmental Management Plan

Reference to section 3.0 regarding baseline data and probable impacts and mitigation measures, the Environmental Management Plan is implemented by the Sand Ghat Allottee/ Successful Bidder.

A budgetary provision of Rs 9.35 lakhs whichever is higher earmarked to implement the Environment Management Plan.

4.1.1 Air Quality Management

4.1.1.1 Controlling Dust Levels

Dust is the major pollutant generated from the mining operations. Dust would be generated during mining, handling and transportation of the material. The maximum predicted value of increase in PM_{10} due to proposed mining operation would be about 0.6681 $\mu g/m^3$. This concentration will be observed within the Sand Ghat area. The concentration was found to reduce to a value of 0.01 $\mu g/m^3$ at a distance of about 1.0 km from the mining lease boundary. The impact of mining operation would be negligible beyond 1.0 km. The environmental control measures, proposed to control the fugitive dust released during the Sand scooping/ mining are given below:

MINES

- Dust masks will be provided to the workers exposed .
- Afforestation along the river bank and along the village road
- Periodic health check up for the workers shall be done
- Maintenance of plantation of wide leaf trees along river bank and tall grass along slope of river bank .
- Water tankers with spraying arrangement will be used for regular water sprinkling on village roads to ensure effective dust suppression due to transportation

RAMP

- Ramp will be maintained regularly
- Speed limits will be prescribed for transport vehicle

- Periodic maintenance of the tractor used for transport shall be done to reduce smoke emissions
- Over filling of tractors is avoided and thus spillage on the ramp/ roads is restricted
- Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the ambient air.
- No vehicle with its engine will be allow to keep idle to reduce pollutant levels and conserve riverine health.

A summary of air pollution control measures is given below:

S. No	Impact Source	Impact	Control measure
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides & development of green belts • Proper maintenance. • Regular water spraying. • Avoiding over filling of tractor and consequent spillage on the roads • Air quality will be monitoring at impacted village.
2	Truck/ Tractor Movement	Air Quality	• No overloading of trucks. • Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Enforcing speed limit. • Regular monitoring of the exhaust fumes. • No Engine of tractor/truck will be kept on during the filling. • If possible entry be restricted to river bed
3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks. • Mining will be done during day time between fixed hours only.
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank.

5	Occupational Health & Safety Measures to Control Dust Inhalation	Safety of Workers and Mining Operations	● Providing a working environment that is conducive to safety & health ● The management of occupational safety & health is the prime responsibility of mine owner. ● Provision of necessary personal protective equipments ● Ensuring employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities • Provision of First Aid and Drinking Water, Temporary rest Room

4.1.2 Noise Pollution and Ground Vibrations

As no blasting is involved ground vibrations will not be measured.

Source	Type	Intensity, dB(A)	Proposed control
Transportation through village roads	---	Highway model -62.8 L_{eq}	• Avenue plantation, • Speed breakers

4.1.2.1 Noise Pollution Control

The following noise control measures will be provided in the proposed crushing and screening plant.

- In addition, personnel working near high noise level generating sources will be provided with ear muffs
- No equipment generating Noise excluding tractor/truck will be permitted.
- No tractor engine will be kept idle.
- Conduct periodic audiometric tests for employees working close to high noise generating areas such as compressors, the loading and unloading sections, etc
- Provision of PPE's will be made and their proper usage will be ensured for hearing protection of the workers as well as visitors.

4.1.3 Traffic Management

The impacts of increase in traffic load from the proposed mine will be reduced by proper planning and implementation of the strict traffic guidelines. The following measures will be adopted to minimize the impacts of the increase in traffic density.

- Feasibility of alternative mode of transport avoiding village.
- The mineral transporting vehicles will be registered with the forest department/revenue department and only registered vehicles will be used for mineral transport.
- The PUC certificate for exhaust emissions for all the transport vehicles will be made mandatory.
- All the vehicles will be properly maintained to control emissions and noise generation.
- Drivers of all the vehicles will strictly follow traffic rules.
- Speeds of the mineral transport vehicles will be regulated.
- Overloading of the trucks/tractors will not be allowed
- The mineral transporting trucks/tractors will be properly covered with tarpaulin to avoid fugitive emissions.
- Batch transport system will be adopted in consultation with the other sand ghat operators in the area to avoid excess traffic at a time on the road.
- Mineral transportation will be done only during day time only.
- Strict action will be taken against any driver, who do not comply the traffic rules.

4.1.4 Water Quality Management

4.1.4.1 Water Pollution Control Measures

The only source of pollution from the mine will be the silt wash off during monsoon. The measures proposed for control of water pollution are mentioned below:

- Plantation of local varieties of flora species, along the drains, so that there will be fast and healthy growth of vegetation specially along bank.
- Sand does not contain any toxic substance, which can dissolve and pollute water quality. To prevent the suspended particles joining the natural stream in the area, ramp and approach created for Sand Ghat will be blocked.
- Domestic effluent will be discharged in septic tank and soak pits temporarily proposed at 20m away from river bank of Tapi .

4.1.5 Implementation of Final Mine Closure Plan

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the

extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

4.1.6 Plantation program

It is proposed to plant about 409 plants of local species during the monsoon period along bank of river and village roads.

List of Species Proposed for green Belt Development

Local species like Neem, peepal,subabhul, Karanj, Bamboo etc will be planted.

4.1.7 Occupational Health and Safety Management

The following Occupational Health and safety Measures will be adopted in the mine leas area:

- Providing a working environment that is conducive to safety and health
- The management of occupational safety and health is the prime responsibility of mine management from the executive level to the first line supervisory level
- Employee involvement and commitment in the implementation of health and safety guidelines
- Provision of necessary personal protective equipments to all the employees
- Extensive publicity and propaganda related to safety.
- Identification and assessment of risk from health hazards at work places and taking adequate steps to reduce risks.
- Education of workers on sanitation, cleanliness, hygiene and health care.
- Periodical medical examination of all workers by medical specialist so that any adverse affect may be detected in its early stage.

Noise Induced Hearing Loss

Rotation of workers exposed to noisy premises to avoid NIHL.

4.2 Monitoring of Implementation of Environmental Management Plan with Budget:

Successful Bidder/ Sand Ghat allottee will implement the Environmental Management Plan for the amount. Rs. 9.35 Lakhs on his own.

Successful Bidder/ Sand Ghat allottee will submit compliance to terms of conditions stipulated in the prior environmental clearance to the District Mining Officer and respective Tahsildar with the expenses made on implementation of environmental management plan.

District Mining Officer/respective Tahsildar will monitor the implementation of approved environmental management plan.

After submission of satisfactory compliances on periodic the implementation compliances of approved environmental management plan, District Collector will release the EMD deposited by the Successful Bidder/ Sand Ghat allottee, otherwise the same will be forfeited.

S. No	Impact Source	Impact	Control measure	Budget/Cost
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides • Proper maintenance. • Regular water spraying. • Air quality will be monitoring at impacted village. • Health Checkup of Employees	• Rs. 100000.00 • Rs. 75000.00 • Rs. 50000.00 • Rs. 15000.00 (For One Day Monitoring) • Rs. 30000.00
2	Truck/ Tractor Movement	Air Quality	• Sand carrying tractors will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Regular monitoring of the exhaust fumes. • Barriers & Traffic Management Expenses	• Rs. 160000.00 (32tarpaulin) • Rs. 16000.00 • Rs. 20000.00 (Excluding Man Power Salary which is included in labour costs)

3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks.	• Rs. 30000.00 (260 days) (Excluding Man Power Salary which is included in labour costs) Rs. 20000.00
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank. (65 Saplings)	Rs. 32500.00 (for Green Belt Development)
5	Transportation on Village Roads	Dust Control	• Green belt along village Rd (344 Saplings)	Rs. 172000.00 (for Green Belt Development)
6	Final Mine Closer Plan implementation	Replenishment of Sand	• Gabions/ boulders will be arranged as per guidelines	Rs. 15000.00
7	• Provision for Mobile Toilets and Sewage Disposal			100000.00
8	• Miscellaneoue			100000.00
• Total in Rs.				935500

ENVIRONMENTAL MANAGEMENT PLAN

FOR

SAND GHATS

AT

NANDURBAR DISTRICT

STATE – MAHARASHTRA

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Latitude	Longitude
1	Kurhavad tasa	Shahada	Tapi	1/1,1/2,1/3	2.125	250 x 85 x 2.00	15017	21°25' 49.0699"N	74°29' 14.6678"E

PROPONENT

DISTRICT MINING OFFICER, COLLECTOR OFFICE, NANDURBAR

CONSULTANT

ENVIRO TECHNO CONSULT PRIVATE LIMITED

68,MAHAKALI NAGAR-2

NEAR MANEWADA SQUARE

NAGPUR 440 024

APRIL 2020

Sr. No.	Section No.	Section Description	Page No.
1	1.0	Introduction to Sand Ghat	4
2		1.0 Introduction	4
3	2.0	Project Description and Method of Mining	9
4	2.0	Project Description	9
5	2.1	Method of Mining	10
6	2.2	Period of Mining	10
7	2.3	Manpower Requirement	11
8	2.4	Amenities	12
9	2.5	Existing & Proposed Land Use Pattern	12
10	2.6	Existing Flora & Fauna	13
11	2.7	Local Geology	13
12	2.8	Mine Closure Plan	13
13	3.0	Baseline Environment ,Anticipated Impacts and Management	15
14	3.0	Baseline Air Quality	15
15	3.1	Anticipated Impacts and Management	17
16	3.1.1	Dust Generation and Control	17
17	3.1.2	Impact due to Noise Pollution and its Management	19
18	3.1.3	Impact due to Water Pollution and its Management	20
19	3.1.4	Impact on Land and its Management	21
20	3.1.5	Impact on Socio Economic Environment	22
21	3.1.6	Impact on Ground Water Level of Surrounding Area	22
22	3.1.7	Sand Replenishment Studies	23
23	3.1.8	Land use pattern in the buffer zone	28
24	3.1.9	Biological Environment	28
25	3.1.10	Socio economic Environment	30
26	3.1.11	Occupational Health	30

27	3.1.12	Final Mine Closure Plan	30
28	4.0	Implementation, Monitoring & Budgeting to implement	31
29	4.1	Environmental Management Plan	31
30	4.1.1	Air Quality Management	31
31	4.1.1.1	Controlling Dust Levels	31
32	4.1.2	Noise Pollution and Ground Vibrations	33
33	4.1.2.1	Noise Pollution Control	33
34	4.1.3	Traffic Management	34
35	4.1.4	Water Quality Management	34
36	4.1.4.1	Water Pollution Control Measures	34
37	4.1.5	Implementation of Final Mine Closure Plan	35
38	4.1.6	Plantation program	35
39	4.1.7	Occupational Health and Safety Management	35
40	4.2	Monitoring of Implementation of Environmental Management Plan with Budget	36

Section 1.0 : Introduction to Sand Ghat

1.0 Introduction :

District Collector, Nandurbar intends to auction sand ghats and appointed District Mining Officer Nandurbar as project proponent. Total 03 sand ghats are identified by Tahsil Level technical Committee, Shahada chaired by Tahsildar Shahada along with District Mining Officer, Nandurbar, representative of G.S.D.A., M.P.C.B., irrigation & Directorate of Geology and Mining Aurangabad. All three sand ghats were identified and explored as per procedure defined in Sand Auction Rules 2019 dated 3.09.2019 on recommendations of Tahsildar Shahada. Revenue of Rs 9.71 Cr is expected from the auction of these sand ghats.

Tembhe Bk. sand ghat proposed over river Tapi in Shahada Taluka is one of the three sand ghats proposed to cater infrastructural requirement of sand in the tahsil of Shahada and Nandurbar and other talukas. Details of Tembhe Bk. Sand Ghat is as below

Table 1.0 Details of Sand Ghat :

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Longitude	Latitude
1	Kurhavadtasa	Shahada	Tapi	1/1,1/2,1/3	2.125	250 x 85 x 2.00	15017	21°25' 49.0699"N	74°29' 14.6678"E

Table 2.0 All corner Coordinates of Sand Ghat :

Sr. No.	**Latitude**	**Longitude**
BP-1	21°25' 41.5121"N	74°29' 45.0188"E
BP-2	21°25' 39.6103"N	74°29' 44.5516"E
BP-3	21°25' 41.9794"N	74°29' 33.549"E
BP-4	21°25' 43.8813"N	74°29' 34.0161"E

Table 3.0 Environmental Sensitivity of Sand Ghat :

Sl. No.	Areas	Distance in kilometer / Details
1	Distance of project site from nearest rail or road bridge over the concerned River,Rivulet, Nallah etc.	Bridge on Tapi river -4.5 kmE
2	Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Shahada-12.3 Km NNW 6.5 km SW NH3-40 Km SE SH4 – 6.5 Km N Sarangkheda Shahada Road– 3.32 Km NE Vil Rd-0.183km NE 15 km Check dam – 4.65 kmE 4.65 kmE 4.65 kmE
3	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Yawal wildlife santury-52 km E, Shoolpaneshwar santury-57 km NW
4	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No wetland is notified in district, Tapi river, Biosphere -Pachmadi 372 km NE Mountain- Satpuda Range
5	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Yawal wildlife santury-52 km E, Shoolpaneshwar santury-57 km NW
6	Inland, coastal, marine or underground waters	Tapi river , Coastal Area -400 Km West, Marine Water -490 Km West
7	State, National boundaries	Gujrat-17.5 Km NW
8	Routes or facilities used by the public for access to recreation or other tourist,pilgrim areas	Sarangkheda -4.2 Km NE
9	Defence installations	Varangaon Ordnance factory-153 Km SE
10	Densely populated or built-up area, distance from nearest human habitation	0.150 Km NE
11	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Shahada-12.3 Km NNW

12	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism,minerals)	Tapi river ,
13	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Not within 5 km study area
14	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area.
15	Is proposed mining site located over or near fissure / fracture for ground water recharge	Not within 5 km study area
16	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	Not within 5 km study area
17	Forest land involved (hectares)	No
18	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	No

Table 4.0 Status of Statutory Clearances for Sand Ghat

2.1	Name of Sand Mine (Ghat)	Kurhavad tasa Sand Ghat Tq. Shahada Dist. Nandurbar
2.2	Name & Address of Allottee	District Mining Officer Nandurbar / Succesful Bidder Nandurbar District, Nandurbar
2.3	Status of the lease	New, Individual/ Project Proponent/Succesful Bidder for auction of sand ghat by District Collector Nandurbar.
2.4	Mineral for which lessee intends to mine	Ordinary Sand for Construction purpose
2.5	Name & Address of the Prospecting Agency	Taluka Level Technical Committee , Shahada
2.6	Mining Plan Approval	Draft stage. It is under approval of authority.
2.7	Grampanchayat NOC	Received from Gramsabha as per public consultation procedure

		defined in sand mining guidelines of Maharashtra State dated 03.09.2019.
2.8	Plan Period for Activity	Up to one year excluding monsoon period of 10th June to 30th September or Allotted/Permitted quantity mined out, whichever is earlier.

Google Image for Sand Ghat (600 m Area) :

Figure -1 : Google Image

Proposed Approach Road for Sand Ghat on Google Image

Approach Road Tractors will ply over 740 m over pandan road to connect Kurhavad Sarangkheda road .

.

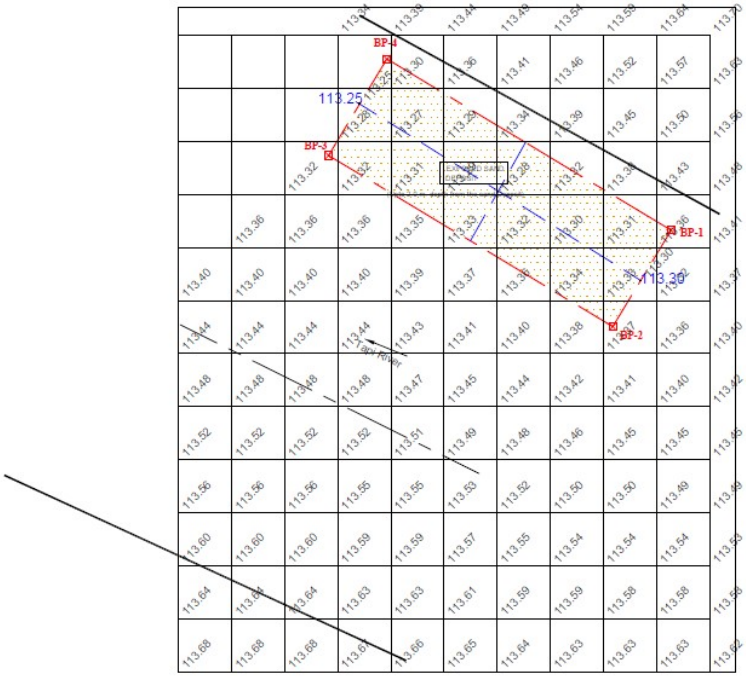
Section 2.0 : Project Description and Method of Mining

2.0 Project Description :

Need for the project: The sand ghat area has been selected in view of its existing demand for Building Grade sand for the area in and around Shahada & Nandurbar Tahsil. District Mining Officer Nandurbar has proposed for the production of 15017 Brass of sand by proposing to follow a systematic mining process with respect to the market scenario. The individual sand reserve at the ghats as per GSDA survey is as under.

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Longitude	Latitude
1	Kurhavadtasa	Shahada	Tapi	1/1,1/2,1/3	2.125	250 x 85 x 2.00	15017	21°25' 49.0699"N	74°29' 14.6678"E

Surface Plan for Kurhavada Tasa Sand Ghat:



2.1 Method of Mining :

The mining will be manual opencast mining method of scooping using simple tool like spade/pawdas.

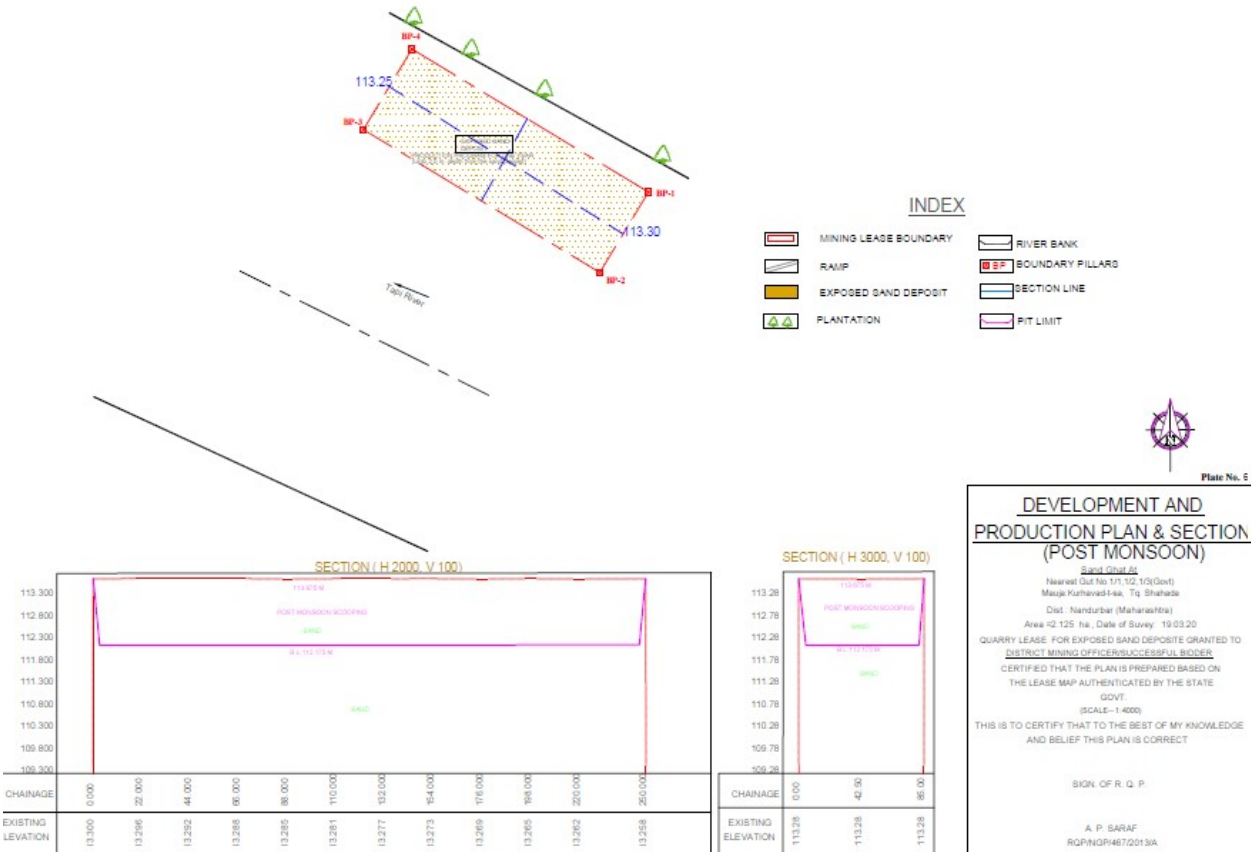
a. Over burden/Soil Removal:
   No overburden/Soil is anticipated.
b. Scooping of Sand /Loading
   The ordinary sand will be loaded manually by labours.
c. Hauling
   Ordinary sand is transported through tractors /trucks with permissible quantity.
d. No machinery will be utilized.

2.2 Period of Mining :

5.1 Year wise Production Plan:Period	Area x Depth (cu.m.)
Up to one year excluding monsoon period of 10th June to 30th September or Allotted/Permitted quantity mined out, whichever is earlier.	250m x 85 m x 2.00 m

Appearance of Sand Ghat

Production Plan for Kurhavad Tasa Sand Ghat :



2.3 Manpower Requirement :

About 38 labours are required to carryout the scooping activity.

Sr. No.	Category	Nos.
1	Mining Supervisor	3
2	Tractor Drivers and Helpers	10
3	Mining Labours	25
	Total	38

2.4 Amenities :

The site services will be provided by allottee/Successful Bidder, Office, First Aid and Rest Shelters will be temporarily constructed 25m away from the bank of river.
Facility of mobile toilet with water tank of 250 ltr. Will be provided at 150m away from river bank.

Arrangement for periodic disposal of collection tank of mobile toilet will be ensured or otherwise toilet will be acquired on rent for workers.

Requirement of Water for Dust Supression & Domestic Purposes

Total water requirement for various activities during sand scooping is estimated as 1.760m^3/day per sand ghat. The water will be required for dust suppression, plantation, domestic use. The activity-wise break up of the total water requirement is given below:

Purpose	**Qty Required m^3/day**
Dust suppression/ Plantation	1.0
Domestic Use	0.760
Total	**1.760**

Water will be sourced from Grampanchayat Borewells on payment litre cost basis. Drinking water will be provided from RO water suppliers.

2.5 Existing & Proposed Land Use Pattern :

Area	Existing Land Use sq. m.	Proposed Land Use sq. m.
Area under pits	00	21250
Area under dumps	00	00
Undisturbed Area	21250	00
Area under Roads	00	00
Area under Plantation	00	00
Area under Storage	00	00
Area under Office, etc.	00	00

2.6 Existing Flora & Fauna :

Local varieties of bushes like tarota, neem, grasses observed in the area. Mainly agricultural activity observed for Jowar Bajra,nung. Natural fauna like fishes observed in the course of water stream during the monsoon period. Mice, lizards etc found in the nearby farms find during

survey whereas no endangered wild life observed. No turtle nesting observed or recorded during the survey and on records.

2.7 Local Geology :

Applied area for sand extraction is covered by dark basalt and which has been derived/ transported from black basalt of surrounding flat and well tilled area. The sand of the applied area is found to be underlain by dark basalt of the river bed.

2.8 Mine Closure Plan :

Sand scooping is permitted for a period of one year from the date of auction of sand ghatas per sand policy dated 03.09.2019 of Govt. of Maharashtra only. Before surrender of Sand Ghat to District Authority, mine closure is proposed which will help to replenish the sand during the monsoon period when there will be live flow of water in the river channel.

Guidelines As per Indian Bureau Of Mines for Final Mine Closure of Sand Ghat:

Mineral is replenish able during each monsoon. No manual reclamation is proposed.

Method of SandTraps Emplace Gabions (1m height) at 200 m intervals to function as sand traps during final closure of Mine is proposed as per Sand Mining Guidelines of IBM vide letter 296/7/2000/MRC dated 16May 2011.

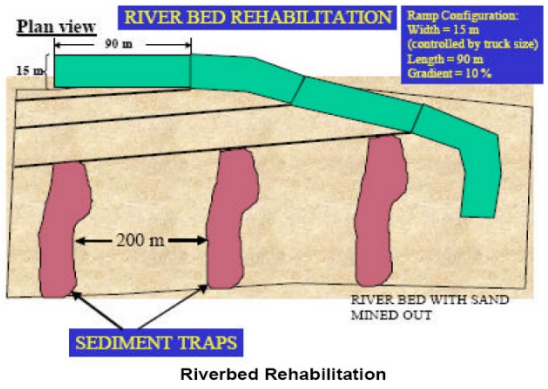


Figure -

Final Closure Action Plan for Sand Ghat

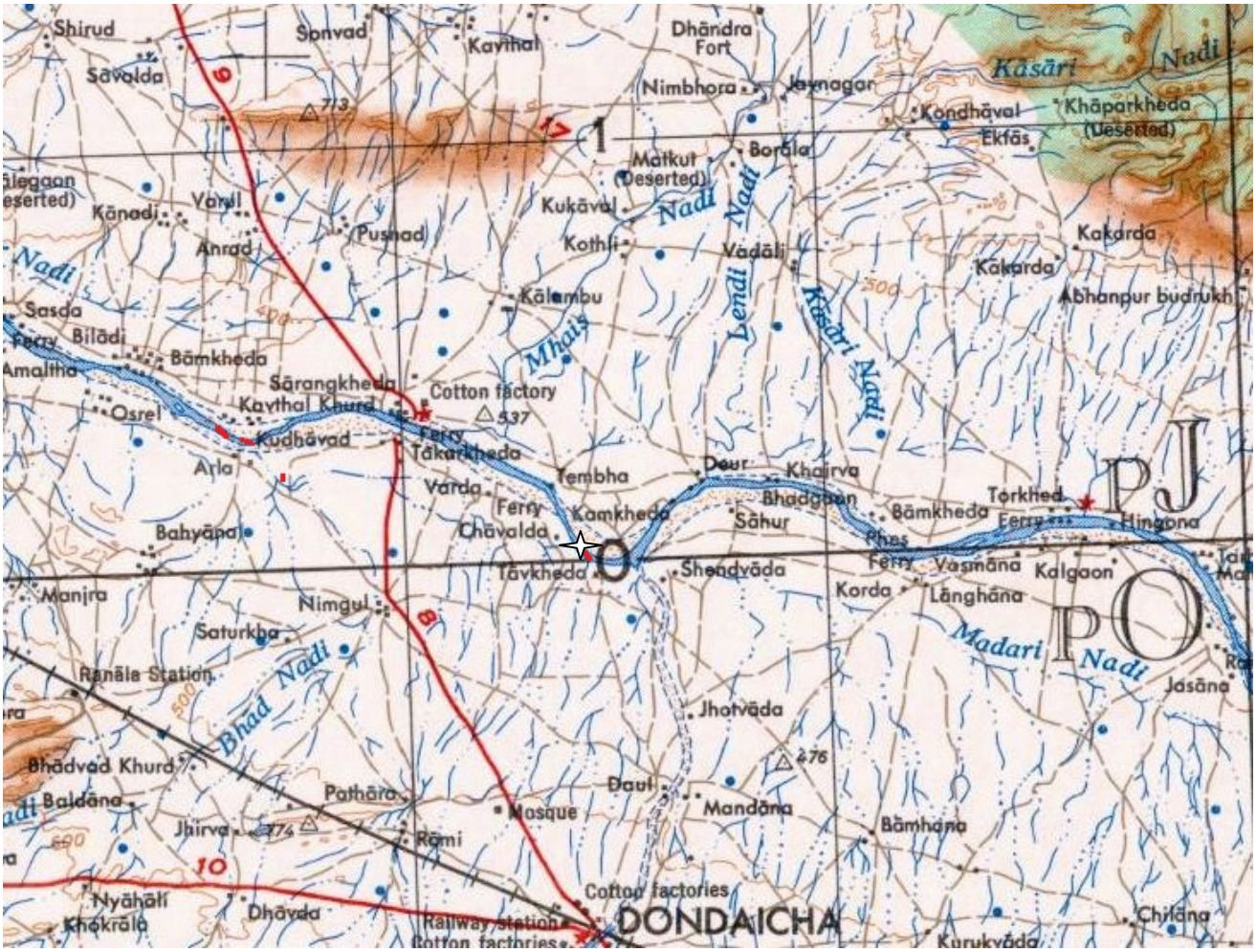
(1) Leave the area from which the sand has been extracted leveled and free of any foreign debris or materials.

(2) Re-vegetate indigenous plants which were removed from areas for the mining of sand as far as is reasonably practical.
(3) Plant trees along the riverbanks with no or minimal vegetation, irrespective of signs of erosion or not (ensure that species selected are indigenous species).
(4) The surface of stockpile and sand processing areas outside the riverbed to be scarified to a depth of 500 mm, graded evenly and the topsoil previously stored, returned to its original depth over the area.
(5) Prepare the area in such a way as to stimulate / ensure the re-growth of vegetation.
(6) Prepare Sand Traps Emplace gabions (1 m height) at 200 m intervals to functions as sand traps. Boulders dug out during mining should be used for this purpose. Gabions would have to be placed at one kilometer (at the maximum) intervals on the mined out areas. The shorter gabion intervals would induce faster rehabilitation. Gabions are preferred over concrete because they would allow water to flow through, are a more natural solution. Also additional gabions can be easily laid to increase the trap height. Figure is a drawing that illustrates river bed rehabilitation.
(7) Any access routes, especially if they are not beneficial to the local community would need to be ploughed and replanted with native species.
(8) Close and restore river bank where access ramps have been restored. Ensure river channel is not obstructed and that repaired bank is adequately fortified.

Section 3.0 : Baseline Environment ,Anticipated Impacts and Management

The Sand Ghat is a part of Toposheet 46K/7

3.0 Baseline Air Quality



Baseline air quality data is collected in between October 2-October 20, 2018 for the impacted village and summarized as

Sr. No.	Name of Village	Tahsil	Name of River	Permissible Limits as per NAAQ standards 2009	PM_{10}	$PM_{2.5}$	Sox	Nox
					$\mu gm/m^3$			
					100	60	80	80
1	Kurhavad Tasa	Shahada	Tapi		44.1	13.5	12.9	13.3

Noise levels are recorded for the impacted village for day time. Maximum and minimum noise recorded is summarized as below

Station	Maximum Noise in dB(A)	Minimum Noise in dB(A)
Kurhavad Tasa	49.7	39.1

3.1 Anticipated Impacts and Management

The impacts envisaged due to mining activity are evaluated based on various factors. The emission inventory of the pollutants is as follows, the main air pollutant would be dust or particulate matter generated by handling and transportation of ore. The persons employed at the above areas are likely to get lung related diseases like silicosis, after prolonged exposure to the sand particles without protective measures. But the impact of mining operations on air quality is negligible as mining involved is only scooping of sand deposits from the river bed manually and not at large scale.

3.1.1 Dust Generation and Control

There is mere possibility of dust generation due to the proposed scooping of Building Grade sand from river bed manually. The maximum concentration recorded for the impacted village for PM_{10} was found to be 44.1 $\mu g/m^3$. There is a possibility of dust generation due to the frequent movement of public transport vehicles and tippers carrying the Building grade sand on haulage & transport road. The envisaged production of Building Grade Sand during the plan period is only 15017Brass/annum from the proposed sand ghat.

- Incremental GLC is predicted using USEPA equation considering pollution sources like transportation and mining and modeled using AERMOD-ISCST-3 model

Area Source Emission Factor Considered

Sr. No.	Activity	Emission Factor Kg/T
1	Loading & Transportation	@0.0005 Kg/T

Refer Chapter -11 19.2 of EPA emission manual.

Being all the sand ghats are nearby and on one stretch of river, average scooping is considered for prediction of incremental ground level concentration. Average production is calculated as 118995Tonnes/Sand Ghat for 260 operational days

Area Source Emission-Production and Development

Description	Statistics
Quantity ,TPA	118995TPA
Operational Days per Year	260 Days
Lead (m)	740 m

Predicted Emission

Activity	Emission rate gm/sec
Transportation	0.688627
Total	**0.688627**

#Emission factor computed on wind speed of 1 m/sec, moisture 10% & Silt content 15 %

Accordingly Maximum incremental GLC is predicted as 0.6693µgm/cum.

Predicted Ground Level Concentrations due to Scooping of Sand is summarized as :

Sr. No.	Name of Village	Tahsil	Name of River	Permissible standard as per NAAQ 2009	PM_{10}	Predicted incremental GLC in terms of PM_{10}	Predicted PM_{10} values at Impacted Village
				$\mu gm/m^3$			
1	Kurhavad Tasa	Shahada	Tapi		44.1	0.6693	44.7693

Predicted levels of PM_{10}were found to be within permissible limits as per NAAQ standards.
In order to mitigate fugitive dust emissions and other air emissions from the project activities, the following measures are proposed to be adopted.

- The mining haulage area will be wetted by water spraying and two 1 KL mobile sprinklers
- To avoid fugitive dust emissions at the time of Screening activity, Sand screening activity will be carried so as to prevent spreading of dust.
- Effective dust suppression arrangements will be made at the ground level sand bunkers at the mines.
- Sand is transported by road through trucks. The sand will be in wet condition however if dry sand is being transported it will be wetted after loading in to the truck and shall be covered by tarpaulin sheets.

To minimize the vehicular pollution from the sand transporting vehicles, the following conditions are insisted to permit the vehicles of the transporters:

- The vehicles should be with good engine condition and should maintain pollution control certificate issued by appropriate authorities.
- Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

- Ambient Air quality Monitoring will be carried out at four stations on fortnightly basis to assess the air quality in and around the project for taking necessary control measures.
- Green belt development along the access roads at mine premises and near the sand mining site

3.1.2 Impact due to Noise Pollution and its Management

Noise environment in this project will be affected only by the equipment at the site and vehicular transportation. Since mining is done manually, increase in noise levels is marginal and only due to transport activities.

In order to mitigate noise generation from the project activities, the following mitigation measures are proposed:

Since the noise generating is only through movement of vehicles, strict compliance to periodical maintenance of the vehicle conditions will be insisted.

Noise monitoring at the work places shall be carried out on fortnightly basis to ensure the compliance.

3.1.3 Impact due to Water Pollution and its Management

As the project activity is carried out in the meandering part of the river bed, none of the project activities will affect the water environment. Sand is in exposed stage to scoop out and away from the river stream. In this project, it is not proposed to divert or truncate any stream. In the lean months, the proposed sand mining will not expose the base flow of the river and hence there will not be any adverse impact on surface hydrology and ground water regime due to this project. As per the Government recommendations the sand in riverbed will be extracted up to 2 m depth only keeping base layer of 2m in the bed.

Thus, the project activities will not have any adverse effect on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality.

In order to ensure that the project activities shall not affect the Water environment, the following measures will be taken up:

- Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed.
- Mining below subterranean water level will be avoided as safe guard against environmental contamination and over exploitation of resources.
- River stream will not be diverted to form in active channels.
- Ground water levels will be monitored regularly in and around sand mining project.
- Mining schedule is synchronized with the river flow direction and the gradient of the land.
- Mining at the concave side of the river channel will be avoided to prevent bank erosion.
- Meandering segment of river will be selected for mining in such a way to avoid natural eroding banks and to promote mining on naturally building meander components.
- Mining depth shall be maintained as per the guidelines and rules of Sand Mining Policy dated 03.019.2019 and recommendations of Taluka Level Technical Committee comprising representative of M.S.. State Ground Water Department for extraction of sand during the lease period.
- Water Quality Monitoring for the ground waters, river water and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.

Mitigation Measures to improve River Health (Tapi River)

- Municipal authorities must arrest their solid, liquid discharge at their own treatment facilities and should avoid these hazardous matters to drain in to river.
- Awareness campaign in the local people must be floated implement river management.

3.1.4 Impact on Land and its Management

Movements of vehicles sometimes cause problems to agricultural land, human habitations, noise and movement of public and also cause traffic hazards. The impacts include damage of river bank due to access ramps to river bed, soil erosion, micro disturbance to ground water, possible inducement of changed river course, contamination of sand aquifer water due to ponding. However there may not be any direct impact on soil quality of the area as the scooping activity is restricted to exposed sand ghat keeping at safe distance of 20m from bank of the river.

Proposed Mitigation Measures

- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained. Access points to the river bed will be decided basing on least steepness of river bank and least human activity.
- Haulage roads parallel to the river bank and roads connecting access to river bed will be made away from bank, preferably 25 m away.
- Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, meandering segment of a river to be selected for mining in such a way so as to avoid natural eroding of banks
- Care will be taken to ensure that ponding is not formed in the river bed.
- Access roads from public roads and up to river bank will be aligned in such a way that it would cause least environmental damage.
- Green belt will be developed along the access roads near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.
- Villagers will be encouraged in the plantation activities by means of social forestry.

3.1.5 Impact on Socio Economic Environment

The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the sand mine lease area is not being used for any

purpose by any section of the society in this region. Also the proposed sand ghat is away from public utilities like bridges, water supply schemes etc. There is no R & R involvement in this project. There is no land acquisition in this project.

The Project is expected to yield a positive impact on the socio-economic environment. It helps sustain the development of this area including further development of infrastructure facilities.

3.1.6 Impact on Ground Water Level of Surrounding Area

Scooping of sand beyond the proposed scooping depth may deplete the ground water level of the area. Hence the maximum scoopable depth of sand is restricted keeping sand bed of 2m. The scoopable limit of Sand for proposed Tembhe Bk. sand ghat is 2.0 m keeping 2.0m bed depth of sand. Total Sand depth available is 4.0m.

Survey Committee includes member from GSDA, Nandurbar and approved the depth by monitoring impact of proposed scooping of sand on ground water levels of the area.

3.1.7 Sand Replenishment Studies

Physical monitoring requirements of sand extraction activities should include surveyed channel cross-sections, longitudinal profiles, bed material measurements, geomorphic maps, and discharge and sediment transport measurements.

In addition to local monitoring for replenishment at specific mining sites, monitoring of the entire reach will provide information on the cumulative response of the system to sand extraction.

Because the elevation of the bed of the channel is variable from year to year, a reach-based approach to monitoring will provide a larger context for site-specific changes.

If long-term monitoring data show that there is a reach-scale trend of bed lowering the extraction could be limited.

Sand Replenishment

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If long-term monitoring data show that there is a reach-scale trend of bed lowering the extraction could be limited.

Stream guage station was installed at Kurhavad over Tapi. Along with stream guage a silt sample was collected to ascertain siltation over the river.

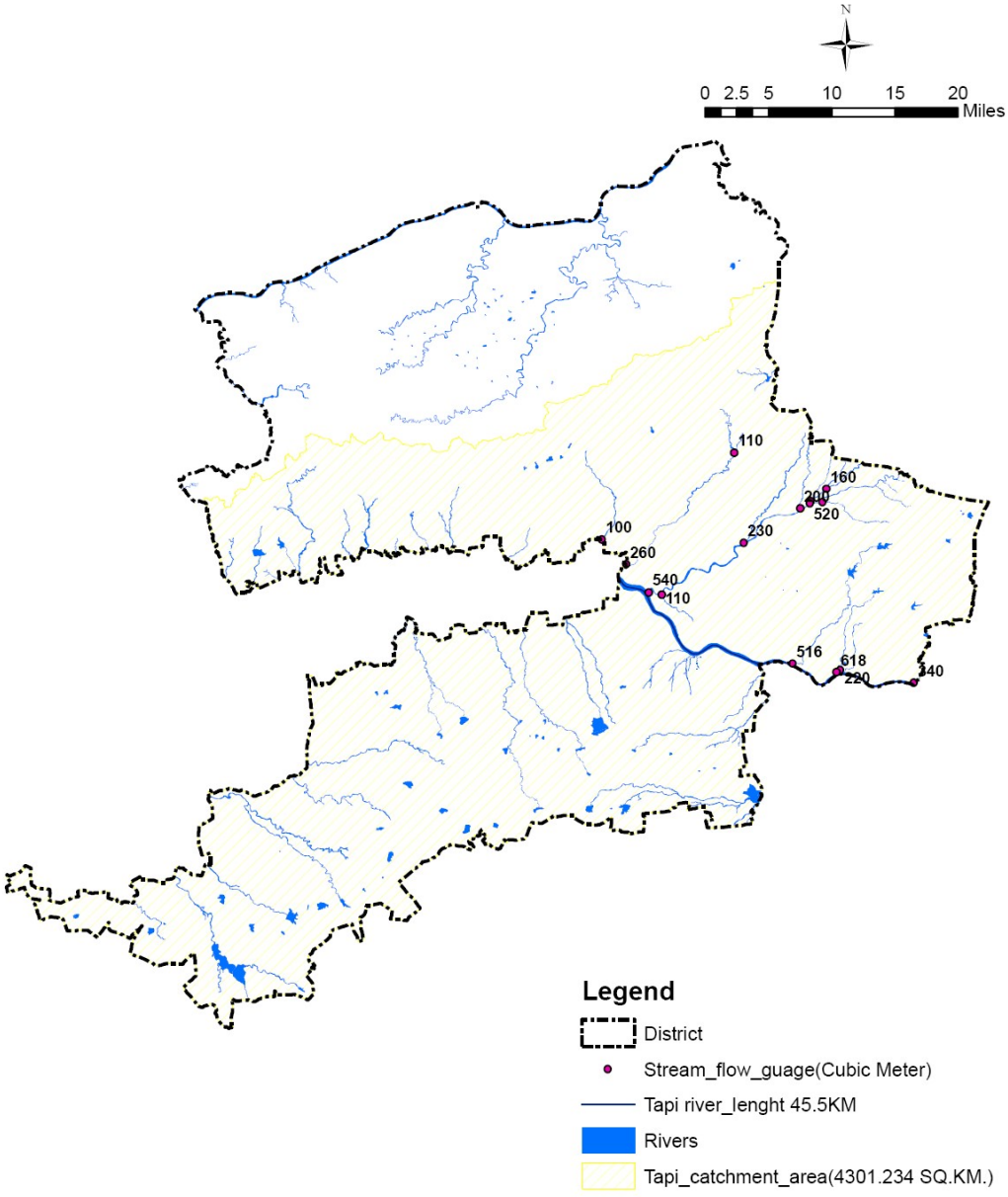
A concurrent type cup flow meter with fish weight of 10 kg with auto data logger is used to record the stream flow velocity.

A Punjab type silt sampler was used to collect the surface water sample for measuring the silt. Silt sample is calibrated to collect surface water sample of 1 ltr. with required arrangements to collect the surface water.

Average flow for both the rivers during the monsoon period was

A] Tapi River 3.0 m/sec.(Average flow velocity)/ Peak Velocity (11.9 m/sec)

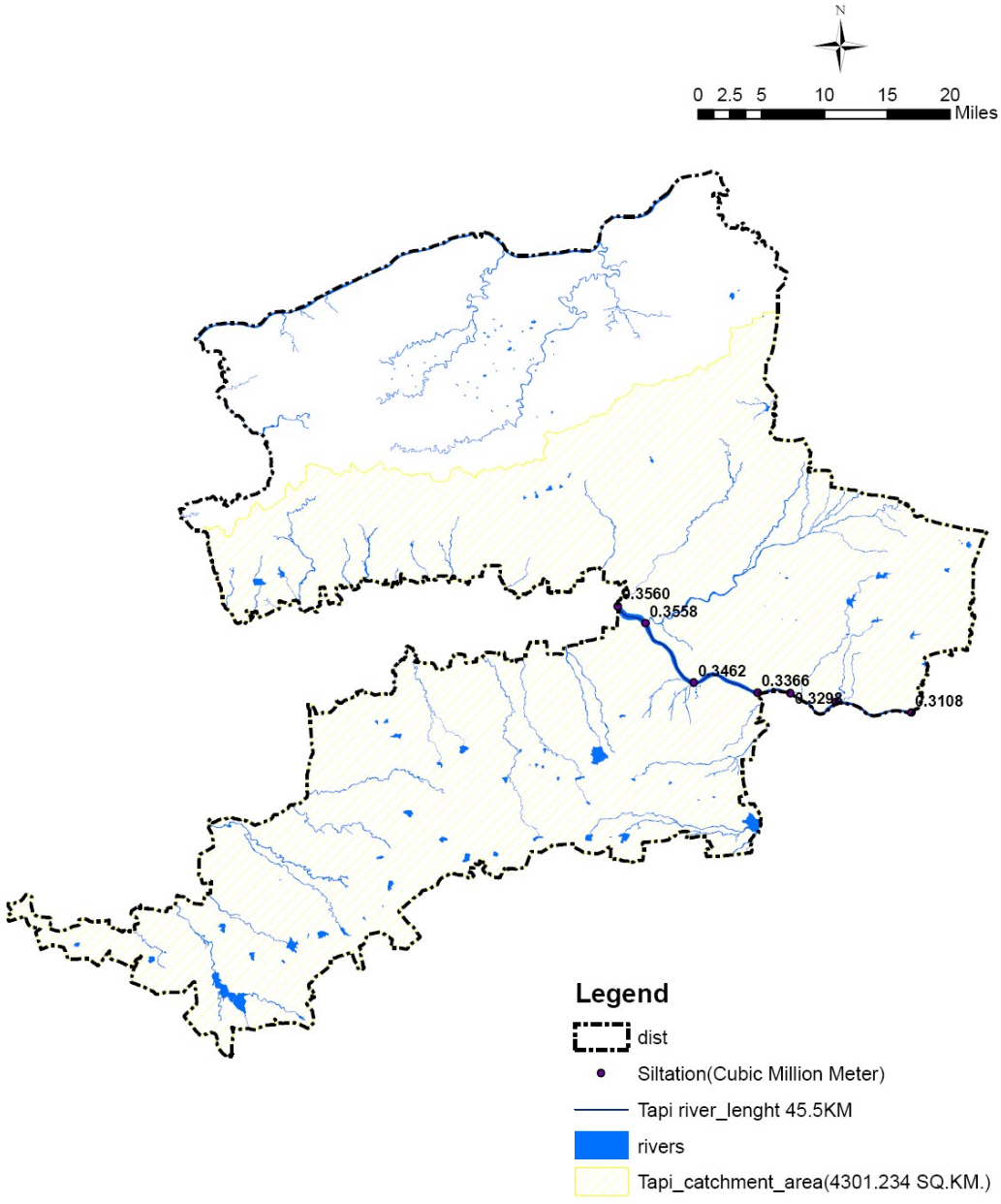
Stream Guage details over river at different locations are marked on drainage map as



cum/minute

Average silt measured for
A] Tapi River 4.8 gm/Lit
Form laboratory method
Siltation is mapped for the rivers using slope –discharge-silt formula as below

Silltaton Map of Major Stream and Rivers of
Nandurbar District Maharashtra



In Million Cum

Comparing theoretical methods with this year, last Year deposition

Sand Replenishment is tabulated at

Name of Sand Ghat	Method	Theoretical	Last Year Deposition	This Year Deposition
Kurhavad Tasa	Data in brass	10870	Sand Ghat was not proposed for last 3 years	15017

Management plan for replenish sand ghat

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

3.1.8 Land use pattern in the buffer zone

The land use of the 5 kms radius study area is studied by analyzing the available secondary data like SOI Toposheet, field visits etc. Most of the lands are around the river body are agricultural lands. The major activity in the buffer zone is mainly agriculture. Agriculture is the main profession of people in the study area with nearly 2/3rd of the population engaged in one or the other form of agriculture.

Anticipated Impacts

As far as impact on the land use pattern is concerned, the buffer zone will not be affected as the mining operations are totally confined to the core zone.

Dump yards are not proposed as no waste is generated. The Building Grade sand mined will be temporarily stacked in a non mineralized area of the river bed. The proposed activity of sand mining is not envisaged to cause any impacts on the topography or the water drainage pattern as the excavation carried out is only manual scooping of Building Grade sand from the river bed.

The impact on soil quality is not likely to be more intensive than the present status and hence

degradation although inevitable, is not likely to affect soil quality. The loss of the fertile soil from the agricultural lands lying along side the river bank are observed during the floods due to differential lateral deposition of sand on the land surface.

As the proposed mining of Building Gradesand from the river bed is only during the pre monsoon season of the year, river erosion is not foreseen and hence control measures are not proposed. However as a preventive measure afforestation in terms of herbs and shrubs are proposed all around the lease area.

Ground water pollution is not envisaged as the proposed activity is not generating any kind of waste such that there can be seepage of pollutants to cause any impacts.

The mining activity proposed is a manual scooping of Building Gradesand and hence no impact is envisaged on the local biodiversity.

Since no agricultural or common property lands are involved in the proposed activity action plan for abatement and compensation for the same is not proposed.

Proposed Mitigation Measures

Since the project site is a river bank mining activities will not have any major impact and since the deposits are replenished naturally. No reclamation is proposed. The proponent will plan to plant about 350 saplings every year to enrich the existing biodiversity. Local varieties available will be suitably planted so that bio-diversity is further enriched.

Avenue plantation are proposed to be carried out all along the roads connecting the mine site; the lessee has proposed to carry out plantations on either side of the village roads as a social responsibility towards the community in restoring the ecological balance in the surrounding area.

A green belt shall be developed by planting a suitable combination of trees which can grow fast and also reduce the noise levels from aesthetic point of view which will also have a positive impact.

To prevent the sand deposition on the agricultural lands various preventive measures like planting bushes all along the river bank which have extensive root system will be carried out. They will act as a barrier preventing the sand from depositing on the lands thus preserving its fertility.

3.1.9 Biological Environment

Baseline Status

The general observation shows moderate green cover and agricultural lands in the buffer zone. Ecological survey was carried out by field visits in the study area of 5kms radius to observe the species and to assess the status of dominance, density, frequency, abundance, etc. Besides, personal enquiries & discussion with local people and forest department officials were also conducted to get a fair idea of the existing ecological status.

Biodiversity: In the buffer zone area common varieties of crops like Soyabean, cotton, Tur are seen. No floral species, which are rare or of medicinal variety have been observed in the study area. The fauna found in the area are of common variety and no endangered species are found in the study area. There are no National Parks, Sanctuary or a Biosphere Reserve within 10 kms radial distance from the mining area.

Aquatic flora and fauna: In order to study the aquatic flora and fauna of River, water samples were collected from the selected locations of the river course and were analyzed. The river harbors a variety of fishes from rohu, sipnas, wagur, etc. It is observed that there no fauna dependant on the river bed or area nearest for its nesting The river also cradles various species of aquatic flora.

Anticipated Impacts

There is no loss of forest resources like medicinal plants, endangered & rare species as no deforestation takes place since mining is done on the banks of a river.

There will be no impact on the terrestrial biodiversity as there is no air & noise pollution due to the proposed mining activity.

Since there is no pollution of the river water due to the proposed activity the aquatic biodiversity is not affected & hence no mitigation measures are suggested. There will be no habitat fragmentation or blocking of migratory corridors as the proposed mining.

Proposed Mitigation Measures

Mitigative measures proposed are in terms of afforestation over the mined out areas. Delineation of the same will be carried out as the mining activity proceeds. It is proposed to

have a green belt along the bank. For which appropriate species of plants that suits the geo-climatic conditions are selected. The species selected have deep roots, fast growth and optimum penetrability to withstand the wind shall be selected, which otherwise will act as wind tunnels.

Since the project site is a river bank, mining activities will not have any major impact and since the deposits are replenished naturally no reclamation is proposed.

Afforestation

The afforestation is proposed all along the river bank for the proposed plan period, every year it is proposed to afforest about 350 saplings will be planted. Avenue plantation will also be undertaken in a phased manner over the next 4 months . Villagers will be involved for all the afforestation activities. Care shall be taken for the protection and growth of these saplings for better survival.

As there is no proposal for deforestation, compensatory afforestation is not envisaged. But afforestation in terms of a social responsibility towards a better environment with economically beneficial plantation is proposed to be grown. A green belt i.e. varieties of herbs & shrubs all along the cultivable area of the river banks is proposed thus creating a better biotic environment.

For afforestation the species to be planted are considered keeping in view the following conditions:

Adaptation to the geo-climatic conditions of the area .

A mix of oblong and conical canopies (hts ranging 4m – 20m) Preferably evergreen trees.

The species that have history of good survival and growth under similar site conditions are preferably selected.

Avenue plantation are proposed to be carried out all along the roads connecting the mine site; the lessee has proposed to carry out plantations on either side of the village roads considering it has a social responsibility towards the community in restoring the ecological balance in the surrounding area. Based on the above Neem, Peepal, Bamboo will be planted.

3.1.10 Socio economic Environment

Baseline Environment

Socio-economic study is an integral part of the environmental study; existing as well as upcoming sand scooping will have both adverse & beneficial impacts on the environment.

It is revealed that the proposed area is well connected to the nearby major towns and cities, the public services and utilities like Medical facilities, Electricity, Drinking water requirement. Transportation & communication etc need to be organized for ready availability.

The basic socioeconomic needs of villages are fulfilled at large from the 25 % of royalty collected from village sand ghat. These funds are available in the District Mineral Foundation specifically for village road development, drinking water scheme to fulfill socio economic upliftment.

3.1.11 Occupational Health

Baseline Status

There is no remarkable environmental pollution due to the proposed mining as it is proposed to be a manual mining/scooping of Building Gradesand on the banks of River Tapi. Hence there will be no major occupational health hazards.

Medical & Health Facilities

First-aid facility is to be provided at the mines. The proponent will further provide related safety equipments & facilities at the proposed mine site. Medical checkups, pathological tests and medicines will be provided to all employees. Each person being employed in the mine will undergo initial medical examination with periodical examinations till they are employed at the mines.

3.1.12 Final Mine Closure Plan

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

Section 4.0 : Implementation, Monitoring & Budgeting to implement

4.1 Environmental Management Plan

Reference to section 3.0 regarding baseline data and probable impacts and mitigation measures, the Environmental Management Plan is implemented by the Sand Ghat Allottee/ Successful Bidder.

A budgetary provision of Rs 9.34 lakhs whichever is higher earmarked to implement the Environment Management Plan.

4.1.1 Air Quality Management

4.1.1.1 Controlling Dust Levels

Dust is the major pollutant generated from the mining operations. Dust would be generated during mining, handling and transportation of the material. The maximum predicted value of increase in PM_{10} due to proposed mining operation would be about 0.6693 $\mu g/m^3$. This concentration will be observed within the Sand Ghat area. The concentration was found to reduce to a value of 0.01 $\mu g/m^3$ at a distance of about 1.0 km from the mining lease boundary. The impact of mining operation would be negligible beyond 1.0 km. The environmental control measures, proposed to control the fugitive dust released during the Sand scooping/ mining are given below:

MINES

- Dust masks will be provided to the workers exposed .
- Afforestation along the river bank and along the village road
- Periodic health check up for the workers shall be done
- Maintenance of plantation of wide leaf trees along river bank and tall grass along slope of river bank .
- Water tankers with spraying arrangement will be used for regular water sprinkling on village roads to ensure effective dust suppression due to transportation

RAMP

- Ramp will be maintained regularly
- Speed limits will be prescribed for transport vehicle

- Periodic maintenance of the tractor used for transport shall be done to reduce smoke emissions
- Over filling of tractors is avoided and thus spillage on the ramp/ roads is restricted
- Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the ambient air.
- No vehicle with its engine will be allow to keep idle to reduce pollutant levels and conserve riverine health.

A summary of air pollution control measures is given below:

S. No	Impact Source	Impact	Control measure
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides & development of green belts • Proper maintenance. • Regular water spraying. • Avoiding over filling of tractor and consequent spillage on the roads • Air quality will be monitoring at impacted village.
2	Truck/ Tractor Movement	Air Quality	• No overloading of trucks. • Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Enforcing speed limit. • Regular monitoring of the exhaust fumes. • No Engine of tractor/truck will be kept on during the filling. • If possible entry be restricted to river bed
3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks. • Mining will be done during day time between fixed hours only.
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank.

5	Occupational Health & Safety Measures to Control Dust Inhalation	Safety of Workers and Mining Operations	● Providing a working environment that is conducive to safety & health ● The management of occupational safety & health is the prime responsibility of mine owner. ● Provision of necessary personal protective equipments ● Ensuring employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities • Provision of First Aid and Drinking Water, Temporary rest Room

4.1.2 Noise Pollution and Ground Vibrations

As no blasting is involved ground vibrations will not be measured.

Source	Type	Intensity, dB(A)	Proposed control
Transportation through village roads	---	Highway model -62.8 L_{eq}	• Avenue plantation, • Speed breakers

4.1.2.1 Noise Pollution Control

The following noise control measures will be provided in the proposed crushing and screening plant.

- In addition, personnel working near high noise level generating sources will be provided with ear muffs
- No equipment generating Noise excluding tractor/truck will be permitted.
- No tractor engine will be kept idle.
- Conduct periodic audiometric tests for employees working close to high noise generating areas such as compressors, the loading and unloading sections, etc
- Provision of PPE's will be made and their proper usage will be ensured for hearing protection of the workers as well as visitors.

4.1.3 Traffic Management

The impacts of increase in traffic load from the proposed mine will be reduced by proper planning and implementation of the strict traffic guidelines. The following measures will be adopted to minimize the impacts of the increase in traffic density.

- Feasibility of alternative mode of transport avoiding village.
- The mineral transporting vehicles will be registered with the forest department/revenue department and only registered vehicles will be used for mineral transport.
- The PUC certificate for exhaust emissions for all the transport vehicles will be made mandatory.
- All the vehicles will be properly maintained to control emissions and noise generation.
- Drivers of all the vehicles will strictly follow traffic rules.
- Speeds of the mineral transport vehicles will be regulated.
- Overloading of the trucks/tractors will not be allowed
- The mineral transporting trucks/tractors will be properly covered with tarpaulin to avoid fugitive emissions.
- Batch transport system will be adopted in consultation with the other sand ghat operators in the area to avoid excess traffic at a time on the road.
- Mineral transportation will be done only during day time only.
- Strict action will be taken against any driver, who do not comply the traffic rules.

4.1.4 Water Quality Management

4.1.4.1 Water Pollution Control Measures

The only source of pollution from the mine will be the silt wash off during monsoon. The measures proposed for control of water pollution are mentioned below:

- Plantation of local varieties of flora species, along the drains, so that there will be fast and healthy growth of vegetation specially along bank.
- Sand does not contain any toxic substance, which can dissolve and pollute water quality. To prevent the suspended particles joining the natural stream in the area, ramp and approach created for Sand Ghat will be blocked.
- Domestic effluent will be discharged in septic tank and soak pits temporarily proposed at 20m away from river bank of Tapi .

4.1.5 Implementation of Final Mine Closure Plan

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the

extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

4.1.6 Plantation program

It is proposed to plant about 350 plants of local species during the monsoon period along bank of river and village roads.

List of Species Proposed for green Belt Development

Local species like Neem, peepal,subabhul, Karanj, Bamboo etc will be planted.

4.1.7 Occupational Health and Safety Management

The following Occupational Health and safety Measures will be adopted in the mine leas area:

- Providing a working environment that is conducive to safety and health
- The management of occupational safety and health is the prime responsibility of mine management from the executive level to the first line supervisory level
- Employee involvement and commitment in the implementation of health and safety guidelines
- Provision of necessary personal protective equipments to all the employees
- Extensive publicity and propaganda related to safety.
- Identification and assessment of risk from health hazards at work places and taking adequate steps to reduce risks.
- Education of workers on sanitation, cleanliness, hygiene and health care.
- Periodical medical examination of all workers by medical specialist so that any adverse affect may be detected in its early stage.

Noise Induced Hearing Loss

Rotation of workers exposed to noisy premises to avoid NIHL.

4.2 Monitoring of Implementation of Environmental Management Plan with Budget:

Successful Bidder/ Sand Ghat allottee will implement the Environmental Management Plan for the amount. Rs. 9.34 Lakhs on his own.

Successful Bidder/ Sand Ghat allottee will submit compliance to terms of conditions stipulated in the prior environmental clearance to the District Mining Officer and respective Tahsildar with the expenses made on implementation of environmental management plan.

District Mining Officer/respective Tahsildar will monitor the implementation of approved environmental management plan.

After submission of satisfactory compliances on periodic the implementation compliances of approved environmental management plan, District Collector will release the EMD deposited by the Successful Bidder/ Sand Ghat allottee, otherwise the same will be forfeited.

S. No	Impact Source	Impact	Control measure	Budget/Cost
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides • Proper maintenance. • Regular water spraying. • Air quality will be monitoring at impacted village. • Health Checkup of Employees	• Rs. 100000.00 • Rs. 75000.00 • Rs. 100000.00 • Rs. 15000.00 (For One Day Monitoring) • Rs. 30000.00
2	Truck/ Tractor Movement	Air Quality	• Sand carrying tractors will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Regular monitoring of the exhaust fumes. • Barriers & Traffic Management Expenses	• Rs. 140000.00 (28tarpaulin) • Rs. 14000.00 • Rs. 20000.00 (Excluding Man Power Salary which is included in labour costs)

3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks.	• Rs. 30000.00 (260 days) (Excluding Man Power Salary which is included in labour costs) Rs. 20000.00
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank. (50Saplings)	Rs. 25000.00 (for Green Belt Development)
5	Transportation on Village Roads	Dust Control	• Green belt along village Rd (300 Saplings)	Rs. 150000.00 (for Green Belt Development)
6	Final Mine Closer Plan implementation	Replenishment of Sand	• Gabions/ boulders will be arranged as per guidelines	Rs. 15000.00
7	• Provision for Mobile Toilets and Sewage Disposal			100000.00
8	• Miscellaneoue			100000.00
• Total in Rs.				934000.00

ENVIRONMENTAL MANAGEMENT PLAN

FOR

SAND GHATS

AT

NANDURBAR DISTRICT

STATE – MAHARASHTRA

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Latitude	Longitude
1	Kauthal tasa	Shahada	Tapi	1/1,1/2	1.95	325 x 60 x 2.00	13780	21°25' 41.5121"N	74°29' 45.0188"E

PROPONENT

DISTRICT MINING OFFICER, COLLECTOR OFFICE, NANDURBAR

CONSULTANT

ENVIRO TECHNO CONSULT PRIVATE LIMITED

68,MAHAKALI NAGAR-2

NEAR MANEWADA SQUARE

NAGPUR 440 024

APRIL 2020

Sr. No.	Section No.	Section Description	Page No.
1	1.0	Introduction to Sand Ghat	4
2		1.0 Introduction	4
3	2.0	Project Description and Method of Mining	9
4	2.0	Project Description	9
5	2.1	Method of Mining	10
6	2.2	Period of Mining	10
7	2.3	Manpower Requirement	11
8	2.4	Amenities	12
9	2.5	Existing & Proposed Land Use Pattern	12
10	2.6	Existing Flora & Fauna	13
11	2.7	Local Geology	13
12	2.8	Mine Closure Plan	13
13	3.0	Baseline Environment ,Anticipated Impacts and Management	15
14	3.0	Baseline Air Quality	15
15	3.1	Anticipated Impacts and Management	17
16	3.1.1	Dust Generation and Control	17
17	3.1.2	Impact due to Noise Pollution and its Management	19
18	3.1.3	Impact due to Water Pollution and its Management	20
19	3.1.4	Impact on Land and its Management	21
20	3.1.5	Impact on Socio Economic Environment	22
21	3.1.6	Impact on Ground Water Level of Surrounding Area	22
22	3.1.7	Sand Replenishment Studies	23
23	3.1.8	Land use pattern in the buffer zone	28
24	3.1.9	Biological Environment	28
25	3.1.10	Socio economic Environment	30
26	3.1.11	Occupational Health	30

27	3.1.12	Final Mine Closure Plan	30
28	4.0	Implementation, Monitoring & Budgeting to implement	31
29	4.1	Environmental Management Plan	31
30	4.1.1	Air Quality Management	31
31	4.1.1.1	Controlling Dust Levels	31
32	4.1.2	Noise Pollution and Ground Vibrations	33
33	4.1.2.1	Noise Pollution Control	33
34	4.1.3	Traffic Management	34
35	4.1.4	Water Quality Management	34
36	4.1.4.1	Water Pollution Control Measures	34
37	4.1.5	Implementation of Final Mine Closure Plan	35
38	4.1.6	Plantation program	35
39	4.1.7	Occupational Health and Safety Management	35
40	4.2	Monitoring of Implementation of Environmental Management Plan with Budget	36

Section 1.0 : Introduction to Sand Ghat

1.0 Introduction :

District Collector, Nandurbar intends to auction sand ghats and appointed District Mining Officer Nandurbar as project proponent. Total 03 sand ghats are identified by Tahsil Level technical Committee, Shahada chaired by Tahsildar Shahada along with District Mining Officer, Nandurbar, representative of G.S.D.A., M.P.C.B., irrigation & Directorate of Geology and Mining Aurangabad. All three sand ghats were identified and explored as per procedure defined in Sand Auction Rules 2019 dated 3.09.2019 on recommendations of Tahsildar Shahada. Revenue of Rs 9.71 Cr is expected from the auction of these sand ghats.

Tembhe Bk. sand ghat proposed over river Tapi in Shahada Taluka is one of the three sand ghats proposed to cater infrastructural requirement of sand in the tahsil of Shahada and Nandurbar and other talukas. Details of Tembhe Bk. Sand Ghat is as below

Table 1.0 Details of Sand Ghat :

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum.	Available Sand in Brass	Location	
						LxBxD (m^3)		Longitude	Latitude
1	Kauthal tasa	Shahada	Tapi	1/1,1/2	1.95	325 x 60 x 2.00	13780	21°25' 41.5121"N	74°29' 45.0188"E

Table 2.0 All corner Coordinates of Sand Ghat :

Sr. No.	**Latitude**	**Longitude**
BP-1	21°25' 41.5121"N	74°29' 45.0188"E
BP-2	21°25' 39.6103"N	74°29' 44.5516"E
BP-3	21°25' 41.9794"N	74°29' 33.549"E
BP-4	21°25' 43.8813"N	74°29' 34.0161"E

Table 3.0 Environmental Sensitivity of Sand Ghat :

Sl. No.	Areas	Distance in kilometer / Details
1	Distance of project site from nearest rail or road bridge over the concerned River,Rivulet, Nallah etc.	Bridge on Tapi river -3.58 kmE
2	Distance from infrastructural facilities Railway line National Highway State Highway Major District Road Any Other Road Electric transmission line pole or tower Canal or check dam or reservoirs or lake or ponds In-take for drinking water pump house Intake for Irrigation canal pumps	Shahada-12.5 Km NNW 6.7 km SW NH3-40 Km SE SH4 – 6.9 Km N Sarangkheda Shahada Road– 2.75 Km NE Vil Rd-0.193km NW 15 km Check dam – 3.75 Km E 3.75 Km E 3.75 Km E
3	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	Yawal wildlife santury-51 km E, Shoolpaneshwar santury-58 km NW
4	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	No wetland is notified in district, Tapi river, Biosphere -Pachmadi 372 km NE Mountain- Satpuda Range
5	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	Yawal wildlife santury-51 km E, Shoolpaneshwar santury-58 km NW
6	Inland, coastal, marine or underground waters	Tapi river , Coastal Area -400 Km West, Marine Water -490 Km West
7	State, National boundaries	Gujrat-18.5 Km NW
8	Routes or facilities used by the public for access to recreation or other tourist,pilgrim areas	Sarangkheda -3.2 Km NE
9	Defence installations	Varangaon Ordnance factory-153 Km SE
10	Densely populated or built-up area, distance from nearest human habitation	0.108 Km N
11	Areas occupied by sensitive man-made land uses (hospitals, schools, places of worship, community facilities)	Shahada-12.5 Km NNW

12	Areas containing important, high quality or scarce resources (ground water resources, surface resources, forestry, agriculture, fisheries, tourism,minerals)	Tapi river ,
13	Areas already subjected to pollution or environmental damage. (those where existing legal environmental standards are exceeded)	Not within 5 km study area
14	Areas susceptible to natural hazard which could cause the project to present environmental problems (earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions)	No. Sand Ghat is at safe distances from natural hazards like earthquake prone area, subsidence, landslide, erosion, flooding prone area.
15	Is proposed mining site located over or near fissure / fracture for ground water recharge	Not within 5 km study area
16	Whether the proposal involves approval or clearance under the following Regulations or Acts, namely:- (a) The Forest (Conservation) Act, 1980; (b) The Wildlife (Protection) Act, 1972; (c) The Coastal Regulation Zone Notification, 2011. If yes, details of the same and their status to be given.	Not within 5 km study area
17	Forest land involved (hectares)	No
18	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders or directions of the Court, if any, and its relevance with the proposed project.	No

Table 4.0 Status of Statutory Clearances for Sand Ghat

2.1	Name of Sand Mine (Ghat)	Kauthal tasa Sand Ghat Tq. Shahada Dist. Nandurbar
2.2	Name & Address of Allottee	District Mining Officer Nandurbar / Succesful Bidder Nandurbar District, Nandurbar
2.3	Status of the lease	New, Individual/ Project Proponent/Succesful Bidder for auction of sand ghat by District Collector Nandurbar.
2.4	Mineral for which lessee intends to mine	Ordinary Sand for Construction purpose
2.5	Name & Address of the Prospecting Agency	Taluka Level Technical Committee , Shahada
2.6	Mining Plan Approval	Draft Stage. It is under approval of authority.
2.7	Grampanchayat NOC	Received from Gramsabha as per public consultation procedure

		defined in sand mining guidelines of Maharashtra State dated 03.09.2019.
2.8	Plan Period for Activity	Up to one year excluding monsoon period of 10th June to 30th September or Allotted/Permitted quantity mined out, whichever is earlier.

Google Image for Sand Ghat (600 m Area) :

Figure -1 : Google Image

Proposed Approach Road for Sand Ghat on Google Image

Approach Road Tractors will ply over 260 m over pandan road to connect Tembhe Sarang kheda road .

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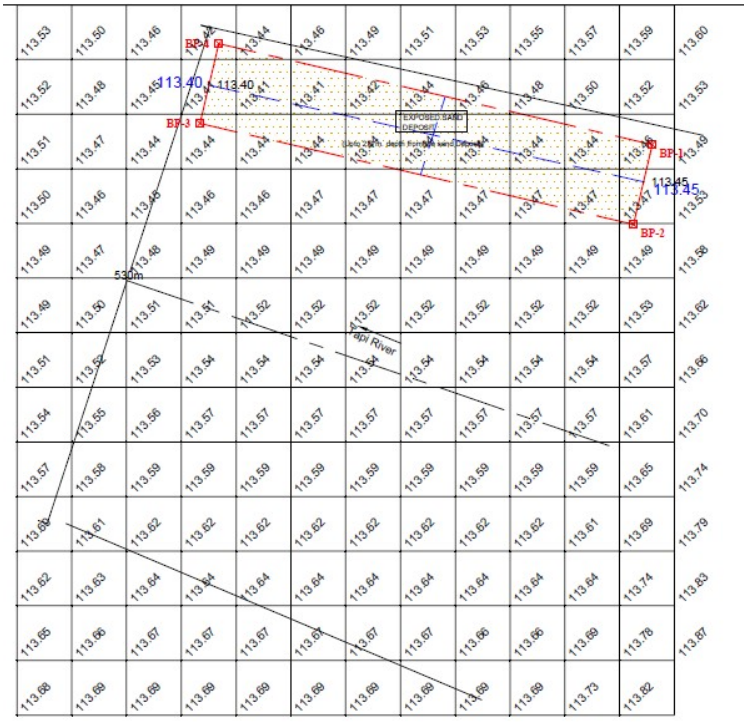
Section 2.0 : Project Description and Method of Mining

2.0 Project Description :

Need for the project: The sand ghat area has been selected in view of its existing demand for Building Grade sand for the area in and around Shahada & Nandurbar Tahsil. District Mining Officer Nandurbar has proposed for the production of 13780 Brass of sand by proposing to follow a systematic mining process with respect to the market scenario. The individual sand reserve at the ghats as per GSDA survey is as under.

Sr. No.	Name of Sand Ghat	Tahsil	Name of River	Nearest Gut No.	Area in Ha	Area im cum. LxBxD (m^3)	Available Sand in Brass	Location	
								Longitude	Latitude
1	Kauthal tasa	Shahada	Tapi	1/1,1/2	1.95	325 x 60 x 2.00	13780	21°25' 41.5121"N	74°29' 45.0188"E

Surface Plan for Kauthal Tasa Sand Ghat:



2.1 Method of Mining :

The mining will be manual opencast mining method of scooping using simple tool like spade/pawdas.

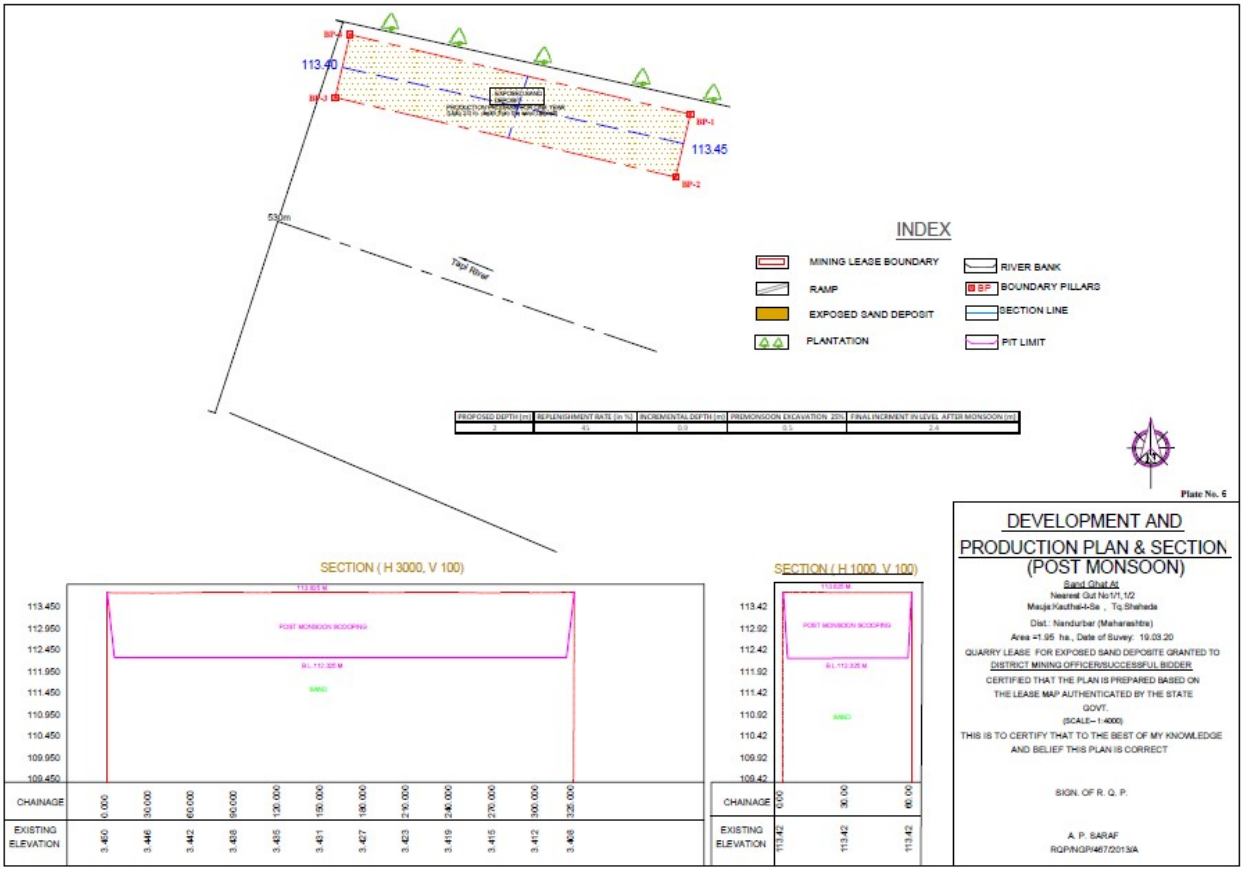
a. Over burden/Soil Removal:
   No overburden/Soil is anticipated.
b. Scooping of Sand /Loading
   The ordinary sand will be loaded manually by labours.
c. Hauling
   Ordinary sand is transported through tractors /trucks with permissible quantity.
d. No machinery will be utilized.

2.2 Period of Mining :

5.1 Year wise Production Plan:Period	Area x Depth (cu.m.)
Up to one year excluding monsoon period of 10th June to 30th September or Allotted/Permitted quantity mined out, whichever is earlier.	325m x 60 m x 2.00 m

Appearance of Sand Ghat

Production Plan for Kauthal Tasa Sand Ghat :



2.3 Manpower Requirement :

About 38 labours are required to carryout the scooping activity.

Sr. No.	Category	Nos.
1	Mining Supervisor	3
2	Tractor Drivers and Helpers	10
3	Mining Labours	25
	Total	38

2.4 Amenities :

The site services will be provided by allottee/Successful Bidder, Office, First Aid and Rest Shelters will be temporarily constructed 25m away from the bank of river.
Facility of mobile toilet with water tank of 250 ltr. Will be provided at 150m away from river bank.

Arrangement for periodic disposal of collection tank of mobile toilet will be ensured or otherwise toilet will be acquired on rent for workers.

Requirement of Water for Dust Supression & Domestic Purposes

Total water requirement for various activities during sand scooping is estimated as 1.760m^3/day per sand ghat. The water will be required for dust suppression, plantation, domestic use. The activity-wise break up of the total water requirement is given below:

Purpose	**Qty Required m^3/day**
Dust suppression/ Plantation	1.0
Domestic Use	0.760
Total	**1.760**

Water will be sourced from Grampanchayat Borewells on payment litre cost basis. Drinking water will be provided from RO water suppliers.

2.5 Existing & Proposed Land Use Pattern :

Area	Existing Land Use sq. m.	Proposed Land Use sq. m.
Area under pits	00	19500
Area under dumps	00	00
Undisturbed Area	19500	00
Area under Roads	00	00
Area under Plantation	00	00
Area under Storage	00	00
Area under Office, etc.	00	00

2.6 Existing Flora & Fauna :

Local varieties of bushes like tarota, neem, grasses observed in the area. Mainly agricultural activity observed for Jowar Bajra,nung. Natural fauna like fishes observed in the course of water stream during the monsoon period. Mice, lizards etc found in the nearby farms find during

survey whereas no endangered wild life observed. No turtle nesting observed or recorded during the survey and on records.

2.7 Local Geology :

Applied area for sand extraction is covered by dark basalt and which has been derived/ transported from black basalt of surrounding flat and well tilled area. The sand of the applied area is found to be underlain by dark basalt of the river bed.

2.8 Mine Closure Plan :

Sand scooping is permitted for a period of one year from the date of auction of sand ghatas per sand policy dated 03.09.2019 of Govt. of Maharashtra only. Before surrender of Sand Ghat to District Authority, mine closure is proposed which will help to replenish the sand during the monsoon period when there will be live flow of water in the river channel.

Guidelines As per Indian Bureau Of Mines for Final Mine Closure of Sand Ghat:

Mineral is replenish able during each monsoon. No manual reclamation is proposed.

Method of SandTraps Emplace Gabions (1m height) at 200 m intervals to function as sand traps during final closure of Mine is proposed as per Sand Mining Guidelines of IBM vide letter 296/7/2000/MRC dated 16May 2011.

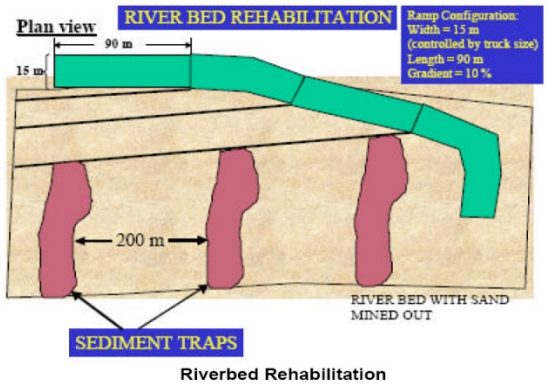


Figure -

Final Closure Action Plan for Sand Ghat

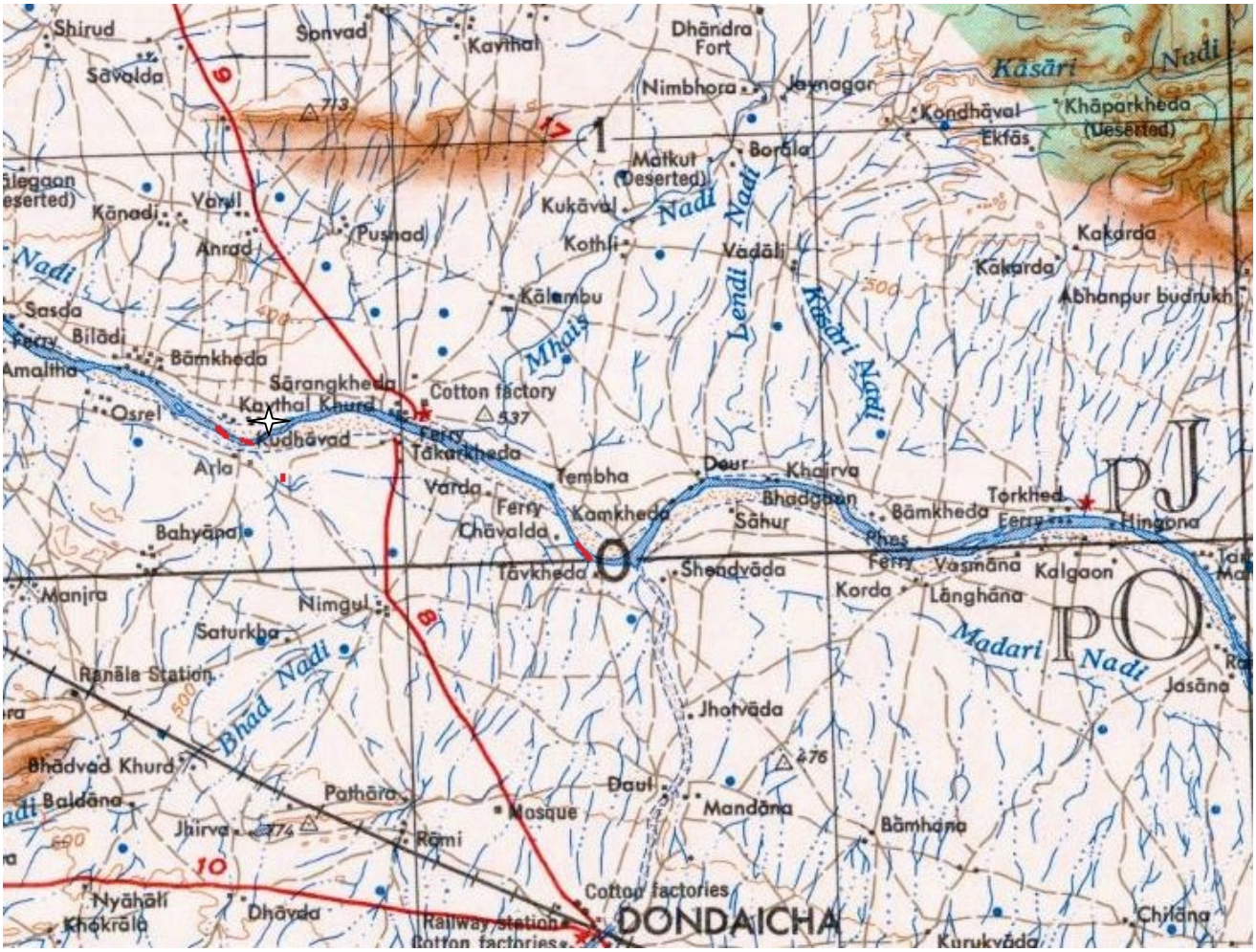
(1) Leave the area from which the sand has been extracted leveled and free of any foreign debris or materials.

(2) Re-vegetate indigenous plants which were removed from areas for the mining of sand as far as is reasonably practical.
(3) Plant trees along the riverbanks with no or minimal vegetation, irrespective of signs of erosion or not (ensure that species selected are indigenous species).
(4) The surface of stockpile and sand processing areas outside the riverbed to be scarified to a depth of 500 mm, graded evenly and the topsoil previously stored, returned to its original depth over the area.
(5) Prepare the area in such a way as to stimulate / ensure the re-growth of vegetation.
(6) Prepare Sand Traps Emplace gabions (1 m height) at 200 m intervals to functions as sand traps. Boulders dug out during mining should be used for this purpose. Gabions would have to be placed at one kilometer (at the maximum) intervals on the mined out areas. The shorter gabion intervals would induce faster rehabilitation. Gabions are preferred over concrete because they would allow water to flow through, are a more natural solution. Also additional gabions can be easily laid to increase the trap height. Figure is a drawing that illustrates river bed rehabilitation.
(7) Any access routes, especially if they are not beneficial to the local community would need to be ploughed and replanted with native species.
(8) Close and restore river bank where access ramps have been restored. Ensure river channel is not obstructed and that repaired bank is adequately fortified.

Section 3.0 : Baseline Environment ,Anticipated Impacts and Management

The Sand Ghat is a part of Toposheet 46K/7

3.0 Baseline Air Quality



Baseline air quality data is collected in between October 2-October 20, 2018 for the impacted village and summarized as

Sr. No.	Name of Village	Tahsil	Name of River	Permissible Limits as per NAAQ standards 2009	PM_{10}	$PM_{2.5}$	Sox	Nox
					$\mu gm/m^3$			
					100	60	80	80
1	Kauthal Tasa	Shahada	Tapi		44.7	13.1	12.4	13.1

Noise levels are recorded for the impacted village for day time. Maximum and minimum noise recorded is summarized as below

Station	Maximum Noise in dB(A)	Minimum Noise in dB(A)
Kauthal Tasa	51.9	40.1

3.1 Anticipated Impacts and Management

The impacts envisaged due to mining activity are evaluated based on various factors. The emission inventory of the pollutants is as follows, the main air pollutant would be dust or particulate matter generated by handling and transportation of ore. The persons employed at the above areas are likely to get lung related diseases like silicosis, after prolonged exposure to the sand particles without protective measures. But the impact of mining operations on air quality is negligible as mining involved is only scooping of sand deposits from the river bed manually and not at large scale.

3.1.1 Dust Generation and Control

There is mere possibility of dust generation due to the proposed scooping of Building Grade sand from river bed manually. The maximum concentration recorded for the impacted village for PM_{10} was found to be 44.7 $\mu g/m^3$. There is a possibility of dust generation due to the frequent movement of public transport vehicles and tippers carrying the Building grade sand on haulage & transport road. The envisaged production of Building Grade Sand during the plan period is only 13780 Brass/annum from the proposed sand ghat.

- Incremental GLC is predicted using USEPA equation considering pollution sources like transportation and mining and modeled using AERMOD-ISCST-3 model

Area Source Emission Factor Considered

Sr. No.	Activity	Emission Factor Kg/T
1	Loading & Transportation	@0.0005 Kg/T

Refer Chapter -11 19.2 of EPA emission manual.

Being all the sand ghats are nearby and on one stretch of river, average scooping is considered for prediction of incremental ground level concentration. Average production is calculated as 109193Tonnes/Sand Ghat for 260 operational days

Area Source Emission-Production and Development

Description	Statistics
Quantity ,TPA	109193TPA
Operational Days per Year	260 Days
Lead (m)	260 m

Predicted Emission

Activity	Emission rate gm/sec
Transportation	0.631902315
Total	**0.631902315**

#Emission factor computed on wind speed of 1 m/sec, moisture 10% & Silt content 15 %

Accordingly Maximum incremental GLC is predicted as 0.6688µgm/cum.

Predicted Ground Level Concentrations due to Scooping of Sand is summarized as :

Sr. No.	Name of Village	Tahsil	Name of River	Permissible standard as per NAAQ 2009	PM_{10}	Predicted incremental GLC in terms of PM_{10}	Predicted PM_{10} values at Impacted Village
				$\mu gm/m^3$			
1	Kauthal Tasa	Shahada	Tapi		44.7	0.6688	45.3688

Predicted levels of PM_{10}were found to be within permissible limits as per NAAQ standards.
In order to mitigate fugitive dust emissions and other air emissions from the project activities, the following measures are proposed to be adopted.

- The mining haulage area will be wetted by water spraying and two 1 KL mobile sprinklers
- To avoid fugitive dust emissions at the time of Screening activity, Sand screening activity will be carried so as to prevent spreading of dust.
- Effective dust suppression arrangements will be made at the ground level sand bunkers at the mines.
- Sand is transported by road through trucks. The sand will be in wet condition however if dry sand is being transported it will be wetted after loading in to the truck and shall be covered by tarpaulin sheets.

To minimize the vehicular pollution from the sand transporting vehicles, the following conditions are insisted to permit the vehicles of the transporters:

- The vehicles should be with good engine condition and should maintain pollution control certificate issued by appropriate authorities.
- Regular maintenance of transport vehicles and monitoring of vehicular emission levels at periodical intervals.

- Ambient Air quality Monitoring will be carried out at four stations on fortnightly basis to assess the air quality in and around the project for taking necessary control measures.
- Green belt development along the access roads at mine premises and near the sand mining site

3.1.2 Impact due to Noise Pollution and its Management

Noise environment in this project will be affected only by the equipment at the site and vehicular transportation. Since mining is done manually, increase in noise levels is marginal and only due to transport activities.

In order to mitigate noise generation from the project activities, the following mitigation measures are proposed:

Since the noise generating is only through movement of vehicles, strict compliance to periodical maintenance of the vehicle conditions will be insisted.

Noise monitoring at the work places shall be carried out on fortnightly basis to ensure the compliance.

3.1.3 Impact due to Water Pollution and its Management

As the project activity is carried out in the meandering part of the river bed, none of the project activities will affect the water environment. Sand is in exposed stage to scoop out and away from the river stream. In this project, it is not proposed to divert or truncate any stream. In the lean months, the proposed sand mining will not expose the base flow of the river and hence there will not be any adverse impact on surface hydrology and ground water regime due to this project. As per the Government recommendations the sand in riverbed will be extracted up to 2 m depth only keeping base layer of 2m in the bed.

Thus, the project activities will not have any adverse effect on the physical components of the environment and therefore may not have any effect on the recharge of ground waters or affect the water quality.

In order to ensure that the project activities shall not affect the Water environment, the following measures will be taken up:

- Mining is avoided during the monsoon season and at the time of floods. This will help in replenishment of sand in the river bed.
- Mining below subterranean water level will be avoided as safe guard against environmental contamination and over exploitation of resources.
- River stream will not be diverted to form in active channels.
- Ground water levels will be monitored regularly in and around sand mining project.
- Mining schedule is synchronized with the river flow direction and the gradient of the land.
- Mining at the concave side of the river channel will be avoided to prevent bank erosion.
- Meandering segment of river will be selected for mining in such a way to avoid natural eroding banks and to promote mining on naturally building meander components.
- Mining depth shall be maintained as per the guidelines and rules of Sand Mining Policy dated 03.019.2019 and recommendations of Taluka Level Technical Committee comprising representative of M.S.. State Ground Water Department for extraction of sand during the lease period.
- Water Quality Monitoring for the ground waters, river water and other surface waters shall be carried out seasonally to ensure that the water quality is not affected by the project activities.

Mitigation Measures to improve River Health (Tapi River)

- Municipal authorities must arrest their solid, liquid discharge at their own treatment facilities and should avoid these hazardous matters to drain in to river.
- Awareness campaign in the local people must be floated implement river management.

3.1.4 Impact on Land and its Management

Movements of vehicles sometimes cause problems to agricultural land, human habitations, noise and movement of public and also cause traffic hazards. The impacts include damage of river bank due to access ramps to river bed, soil erosion, micro disturbance to ground water, possible inducement of changed river course, contamination of sand aquifer water due to ponding. However there may not be any direct impact on soil quality of the area as the scooping activity is restricted to exposed sand ghat keeping at safe distance of 20m from bank of the river.

Proposed Mitigation Measures

- Minimum number of access roads to river bed for which cutting of river banks will be avoided and ramps are to be maintained. Access points to the river bed will be decided basing on least steepness of river bank and least human activity.
- Haulage roads parallel to the river bank and roads connecting access to river bed will be made away from bank, preferably 25 m away.
- Mining at the concave side of the river channel should be avoided to prevent bank erosion. Similarly, meandering segment of a river to be selected for mining in such a way so as to avoid natural eroding of banks
- Care will be taken to ensure that ponding is not formed in the river bed.
- Access roads from public roads and up to river bank will be aligned in such a way that it would cause least environmental damage.
- Green belt will be developed along the access roads near the sand mining site. While selecting the plant species, preference will be given for planting native species of the area.
- Villagers will be encouraged in the plantation activities by means of social forestry.

3.1.5 Impact on Socio Economic Environment

The project activities shall not have any adverse impacts on any of the common property resources of the village communities, as the sand mine lease area is not being used for any purpose by any section of the society in this region. Also the proposed sand ghat is away from public utilities like bridges, water supply schemes etc. There is no R & R involvement in this project. There is no land acquisition in this project.

The Project is expected to yield a positive impact on the socio-economic environment. It helps sustain the development of this area including further development of infrastructure facilities.

3.1.6 Impact on Ground Water Level of Surrounding Area

Scooping of sand beyond the proposed scooping depth may deplete the ground water level of the area. Hence the maximum scoopable depth of sand is restricted keeping sand bed of 2m. The scoopable limit of Sand for proposed Tembhe Bk. sand ghat is 2.0 m keeping 2.0m bed depth of sand. Total Sand depth available is 4.0m.

Survey Committee includes member from GSDA, Nandurbar and approved the depth by monitoring impact of proposed scooping of sand on ground water levels of the area.

3.1.7 Sand Replenishment Studies

Physical monitoring requirements of sand extraction activities should include surveyed channel cross-sections, longitudinal profiles, bed material measurements, geomorphic maps, and discharge and sediment transport measurements.

In addition to local monitoring for replenishment at specific mining sites, monitoring of the entire reach will provide information on the cumulative response of the system to sand extraction.

Because the elevation of the bed of the channel is variable from year to year, a reach-based approach to monitoring will provide a larger context for site-specific changes.

If long-term monitoring data show that there is a reach-scale trend of bed lowering the extraction could be limited.

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If long-term monitoring data show that there is a reach-scale trend of bed lowering the extraction could be limited.

Stream guage station was installed at Kauthal Tasa over Tapi. Along with stream guage a silt sample was collected to ascertain siltation over the river.

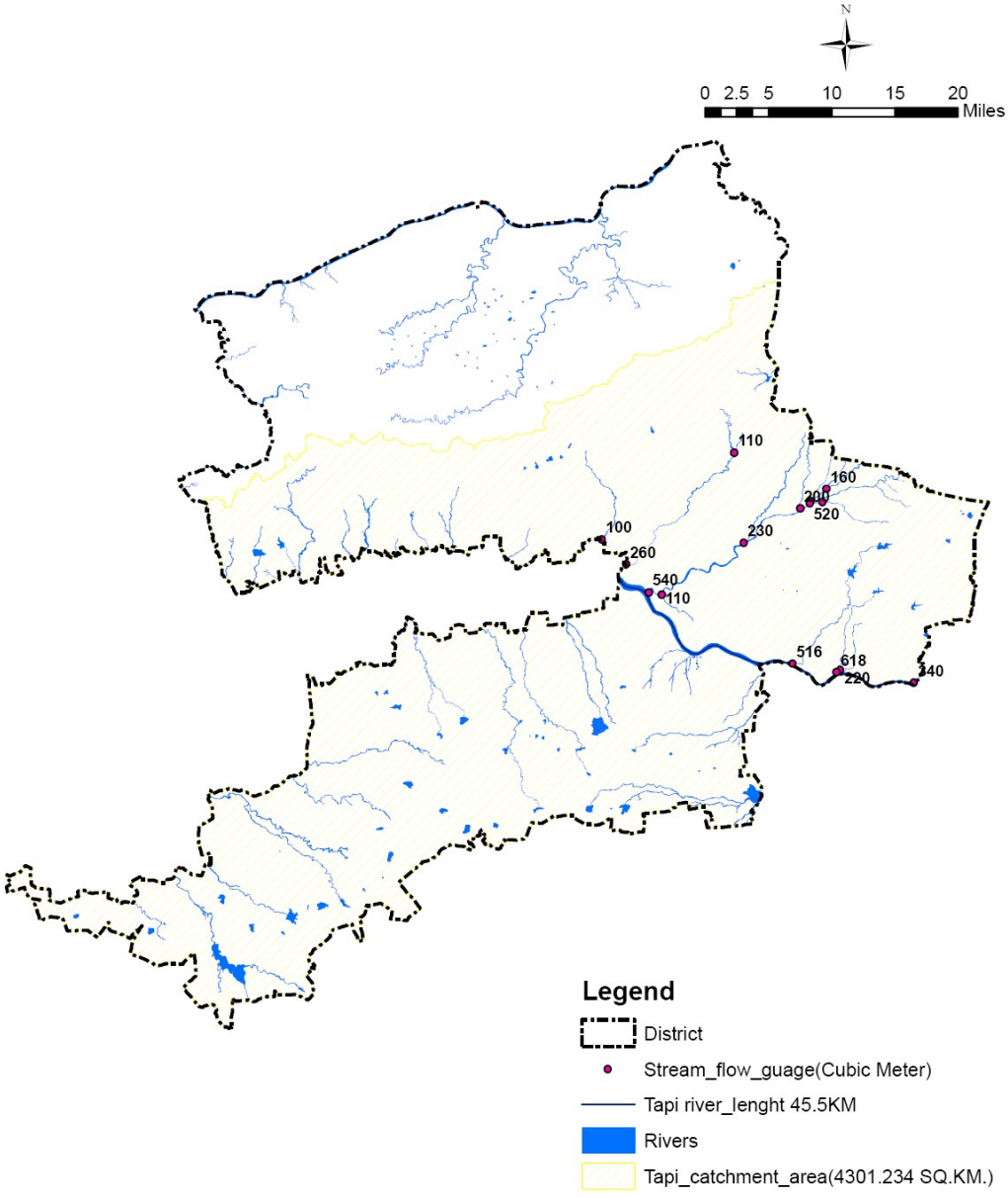
A concurrent type cup flow meter with fish weight of 10 kg with auto data logger is used to record the stream flow velocity.

A Punjab type silt sampler was used to collect the surface water sample for measuring the silt. Silt sample is calibrated to collect surface water sample of 1 ltr. with required arrangements to collect the surface water.

Average flow for both the rivers during the monsoon period was

A] Tapi River 3.0 m/sec.(Average flow velocity)/ Peak Velocity (11.9 m/sec)

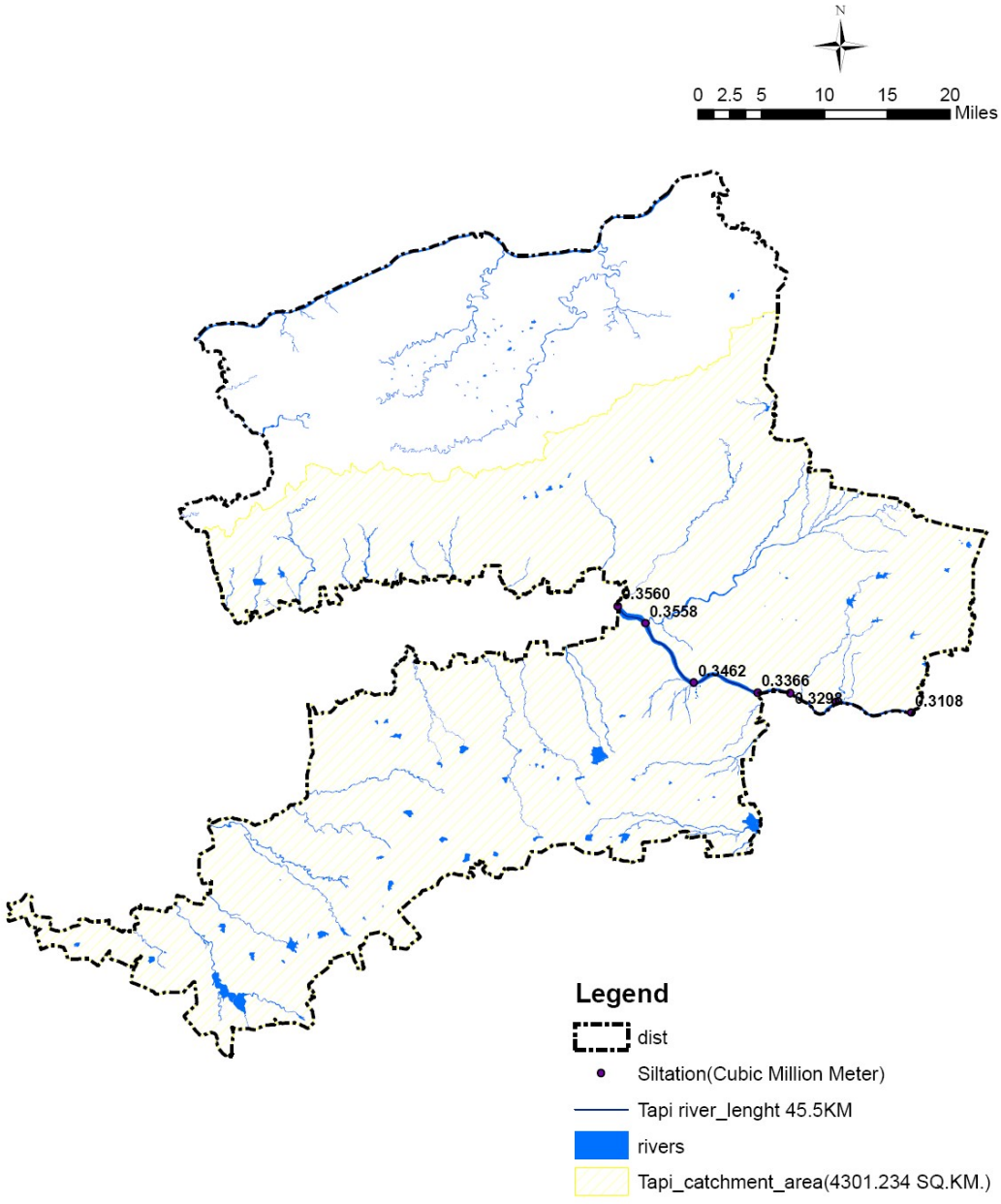
Stream Guage details over river at different locations are marked on drainage map as



cum/minute

Average silt measured for
A] Tapi River 4.8 gm/Lit
Form laboratory method
Siltation is mapped for the rivers using slope –discharge-silt formula as below

Silltaton Map of Major Stream and Rivers of
Nandurbar District Maharashtra



In Million Cum

Comparing theoretical methods with this year, last Year deposition

Sand Replenishment is tabulated at

Name of Sand Ghat	Method	Theoretical	Last Year Deposition	This Year Deposition
Kauthal Tasa	Data in brass	8740	Sand Ghat was not proposed for last 3 years	13780

Management plan for replenish sand ghat

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

3.1.8 Land use pattern in the buffer zone

The land use of the 5 kms radius study area is studied by analyzing the available secondary data like SOI Toposheet, field visits etc. Most of the lands are around the river body are agricultural lands. The major activity in the buffer zone is mainly agriculture. Agriculture is the main profession of people in the study area with nearly 2/3rd of the population engaged in one or the other form of agriculture.

Anticipated Impacts

As far as impact on the land use pattern is concerned, the buffer zone will not be affected as the mining operations are totally confined to the core zone.

Dump yards are not proposed as no waste is generated. The Building Grade sand mined will be temporarily stacked in a non mineralized area of the river bed. The proposed activity of sand mining is not envisaged to cause any impacts on the topography or the water drainage pattern as the excavation carried out is only manual scooping of Building Grade sand from the river bed.

The impact on soil quality is not likely to be more intensive than the present status and hence

degradation although inevitable, is not likely to affect soil quality. The loss of the fertile soil from the agricultural lands lying along side the river bank are observed during the floods due to differential lateral deposition of sand on the land surface.

As the proposed mining of Building Gradesand from the river bed is only during the pre monsoon season of the year, river erosion is not foreseen and hence control measures are not proposed. However as a preventive measure afforestation in terms of herbs and shrubs are proposed all around the lease area.

Ground water pollution is not envisaged as the proposed activity is not generating any kind of waste such that there can be seepage of pollutants to cause any impacts.

The mining activity proposed is a manual scooping of Building Gradesand and hence no impact is envisaged on the local biodiversity.

Since no agricultural or common property lands are involved in the proposed activity action plan for abatement and compensation for the same is not proposed.

Proposed Mitigation Measures

Since the project site is a river bank mining activities will not have any major impact and since the deposits are replenished naturally. No reclamation is proposed. The proponent will plan to plant about 325 saplings every year to enrich the existing biodiversity. Local varieties available will be suitably planted so that bio-diversity is further enriched.

Avenue plantation are proposed to be carried out all along the roads connecting the mine site; the lessee has proposed to carry out plantations on either side of the village roads as a social responsibility towards the community in restoring the ecological balance in the surrounding area.

A green belt shall be developed by planting a suitable combination of trees which can grow fast and also reduce the noise levels from aesthetic point of view which will also have a positive impact.

To prevent the sand deposition on the agricultural lands various preventive measures like planting bushes all along the river bank which have extensive root system will be carried out. They will act as a barrier preventing the sand from depositing on the lands thus preserving its fertility.

3.1.9 Biological Environment

Baseline Status

The general observation shows moderate green cover and agricultural lands in the buffer zone. Ecological survey was carried out by field visits in the study area of 5kms radius to observe the species and to assess the status of dominance, density, frequency, abundance, etc. Besides, personal enquiries & discussion with local people and forest department officials were also conducted to get a fair idea of the existing ecological status.

Biodiversity: In the buffer zone area common varieties of crops like Soyabean, cotton, Tur are seen. No floral species, which are rare or of medicinal variety have been observed in the study area. The fauna found in the area are of common variety and no endangered species are found in the study area. There are no National Parks, Sanctuary or a Biosphere Reserve within 10 kms radial distance from the mining area.

Aquatic flora and fauna: In order to study the aquatic flora and fauna of River, water samples were collected from the selected locations of the river course and were analyzed. The river harbors a variety of fishes from rohu, sipnas, wagur, etc. It is observed that there no fauna dependant on the river bed or area nearest for its nesting The river also cradles various species of aquatic flora.

Anticipated Impacts

There is no loss of forest resources like medicinal plants, endangered & rare species as no deforestation takes place since mining is done on the banks of a river.

There will be no impact on the terrestrial biodiversity as there is no air & noise pollution due to the proposed mining activity.

Since there is no pollution of the river water due to the proposed activity the aquatic biodiversity is not affected & hence no mitigation measures are suggested. There will be no habitat fragmentation or blocking of migratory corridors as the proposed mining.

Proposed Mitigation Measures

Mitigative measures proposed are in terms of afforestation over the mined out areas. Delineation of the same will be carried out as the mining activity proceeds. It is proposed to

have a green belt along the bank. For which appropriate species of plants that suits the geo-climatic conditions are selected. The species selected have deep roots, fast growth and optimum penetrability to withstand the wind shall be selected, which otherwise will act as wind tunnels.

Since the project site is a river bank, mining activities will not have any major impact and since the deposits are replenished naturally no reclamation is proposed.

Afforestation

The afforestation is proposed all along the river bank for the proposed plan period, every year it is proposed to afforest about 325 saplings will be planted. Avenue plantation will also be undertaken in a phased manner over the next 4 months . Villagers will be involved for all the afforestation activities. Care shall be taken for the protection and growth of these saplings for better survival.

As there is no proposal for deforestation, compensatory afforestation is not envisaged. But afforestation in terms of a social responsibility towards a better environment with economically beneficial plantation is proposed to be grown. A green belt i.e. varieties of herbs & shrubs all along the cultivable area of the river banks is proposed thus creating a better biotic environment.

For afforestation the species to be planted are considered keeping in view the following conditions:

Adaptation to the geo-climatic conditions of the area .

A mix of oblong and conical canopies (hts ranging 4m – 20m) Preferably evergreen trees.

The species that have history of good survival and growth under similar site conditions are preferably selected.

Avenue plantation are proposed to be carried out all along the roads connecting the mine site; the lessee has proposed to carry out plantations on either side of the village roads considering it has a social responsibility towards the community in restoring the ecological balance in the surrounding area. Based on the above Neem, Peepal, Bamboo will be planted.

3.1.10 Socio economic Environment

Baseline Environment

Socio-economic study is an integral part of the environmental study; existing as well as upcoming sand scooping will have both adverse & beneficial impacts on the environment.

It is revealed that the proposed area is well connected to the nearby major towns and cities, the public services and utilities like Medical facilities, Electricity, Drinking water requirement. Transportation & communication etc need to be organized for ready availability.

The basic socioeconomic needs of villages are fulfilled at large from the 25 % of royalty collected from village sand ghat. These funds are available in the District Mineral Foundation specifically for village road development, drinking water scheme to fulfill socio economic upliftment.

3.1.11 Occupational Health

Baseline Status

There is no remarkable environmental pollution due to the proposed mining as it is proposed to be a manual mining/scooping of Building Gradesand on the banks of River Tapi. Hence there will be no major occupational health hazards.

Medical & Health Facilities

First-aid facility is to be provided at the mines. The proponent will further provide related safety equipments & facilities at the proposed mine site. Medical checkups, pathological tests and medicines will be provided to all employees. Each person being employed in the mine will undergo initial medical examination with periodical examinations till they are employed at the mines.

3.1.12 Final Mine Closure Plan

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

Section 4.0 : Implementation, Monitoring & Budgeting to implement

4.1 Environmental Management Plan

Reference to section 3.0 regarding baseline data and probable impacts and mitigation measures, the Environmental Management Plan is implemented by the Sand Ghat Allottee/ Successful Bidder.

A budgetary provision of Rs 8.41 lakhs whichever is higher earmarked to implement the Environment Management Plan.

4.1.1 Air Quality Management

4.1.1.1 Controlling Dust Levels

Dust is the major pollutant generated from the mining operations. Dust would be generated during mining, handling and transportation of the material. The maximum predicted value of increase in PM_{10} due to proposed mining operation would be about 0.6688 $\mu g/m^3$. This concentration will be observed within the Sand Ghat area. The concentration was found to reduce to a value of 0.01 $\mu g/m^3$ at a distance of about 1.0 km from the mining lease boundary. The impact of mining operation would be negligible beyond 1.0 km. The environmental control measures, proposed to control the fugitive dust released during the Sand scooping/ mining are given below:

MINES

- Dust masks will be provided to the workers exposed .
- Afforestation along the river bank and along the village road
- Periodic health check up for the workers shall be done
- Maintenance of plantation of wide leaf trees along river bank and tall grass along slope of river bank .
- Water tankers with spraying arrangement will be used for regular water sprinkling on village roads to ensure effective dust suppression due to transportation

RAMP

- Ramp will be maintained regularly
- Speed limits will be prescribed for transport vehicle

- Periodic maintenance of the tractor used for transport shall be done to reduce smoke emissions
- Over filling of tractors is avoided and thus spillage on the ramp/ roads is restricted
- Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the ambient air.
- No vehicle with its engine will be allow to keep idle to reduce pollutant levels and conserve riverine health.

A summary of air pollution control measures is given below:

S. No	Impact Source	Impact	Control measure
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides & development of green belts • Proper maintenance. • Regular water spraying. • Avoiding over filling of tractor and consequent spillage on the roads • Air quality will be monitoring at impacted village.
2	Truck/ Tractor Movement	Air Quality	• No overloading of trucks. • Sand carrying trucks will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Enforcing speed limit. • Regular monitoring of the exhaust fumes. • No Engine of tractor/truck will be kept on during the filling. • If possible entry be restricted to river bed
3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks. • Mining will be done during day time between fixed hours only.
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank.

5	Occupational Health & Safety Measures to Control Dust Inhalation	Safety of Workers and Mining Operations	● Providing a working environment that is conducive to safety & health ● The management of occupational safety & health is the prime responsibility of mine owner. ● Provision of necessary personal protective equipments ● Ensuring employees at all levels receive appropriate training and are competent to carry out their duties and responsibilities • Provision of First Aid and Drinking Water, Temporary rest Room

4.1.2 Noise Pollution and Ground Vibrations

As no blasting is involved ground vibrations will not be measured.

Source	Type	Intensity, dB(A)	Proposed control
Transportation through village roads	---	Highway model -62.8 L_{eq}	• Avenue plantation, • Speed breakers

4.1.2.1 Noise Pollution Control

The following noise control measures will be provided in the proposed crushing and screening plant.

- In addition, personnel working near high noise level generating sources will be provided with ear muffs
- No equipment generating Noise excluding tractor/truck will be permitted.
- No tractor engine will be kept idle.
- Conduct periodic audiometric tests for employees working close to high noise generating areas such as compressors, the loading and unloading sections, etc
- Provision of PPE's will be made and their proper usage will be ensured for hearing protection of the workers as well as visitors.

4.1.3 Traffic Management

The impacts of increase in traffic load from the proposed mine will be reduced by proper planning and implementation of the strict traffic guidelines. The following measures will be adopted to minimize the impacts of the increase in traffic density.

- Feasibility of alternative mode of transport avoiding village.
- The mineral transporting vehicles will be registered with the forest department/revenue department and only registered vehicles will be used for mineral transport.
- The PUC certificate for exhaust emissions for all the transport vehicles will be made mandatory.
- All the vehicles will be properly maintained to control emissions and noise generation.
- Drivers of all the vehicles will strictly follow traffic rules.
- Speeds of the mineral transport vehicles will be regulated.
- Overloading of the trucks/tractors will not be allowed
- The mineral transporting trucks/tractors will be properly covered with tarpaulin to avoid fugitive emissions.
- Batch transport system will be adopted in consultation with the other sand ghat operators in the area to avoid excess traffic at a time on the road.
- Mineral transportation will be done only during day time only.
- Strict action will be taken against any driver, who do not comply the traffic rules.

4.1.4 Water Quality Management

4.1.4.1 Water Pollution Control Measures

The only source of pollution from the mine will be the silt wash off during monsoon. The measures proposed for control of water pollution are mentioned below:

- Plantation of local varieties of flora species, along the drains, so that there will be fast and healthy growth of vegetation specially along bank.
- Sand does not contain any toxic substance, which can dissolve and pollute water quality. To prevent the suspended particles joining the natural stream in the area, ramp and approach created for Sand Ghat will be blocked.
- Domestic effluent will be discharged in septic tank and soak pits temporarily proposed at 20m away from river bank of Tapi .

4.1.5 Implementation of Final Mine Closure Plan

At the end of mining activity, large boulders removed during the scooping of sand will be arranged in the

extracted area as per procedure depicted in approved mining plan and para 2.7 of this document. This will enable to replenish the sand ghat during the monsoon period.

4.1.6 Plantation program

It is proposed to plant about 325 plants of local species during the monsoon period along bank of river and village roads.

List of Species Proposed for green Belt Development

Local species like Neem, peepal,subabhul, Karanj, Bamboo etc will be planted.

4.1.7 Occupational Health and Safety Management

The following Occupational Health and safety Measures will be adopted in the mine leas area:

- Providing a working environment that is conducive to safety and health
- The management of occupational safety and health is the prime responsibility of mine management from the executive level to the first line supervisory level
- Employee involvement and commitment in the implementation of health and safety guidelines
- Provision of necessary personal protective equipments to all the employees
- Extensive publicity and propaganda related to safety.
- Identification and assessment of risk from health hazards at work places and taking adequate steps to reduce risks.
- Education of workers on sanitation, cleanliness, hygiene and health care.
- Periodical medical examination of all workers by medical specialist so that any adverse affect may be detected in its early stage.

Noise Induced Hearing Loss

Rotation of workers exposed to noisy premises to avoid NIHL.

4.2 Monitoring of Implementation of Environmental Management Plan with Budget:

Successful Bidder/ Sand Ghat allottee will implement the Environmental Management Plan for the amount. Rs. 8.41 Lakhs on his own.

Successful Bidder/ Sand Ghat allottee will submit compliance to terms of conditions stipulated in the prior environmental clearance to the District Mining Officer and respective Tahsildar with the expenses made on implementation of environmental management plan.

District Mining Officer/respective Tahsildar will monitor the implementation of approved environmental management plan.

After submission of satisfactory compliances on periodic the implementation compliances of approved environmental management plan, District Collector will release the EMD deposited by the Successful Bidder/ Sand Ghat allottee, otherwise the same will be forfeited.

S. No	Impact Source	Impact	Control measure	Budget/Cost
1	Transport Road	On Air Quality On Land / Rd stability/ Rd degradation	• Compaction, gradation and drainage on both sides • Proper maintenance. • Regular water spraying. • Air quality will be monitoring at impacted village. • Health Checkup of Employees	• Rs. 75000.00 • Rs. 50000.00 • Rs. 75000.00 • Rs. 15000.00 (For One Day Monitoring) • Rs. 30000.00
2	Truck/ Tractor Movement	Air Quality	• Sand carrying tractors will be effectively covered by tarpaulin to avoid escape of fines to the atmosphere. • Regular monitoring of the exhaust fumes. • Barriers & Traffic Management Expenses	• Rs. 135000.00 (27tarpaulin) • Rs. 13500.00 • Rs. 20000.00 (Excluding

				Man Power Salary which is included in labour costs)
3	Ramp and Sand Reach	Mining Operations	• Regular ramp Inspection and Ramp maintenance • Provision of dusk masks.	• Rs. 30000.00 (260 days) (Excluding Man Power Salary which is included in labour costs) Rs. 20000.00
4	Bank Management	Bank Erosion/ Flood Plain management	• Green belt along bank • Plantation of wide leaf tall trees on banks and grass along slanting portion of bank. (65Saplings)	Rs. 32500.00 (for Green Belt Development)
5	Transportation on Village Roads	Dust Control	• Green belt along village Rd (260 Saplings)	Rs. 130000.00 (for Green Belt Development)
6	Final Mine Closer Plan implementation	Replenishment of Sand	• Gabions/ boulders will be arranged as per guidelines	Rs. 15000.00
7	• Provision for Mobile Toilets and Sewage Disposal			100000.00
8	• Miscellaneoue			100000.00
• Total in Rs.				841000.00