राजस्थान सरकार
वन विभाग

क्रमांक प.1 (77)वन/2023 जयपुर, दिनांक :–

Assistant Inspector General of Forests
Government of India
Ministry of Environment, Forests and Climate Change
(FC Division)
Indira Paryavaran Bhawan,
Aliganj, Jor Bag Road, New Delhi - 110003

विषयः– Proposal for diversion of 407.8227 ha for construction of Shahpur (1800 MW) Pumped Storage Project by M/s Greenko Energies Private Limited, in Hanumanth khera, Mungawali villages, G.P.-Mundiyar, Tehsil-Shahbad, Baran District, Rajasthan.

संदर्भः–आपका पत्रांक क्रमांक 8-25-2023-FC दिनांक 12.02.2024

महोदय,

उपरोक्त विषयान्तर्गत संदर्भित पत्र द्वारा जारी EDS क्रम में अतिरिक्त प्रधान मुख्य वन संरक्षक, प्राटेक्शन एवं नोडल अधिकारी एफसीए, राजस्थान, जयपुर के पत्रांक 14(Trans)2021/एफसीए/प्रमुवस/538 दिनांक 26.02.2024 से प्रेषित बिन्दुवार सूचना मय राज्य सरकार की अभिशंषा सहित प्रेषित कर, अनुरोध है कि विषयाकिंत प्रस्ताव के संबंध में आवश्यक स्वीकृति जारी करवाने का श्रम करावे।

भवदीया,

संलग्नः–उपरोक्तानुसार

(मोनाली सेन)
विशिष्ट शासन सचिव, वन

Signature valid
RajKaj Ref 5801320
Digitally signed by Monali Sen
Designation: Special Secretary To Government
Date: 2024.02.26 14:17:09 IST
Reason: Approved

कार्यालय प्रधान मुख्य वन संरक्षक (वन बल प्रमुख) राजस्थान,

अरण्य भवन, झालाना सांस्थानिक क्षेत्र, जयपुर–302004

क्रमांक: एफ. 14(Trans)2021/एफसीए/प्रमुवसं./ 538 दिनांक 26.12.2024

विशिष्ठ शासन सचिव,
वन, पर्यावरण एवं जलवायु परिवर्तन मंत्रालय,
राजस्थान सरकार,
शासन सचिवालय, जयपुर।

विषय:–Diversion of 407.8227 ha. of forest land for the development of Shahpur Pumped Storage Project by M/s Greenko Energies Private Limited, Shahabad Tehsil in Baran District, Rajasthan. (Proposal No.- FP/RJ/HYD/121439/2021)

सन्दर्भ:–उप वन महानिरीक्षक, भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, नई दिल्ली का पत्रांक 8–25–2023–एफसी दिनांक 12.02.2024

महोदया,

उपर्युक्त विषयान्तर्गत संदर्भित पत्र के क्रम में मुख्य वन संरक्षक, कोटा के पत्रांक 704 दिनांक 20.02.2024 से प्राप्त सूचना के आधार पर प्रत्युत्तर बिन्दुवार निम्नानुसार है:–

S.No.	EDS	REPLY
1	The copy of approval from the concerned DCF, Baran has not been submitted for the Soil Erosion Treatment Plan, which needs submission.	Soil Erosion Treatment Plan is technically checked and duly approved by DCF, Baran is enclosed herewith for ready perusal at. Annexure-1
2	It has been reported by the State Govt. that the plantation raised in the year 2007 in 26 ha area which is now proposed for diversion. In this regard, it needs clarification whether the said plantations have done against any forest diversion proposal or otherwise.	As per DCF reported, this plantation was not done against any forest diversion proposal and were planted as part of State Govt. program. Further, these trees (plantations)were already considered in tree enumeration of present proposal.

.... P.T.O.

<table>
<tr><td>3</td><td>As sought earlier, the State Govt. has not submitted the information on the encroachment of Agriculture land and Built-up as visible in the proposed forest land for CA.</td><td>• User agency has given an undertaking that all encroachments, if any shall be removed and shall be handed over to the State Govt. free from all encumbrances on the non-forest land (private land) proposed towards CA in Jaisalmer.
. CA area (RDF) in Baran district is having some agriculture encroachment & few built-up areas which are non-permanent structures. Encroachments will be Removed by following due legal procedure and forest land will be released by eviction of encroachments before taking up planation activity.</td></tr>
<tr><td>4</td><td>Since, the Ministry vide letter dated 29.12.2023 has issued consolidated guidelines and clarifications issued under Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 and Van (Sanrakshan Evam Samvardhan) Rules, 2023 in suppression to all previous guidelines & Rules in exercise of the powers conferred under section 3 C of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. In view of that the State Govt. is therefore ascertain the suitability of Compensatory Afforestation land proposed over the Non-forest land as well as the Degraded forest land proposed in the instant proposal as per the Sub-Rule 13 given under the Van (Sanrakshan Evam Samvardhan) Rules, 2023.</td><td>Yes, the non-forest land as well as the Degraded Forest land proposed in the instant proposal are suitable for plantations under CA and falls within the conformity as per the Sub-Rule 13 given under the Van (Sanrakshan Evam Samvardhan) Rules, 2023. The details of Non-Forest Land proposed towards CA is given below:
<table>
<tr><th>S. No</th><th>District</th><th>Tehsil</th><th>Village</th><th>Chak / Block No.</th><th>Type of Land</th><th>Area in Ha</th></tr>
<tr><td>1</td><td>Jaisalmer</td><td>Ramgrah -2</td><td>Kolu Tala A & Ekalpar</td><td>13,14,15 RRM, 5 RMSM & 3SLM</td><td>NFL</td><td>431.03</td></tr>
<tr><td></td><td></td><td></td><td colspan="2">Grand Total</td><td></td><td>431.03</td></tr>
</table>
Additionally, an area of 408 hectares in Shahbad Conservation Reserve, Baran has been proposed for Eco Restoration (RDF) plantation to compensate for the ecological damage in the Shahbad Conservation Reserve.</td></tr>
</table>

5	As intimated earlier, a road is passing through the forest land wherein a component i.e. Upper Reservoir has been proposed. In this regard, a plan/ map showing the alternative roads which will be available for use by the villagers during & after completion of the project has not been submitted. This needs clarification.	The Kutcha Road visible in Satellite imagery from Kaloni village to nearby agricultural lands pass through forest are a temporary path/road being used by villagers. This is not a permanent road. However, after the private land acquisition is done for the project upper reservoir, this road will no longer be required. Apart from above mentioned Kutcha Road, villagers use various access roads/routes (non-forest/private land) for accessibility as may be seen from the image enclosed at **Annexure-2**. In view of the above, due to project execution, accessibility of villagers will not be affected/obstructed.

भवदीया,

(शिखा मेहरा)
अतिरिक्त प्रधान मुख्य वन संरक्षक,
प्रोटेक्शन एवं नोडल अधिकारी एफसीए,
राजस्थान, जयपुर

क्रमांक: एफ. 14(Trans)2021/एफसीए/प्रमुवसं./ दिनांक
प्रतिलिपि निम्नांकित को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित है:–

1. सहायक महानिरीक्षक (वन), भारत सरकार, पर्यावरण, वन एवं जलवायु परिवर्तन मंत्रालय, इंदिरा पर्यावरण भवन, जोर बाग रोड, अलीगंज नई दिल्ली–110003
2. मुख्य वन संरक्षक, कोटा।
3. उप वन संरक्षक, बारां।
4. उप महाप्रबन्धक, ग्रीनको इन्जीनियर प्रा0 लि0, प्लाट न0 1071, रोड़ न0 44, जुबलीहिल्स, हैदराबाद–500033

(दिनेश कुमार गुप्ता)
उप वन संरक्षक (एफ.सी.ए.)
अरण्य भवन, जयपुर

कार्यालय संभागीय मुख्य वन संरक्षक कोटा

Add. Near Chambal Rest House, Kishorpura Kota- 324009 E-Mail:- ccffdp.kota@gmail.com Tel. no. 0744- 2500194

क्रमांक एफ( )एफसीए/समुवसं/2023–24/704 दिनांक: 20-2-2024

निमित्तः–

अति0 प्रधान मुख्य वन संरक्षक
प्रोटेक्शन एवं नोडल अधिकारी
एफसीए राजस्थान जयपुर

विषयः Proposal for seeking Prior approval of the Central Government under Section 2 (1) (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 for diversion of 407.8227 ha for construction of Shahpur (1800MW) Pumped storage project by M/S Greenko Energies Private Limited, in Hanumanthkhera, Mungawali village, G.P Mundiyar, Tehsil- Shahabad, Varan district,Rajasthan.

प्रसंगः भारत सरकार के पत्र दिनांक 12.02.2024 के क्रम में

महोदय,

उपरोक्त विषयान्तर्गत निवेदन है कि भारत सरकार के प्रासंगिक पत्र से चाही गयी सूचना उप वन संरक्षक बारां द्वारा बिन्दुवार रिपोर्ट तैयार कर पत्रांक 1679 दिनांक 15.02.2024 से कार्यालय में प्रेषित किया है, जो निम्नानुसार हैः–

SN	EDS	REPLY
1	The copy of approval from the concerned DCF, Baran has not been submitted for the Soil Erosion Treatment Plan, which needs submission.	Soil Erosion Treatment plan is duly Approved by the undersigned and has been uploaded in Part-II, at serial number 25 of Additional Information. The same is enclosed again herewith for ready perusal at. Annexure-1
2	It has been reported by the State Govt. that the plantation raised in the year 2007 in 26 ha area which is now proposed for diversion. In this regard, it needs clarification whether the said plantations have done against any forest diversion proposal or otherwise.	This plantation was not done against any forest diversion proposal and were planted as part of state Govt program. Further, these trees (plantations)were already considered in tree enumeration of present proposal.
3	As sought earlier, the State Govt. has not submitted the information on the encroachment of Agriculture land and Built-up as visible in the proposed forest land for CA.	• User agency has given an undertaking that all encroachments, if any shall be removed and shall be handed over to the State Govt free from all encumbrances on the non-forest land (private land) proposed towards CA in Jaisalmer. . CA area for RDF in Baran district is having some agriculture encroachment & few built-up areas which are non-permanent structures. Encroachments will be Removed by following due legal procedure and forest land will be released by eviction of encroachments before taking up plantation activity.
4	Since, the Ministry vide letter dated 29.12.2023	Yes, the non-forest land as well as Degraded Forest

Signature valid
Digitally signed by Ram Karan Khairwa
Designation : Chief Conservator Of Forest
Date: 2024.02.20 16:39:14 IST
Reason: Approved

<table>
<tr>
<td></td>
<td>has issued consolidated guidelines and clarifications issued under Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 and Van (Sanrakshan Evam Samvardhan) Rules, 2023 in suppression to all previous guidelines & Rules in exercise of the powers conferred under section 3 C of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. In view of that the State Govt. is therefore ascertain the suitability of Compensatory Afforestation land proposed over the Non-forest land as well as the Degraded forest land proposed in the instant proposal as per the Sub-Rule 13 given under the Van (Sanrakshan Evam Samvardhan) Rules, 2023.</td>
<td>land proposed in the instant proposal are suitable for plantations under CA and falls within the conformity as per the Sub-Rule 13 given under the Van (Sanrakshan Evam Samvardhan) Rules, 2023. The details of Non-Forest Land proposed towards CA is given below:
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</table>
Additionally, an area of 408 hectares in Shahbad Conservation Reserve, Baran has been proposed for RDF plantation to compensate for the ecological damage in the Shahbad Conservation Reserve.</td>
</tr>
<tr>
<td>5</td>
<td>As intimated earlier, a road is passing through the forest land wherein a component i.e. Upper Reservoir has been proposed. In this regard, a plan/ map showing the alternative roads which will be available for use by the villagers during & after completion of the project has not been submitted. This needs clarification.</td>
<td>The Kutcha Road visible in Satellite imagery from Kaloni village to nearby agricultural lands passes through forest are a temporary path/road being used by villagers. This is not a permanent road. However, after the private land acquisition is done for the project upper reservoir, this road will no longer be required.

Apart from above mentioned Kutcha Road, villagers use various access roads/routes (non-forest/private land) for accessibility as may be seen from the image enclosed at Annexure-2. In view of the above, due to project execution, accessibility of villagers will not be affected/obstructed.</td>
</tr>
</table>

संलग्नः–उपरोक्तानुसार।

भवदीय

(रामकरण खैरवा)
संभागीय मुख्य वन संरक्षक
कोटा

क्रमांक एफ( )एफसीए/समुवसं/2023–24/ दिनांकः
प्रतिलिपि उप वन संरक्षक बारां को उनके पत्रांक 1679 दिनांक 15.02.2024 के क्रम में सूचनार्थ प्रेषित है।

संभागीय मुख्य वन संरक्षक

Signature valid
RajKaj Ref 5687328
Digitally signed by Ram Karan Khairwa
Designation : Chief Conservator Of Forest
Date: 2024.02.20 [illegible]:39:14 IST
Reason: Approved

कार्यालय उप वन संरक्षक, बारां

E-mail-dcf.brn.forest@rajasthan.gov.in , Tel.No.. 07453&230244

क्रमांक0 एफ ( )/एफ.सी.ए./ उ.व.स./2023 –24/ दिनांक

निमित्तः–

संभागीय मुख्य वन संरक्षक,
कोटा।

विषयः– Proposal for seeking Prior approval of the Central Government under Section 2 (1) (ii) of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 for diversion of 407.8227 ha for construction of Shahpur (1800MW) Pumped storage project by M/S Greenko Energies Private Limited, in Hanumanthkhera, Mungawali village, G.P Mundiyar, Tehsil- Shahabad, Varan district,Rajasthan.

संदर्भः- MOEF के पत्र दिनांक 12.02.2024 के क्रम में।

महोदय,

उपरोक्त विषयान्तर्गत निवेदन है MOEF के पत्र दिनांक 12.02.2024 के अनुसार चाही गई रिपोर्ट निम्नानुसार प्रेषित है।

SN	EDS	REPLY
1	The copy of approval from the concerned DCF, Baran has not been submitted for the Soil Erosion Treatment Plan, which needs submission.	Soil Erosion Treatment plan was duly Approved by the undersigned and has been uploaded in Part-II, at serial number 25 of Additional Information. The same is enclosed again herewith for ready perusal at. Annexure-1
2	It has been reported by the State Govt. that the plantation raised in the year 2007 in 26 ha area which is now proposed for diversion. In this regard, it needs clarification whether the said plantations have done against any forest diversion proposal or otherwise.	This plantation was not done against any forest diversion proposal and were planted as part of state Govt program. Further, these trees (plantations)were already considered in tree enumeration of present proposal.
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4	Since, the Ministry vide letter dated 29.12.2023 has issued consolidated guidelines and clarifications issued under Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980 and Van (Sanrakshan Evam Samvardhan) Rules, 2023 in	Yes, the non-forest land as well as the Degraded Forest land proposed in the instant proposal are suitable for plantations under CA and falls within the conformity as per the Sub-Rule 13 given under the Van (Sanrakshan Evam Samvardhan) Rules, 2023. The details of Non-

	suppression to all previous guidelines & Rules in exercise of the powers conferred under section 3 C of the Van (Sanrakshan Evam Samvardhan) Adhiniyam, 1980. In view of that the State Govt. is therefore ascertain the suitability of Compensatory Afforestation land proposed over the Non-forest land as well as the Degraded forest land proposed in the instant proposal as per the Sub-Rule 13 given under the Van (Sanrakshan Evam Samvardhan) Rules, 2023.	Forest Land proposed towards CA is given below: S. No / District / Tehsil / Village / Chak / Block No. / Type of Land / Area in Ha 1 / Jaisalmer / Ramgrah -2 / Kolu Tala A &Ekalpar / 13,14,15 RRM, 5 RMSM & 3SLM / NFL / 431.03 Grand Total / 431.03 Additionally, an area of 408 hectares in Shahbad Conservation Reserve, Baran has been proposed for RDF plantation to compensate for the ecological damage in the Shahbad Conservation Reserve.
5	As intimated earlier, a road is passing through the forest land wherein a component i.e. Upper Reservoir has been proposed. In this regard, a plan/ map showing the alternative roads which will be available for use by the villagers during & after completion of the project has not been submitted. This needs clarification.	The Kutcha Road visible in Satellite imagery from Kaloni village to nearby agricultural lands passes through forest are a temporary path/road being used by villagers. This is not a permanent road. However, after the private land acquisition is done for the project upper reservoir, this road will no longer be required. Apart from above mentioned Kutcha Road, villagers use various access roads/routes (non-forest/private land) for accessibility as may be seen from the image enclosed at **Annexure-2**.In view of the above, due to project execution, accessibility of villagers will not be affected/obstructed.

(सागर पवार **IFS**)
उप वन संरक्षक
बारां

क्रमांक0 एफ ( )/एफ.सी.ए./उ.व.स./2022–23/ दिनांक

प्रतिलिपिः– निम्न को सूचनार्थ एवं आवश्यक कार्यवाही हेतु प्रेषित हैः–

1.अतिःप्रधान मुख्य वन संरक्षक,प्रोटेक्शन एवं नोडल अधिकारी (एफ.सी.ए) राजस्थान जयपुर।

2. Greenko Energies Private Limited .

(सागर पवार **IFS**)
उप वन संरक्षक
बारां

Greenko Energies Private Limited
CIN: U40109TG2000FTC034990

GEPL/MoEFCC/EDS/SPSP/240215 Dated 15.02.2024.

To

Deputy Conservator of Forests
Baran Territorial Forest Division
Rajasthan

Sub: Diversion of 407.8227 Ha forest land for the development of Shahpur (1800 MW) Pumped Storage Project by M/s Greenko Energies Private Limited (GEPL) in Baran Territorial Forest Division, Baran District of Rajasthan State (Online Proposal No. FP/RJ/HYD/121439/2021)-reg

Ref: **1.** EDS of DCF, Baran vide letter dated 15.02.2024.
2. EDS raised by MoEF & CC vide letter dated 12.02.2024

Dear Sir,

With reference to above mentioned subject matter, as desired reply to Point (5) of the observations of MOEF & CC, EDS letter dated 12.02.2024 is herewith submitted below for your kind consideration and further necessary action:

S. No	EDS	Reply
5	As intimated earlier, a road is passing through the forest land wherein a component i.e. Upper Reservoir has been proposed. In this regard, a plan/ map showing the alternative roads which will be available for use by the villagers during & after completion of the project has not been submitted. This needs clarification.	• The Kutcha Road visible in Satellite imagery from Kaloni village to nearby agricultural lands passes through forest are a temporary path/road being used by villagers. This is not a permanent road. However, after the private land acquisition is done for the project upper reservoir, this road will no longer be required. • Apart from above mentioned Kutcha Road, villagers use various access roads/routes (non-forest/private land) for accessibility as may be seen from the image enclosed at **Annexure-A**. In view of the above, due to project execution, accessibility of villagers will not be affected/obstructed.

Thanking you,
Yours faithfully,

For **Greenko Energies Pvt. Ltd.**

Authorized Signatory

Encl: As above

ANNEXURE-1

SOIL EROSION TREATMENT PLAN

FOR

SHAHPUR STANDALONE PUMPED STORAGE PROJECT

Greenko Energies Pvt. Ltd.

Greenko Hub, # 13, Hitech City,
Madhapur, Hyderabad-500081

Technically checked & approved.

उप वन संरक्षक

CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

1.1 General

Shahpur Standalone Pumped Storage Project (PSP) with an installed capacity of 1800 MW / 10800 MWH storage capacity is located at Shahabad Tehsil, Baran District, Rajasthan. It envisages creation of upper reservoir & lower reservoir which are located away from all existing natural river systems and have negligible catchment areas. The project sites are accessible from NH-76 road close to Mahuri Khera from where Shahpur village road takes off; and is at a distance of approximately 6 Km. Nearest railhead is Baran Railway Station, about 77 kms from project site and nearest Airport is Gwalior Airport, about 200 km from project site The powerhouse is located near Shahpur village, which is in Shahabad Tehsil of Baran district.

This scheme envisages non-consumptive re-utilization of water by re-circulation. The water from the proposed lower reservoir will be pumped up and stored in the proposed upper Reservoir and will be utilized for power generation. The Geographical co-ordinates of the proposed upper reservoir are at longitude 77° 10' 55.78"E and latitude is 25° 11' 25.21"N and that of proposed lower reservoir are 25°11'40.00"N and 77° 11' 50.00"E. The project location map is enclosed as **Figure 1**.

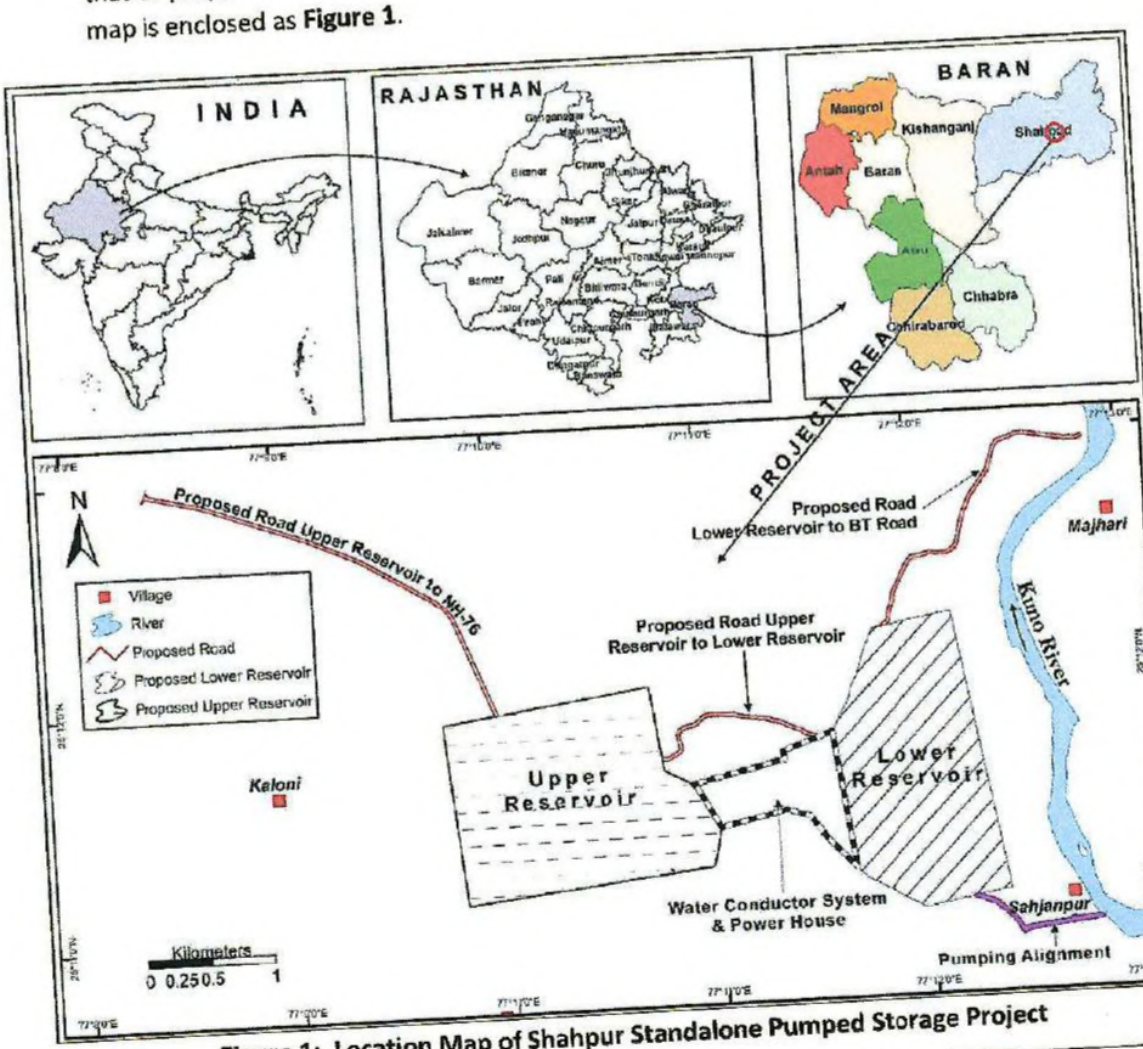

Figure 1: Location Map of Shahpur Standalone Pumped Storage Project

The Shahpur Standalone Pumped Storage Project envisages construction of both upper reservoir and lower reservoir in Baran district of Rajasthan and involves construction of rockfill embankment with avg. height of 24.5 m for the length of 5309 m for creation of Shahpur PSP upper reservoir with 1.21 TMC gross capacity and construction of rockfill embankment with avg. height of 26.5 m for the length of 2937 m for creation of Shahpur PSP lower reservoir with 1.05 TMC gross capacity. Total 6 numbers of Independent Head Race Pipe / Pressure Shaft with one pressure Tunnel bifurcating into two-unit pressure tunnel convey water between Lower and Upper reservoirs. Surface Power/Pump House will be located at about 830 m from the intake structure and shall be equipped with six vertical shaft reversible Francis type units composed each of a generator/motor and a turbine/pump having generating/pumping capacity of 300 & 150 MW/330 & 165MW.

1.2 Salient Features

The salient features of the proposed Shahpur Standalone Pumped Storage Project are given in **Table 1.**

Table 1: Salient Features of Shahpur Standalone Pumped Storage Project

		Feature	Description
1		Name of the Project	Shahpur Standalone Pumped Storage Project (5 x 300 MW + 2 x 150 MW)
2		**Location**	
	a	Country	India
	b	State	Rajasthan
	c	District	Baran
	d	Village near Powerhouse	Shahpur
3		**Geographical Co-Ordinates**	
	a	Shahpur Standalone PSP Upper Reservoir- (Now Proposed)	
		Latitude	25°11'25.21"N
		Longitude	77°10'55.78"E
	b	Shahpur Standalone PSP Lower Reservoir - (Now Proposed)	
		Latitude	25°11'40.00"N
		Longitude	77°11'50.00"E
4		**Access to Project Site**	
	a	Airport	Gwalior Airport – 200 km from project site
	b	Railway Station	Baran Railway Station, 77 km from project site
	c	Road	NH 76 – 6Kms
	d	Port	Kandla Port - 980 km from project site
5		**Project**	
	a	Type	Standalone Pumped Storage Project
	b	Storage Capacity	10800 MWH
	c	Rating	1800 MW
	d	Peak Operation Duration	6 hours
6		**Shahpur Standalone PSP - Upper Reservoir**	
	a	Live Storage	1.01 TMC (28.60 MCM)
	b	Dead Storage	0.20 TMC (5.66 TMC)
	c	Gross Storage	1.21 TMC (34.28 TMC)
7		**Upper Reservoir**	

		Feature	Description
	a	Full Reservoir level (FRL)	EL 507.00 m
	b	Min. Draw Down Level (MDDL)	EL 490.00 m
	c	Top Bund Level (TBL)	EL 510.00 m
	d	Type of Embankment	Asphalt Faced Rockfill Embankment
	e	Max. Height of Embankment	30 m
	f	Average Height of Embankment	24.5 m
	g	Length at the top of Embankment	5309 m
	h	Top width of the Embankment	10.0 m
	i	Type of Power Block	Gates with Concrete Breast Walls
	j	Top Level of Power Block	510.00 m
	k	Maximum Height of Power Block	38.5 m
	l	Length at the top of Power Block	162.0 m
	m	Top width of Road at Power Block	10.0 m
8		**Shahpur Standalone PSP - Lower Reservoir**	
	a	Live Storage	1.01 TMC (28.32 MCM)
	b	Dead Storage	0.05 TMC (1.42 MCM)
	c	Gross Storage	1.05 TMC (29.74 MCM)
9		**Lower Reservoir**	
	a	Full Reservoir level (FRL)	EL 349.00 m
	b	Min. Draw Down Level (MDDL)	EL 328.00 m
	c	Top Bund Level (TBL)	EL 352.00 m
	d	Type of Embankment	Asphalt Faced Rockfill Embankment
	e	Average Height of Embankment	26.5 m
	f	Length of Embankment	2937 m
10		**Intake Structure**	
	a	Type	Diffuser Type
	b	No. of Vents	3 nos.
	c	Size of Each Intake	24.00 m (W) x 11.2 m (H) including piers
	d	Length of each Intake	38.98 m (covered with RCC slab at top up to Intake Gate)
	e	Elevation of Intake center line	EL 476.30 m
	f	Elevation of Intake bottom	EL 472.55 m
	g	Design Discharge of each Intake (Turbine mode)	220.04 cumec for 300 MW Unit and 220.50 cumec for 150 MW Units
	h	Trash rack type	Vertical with inclination of 15°
	i	Size of Trash Rack	3 nos. of 7.00 m (W) x 11.60 m (Inclined Height) for each unit
	j	Numbers & Size of Intake Service Gate	6 nos. of 6.20 m (W) x 7.50 m (H)
	k	Numbers & Size of Intake Emergency Gate	1 set – 6.20 m (W) x 7.50 m (H) with Moving Gantry Crane
11		**Head Race Pipe /Pressure Shafts**	
	a	Type	Finished steel lined - circular
	b	Number of Head Race Pipe / Pressure Shaft	Total 6 No. of Independent Head Race Pipe / Pressure Shaft with one pressure Tunnel bifurcating into two-unit pressure tunnel
	c	Diameter of Horizontal Pressure Tunnel	7.5 m
	d	Diameter of unit Pressure Tunnel	5.3 m
	e	Length of Head Race Pipe /	830 m (6 nos.) Length of Head Race Pipe from Intake to Vertical Pressure Shaft - 663 m Length of Vertical Pressure Shaft - 72 m

		Feature	Description
		Pressure Shaft	Length of Horizontal Pressure Tunnel - 95 m
	f	Length of Unit Pressure Tunnel	About 50 m each
	g	Design Discharge of each Head race Pipe / Pressure Shaft	220.04 cumec for 300 MW unit and 220.50 cumec for 150 MW units
	h	Design Discharge of each unit Pressure Tunnel	110.25 cumec
	i	Maximum velocity in the Head Race Pipe / Pressure shaft	4.99 m/sec
	j	Maximum velocity in the Unit Pressure Tunnel	4.99 m/sec
12		**Powerhouse**	
	a	Type	Surface Pit Type Powerhouse
	b	Centre line of Unit	EL 298.0 m
	c	Dimensions (Excluding service bay)	196.166 m (L) x 28.5 m (W) x 61.5 m (H)
	d	Size of Service Bay	40 m (L) x 28.5 m (W)
	e	Service Bay Level	EL 313.72 m
	f	Size of Unloading Bay	25m (L) x 28.5 m (W)
	g	Unloading Bay Level	EL 336.70 m
13		**Tail Race Tunnel**	
	a	Type & Shape	Concrete Lined – Circular
	b	Number of Tunnels	7 Nos.
	c	Dia. of Tunnel for 300 MW Unit	8.50 m
	d	Dia. of Tunnel for 150 MW Unit	6.20 m
	e	Length of the Tunnel	179 m for 8.5 m dia as well as for 6.2 m dia
	f	Design Discharge for 300 MW Unit	220.04 cumec
	g	Design Discharge for 150 MW Unit	110.25 cumec
14		**Tailrace Outlet**	
	a	Type	Diffuser Type
	b	No. of Outlet	7 Nos.
	c	Size of each outlet	For 300 MW Unit - 24.00 m (W) x 12.50 m (H) including piers For 150 MW Unit - 18.00 m (W) x 9.0 m (H) including piers
	d	Length of each Outlet	31.40 m (covered with RCC slab at top up to Intake Gate)
	e	Elevation of outlet center line	For 300 MW Unit - EL + 315.30 m For 150 MW Unit - EL + 314.15 m
	f	Elevation of Outlet bottom	EL + 311.05 m for 300 MW as well as 150 MW unit
	g	Trash rack Type	Vertical with inclination of 15°
	h	Size of Trash rack	For 300 MW Unit - 3 sets of 7.0 (W) x 12.94 m (Inclined Height) for each unit For 150 MW Unit - 3 sets of 5.0 (W) x 9.32 m (Inclined Height) for each unit
	i	Tailrace outlet Service Gate	5 nos. of 6.00 m (W) x 8.50 m (H) and 2 nos. of 4.20 m (W) x 6.20 m (H)
	j	Tail Race outlet Emergency Gate	1 set - 6.00 m (W) x 8.50 m (H) 1 set - 4.20 m (W) x 6.20 m (H) with one common Gantry Crane
15		**Tailrace Channel**	
	a	Type	Trapezoidal shape with concrete lined
	b	Bed Width	140.0 m
	c	Length of channel	717 m
	d	Full Supply Depth	6.8 m

		Feature	Description
	e	Bed Slope	1:6400
	f	Side Slope	1H:6V
16		**Electro-Mechanical Equipment**	
	a	Pump Turbine	Francis type, vertical shaft reversible pump-turbine
	b	Total No of units	5 nos. (5 X 300 MW) + 2 nos. (2x150 MW)
	c	Total Design Discharge (Turbine Mode)	1320.70 cumec (5 x 220.04 cumec + 2 x 110.25 cumec)
	d	Rated Net Head in Turbine mode	154.73 m for 300 MW unit and 154.41 m for 150 MW unit
	I	**300 MW Turbines**	
	a	Total No of units	5 Units (All fixed Speed)
	b	Turbine Design Discharge	220.04 cumec
	c	Pump Capacity	330 MW
	d	Rated Pumping Head	162.56 m
	e	Rated Pump Discharge	190.96 cumec
	f	Synchronous Speed	187.50 rpm
	II	**150 MW Turbines**	
	a	Total No of units	2 Units (All Fixed Speed)
	b	Turbine Design Discharge	110.25 cumec
	c	Pump Capacity	165 MW
	d	Rated Pumping Head	163.21 m
	e	Rated Pump Discharge	95.10 cumec
	f	Synchronous Speed	250.00 rpm
	III	**Generator-Motor**	
	a	Type	Three (3) phases, alternating current synchronous generator motor semi umbrella type with vertical shaft
	b	Number of units	5 Units (5 x 300 MW) and 2 Units (2x150 MW)
	c	Rated Capacity	Generator – 300 MW & 150 MW Pump Input – 330 MW & 165 MW
	d	Rated Voltage	18.0 kV
	IV	**Main Power Transformer**	
	a	Type	Outdoor Single-Phase Power transformers with On Load Tap Changer (OLTC)
	b	Number of units	23 Nos. i.e., 3 nos. per unit & 2 no spare
	c	Rated Capacity of each unit	16 no. (3x5 Working +1 Spare) of Single Phase, 18 kV/400kV, 123 MVA and 7 no. (2 x 2 Working + 1 spare) of Single Phase, 18 kV/400kV, 62 MVA
	d	Rated Voltage	Primary – 18.0 kV; Secondary - 400 kV adjustable range of the secondary voltage: ±10% in steps of 1.25%
17		**400 KV Gas Insulated Switchgear**	
	a	Type of GIS	Indoor Type
	b	No. of GIS units	1 No.
	c	Location	Inside GIS building above ground
	d	Scheme	Double Bus Scheme with coupler and sectionaliser
18		**Power Evacuation**	
	a	Voltage Level (kV)	400 kV
	b	No. of Transmission Lines	One no. 400 kV double circuit transmission lines
	c	Conductor	Quad Moose

		Feature	Description
	d	Total Length	One 400 kV Double Circuit Transmission Line of length 75 km (approx.) from PSP will be connected to **400/765 kV PGCIL substation at New Shivpuri of Madya Pradesh State** for evacuation of stored power during generating mode and for supply of power during pumping mode.
19		**Estimated Cost**	
	a	Civil & Other works	4782.91
	b	E&M Works including Transmission	3096.20
	c	IDC & Others	1842.65
		Total Project Cost with IDC	9721.76

Source: Pre-Feasibility Report of Shahpur Standalone Pumped Storage Project

2.0 NEED FOR SOIL EROSION TREATMENT

It is a well-established fact that reservoirs formed by dams on rivers are subjected to sedimentation. The process of sedimentation embodies the sequential processes of erosion, entrainment, transportation, deposition and compaction of sediment. The steady erosion and sediment in reservoir reduce its capacity, and thus affecting the water availability for the designated use. Thus, a well-designed Soil erosion Treatment Plan is essential to ameliorate the above-mentioned adverse effects of soil erosion. Soil erosion can be defined as detachment, transportation and deposition of soil particles from one place to other by means of transporting agent like air, water or animals. Soil erosion is mainly affected by rainfall intensity and runoff, slope gradient and length, soil erodibility and vegetation cover (landuse pattern). Therefore, study of erosion and sediment yield from catchments are of great importance. Soil erosion leads to:

- loss in production potential
- reduction in infiltration rates
- reduction in water-holding capacity
- loss of nutrients
- increase in tillage operation costs
- reduction in water supply

To control the rate of soil erosion in the catchment, Soil erosion treatment is an ineluctable part. The Soil Erosion Treatment Plan pertains to preparation of a management plan for treatment of erosion prone areas through adequate preventive measures. An effective Soil Erosion Treatment Plan is a key factor to make the project eco-friendly and sustainable. Thus, a well-designed Soil erosion treatment plan is essential to ameliorate the above-mentioned adverse process of soil erosion. Soil Erosion Treatment Plan essentially consists of following steps.

1. Calculation of soil erosion using Revised Universal Soil Loss Equation (RUSLE), combined with Remote Sensing (RS) and Geographic Information System (GIS) technologies.
2. Prioritizing the areas for treatment using Silt Yield Index (SYI).
3. Planning of suitable erosion control measures.
4. Cost estimation for Soil Erosion Treatment Plan.

3.0 METHODOLOGY ADOPTED FOR THE STUDY

The various steps, covered in the study, are as follows:

- Defining study area
- Defining data requirement
- Data acquisition and preparation
- Output presentation

The above-mentioned steps are briefly described in the following paragraphs:

3.1 Defining Study Area

Purpose of the study is for preparation of Soil Erosion Treatment Plan for the erosion prone areas within catchment of Shahpur Standalone Pumped Storage Project. Since the project involves construction of two different reservoirs therefore catchment area of both the reservoirs has been considered as study area. The total catchment area of both the reservoirs is **6.48 sq km**. The catchment area of both the reservoirs falls in Survey of India Toposheet No. 54G/4. In order to plan watershed management and to formulate action plans it requires subwatershed delineation, therefore, catchment area was further delineated into subwatershed. For the delineation of subwatershed, Watershed Atlas of India prepared by Soil and Land Use Survey of India (SLUSI) has been referred.

Soil and Land Use Survey of India (SLUSI) has Watershed Atlas of India under digital environment using GIS and produced a Digital Watershed Atlas (DWA) where the delineation and codification of watersheds in the country has been undertaken in GIS environment. The delineation for DWS has been done in seven stages starting with Water Resource Regions and their subsequent division and subdivisions into Basins, Catchments, Subcatchments, Watersheds, Subwatersheds and Microwatersheds in decreasing size of the delineated hydrologic unit.

As per Watershed Atlas of India, catchment areas of both the reservoirs falls in a two subwatersheds. Catchment area of lower reservoir falls in a single subwatershed, coded as 2D1B5f. Whereas, catchment area of upper reservoir falls in two subwatersheds, coded as 2D1B5f and 2D1B5c. The nomenclature of the subwatersheds forming the catchment area has been assigned as follows: Region (2) "Ganges drainage"; Basin (2D) "Chambal"; Catchment (2D1) "Chambal up to Banas confluence"; Subcatchment (2D1B); Watershed (2D1B5) "Kunu"; Subwatershed 2D1B5c and 2D1B5f (refer **Figure 2)**.

3.2 Defining Data Requirement

Soil loss has been calculated through RUSLE (Revised Universal Soil Loss Equation) model which is computed by the following equation:

Soil Loss (A) = R*K*LS*C*P

Wherein;

A = Soil loss (Tons/ha/year)

R is Rainfall & Runoff Erosivity Factor (MJ mm/ha-1/h-1/year-1), which depends upon the annual average rainfall in mm. Data required for R factor is rainfall intensity.

K is Soil Erodibility Factor (Tons/ha/h/ha-1/MJ-1/mm-1), which depends on the organic matter, texture permeability and profile structure of the soil. Also, it is a constant value for each soil type. Data required for K factor is soil type.

LS is Topographic Factor (dimensionless) which depends upon flow accumulation and steepness and length of slope in the area. Data required for LS factor is slope length and slope gradient.

C = Vegetation Cover and Crop Management Factor (dimensionless), which is the ratio of bare soil to vegetation and non- photosynthetic material. It is a constant value for each land use category. Data required for C factor is land use/ land cover.

P is Conservation Supporting Practice Factor (dimensionless), which takes into account specific erosion control practices like contour bunding, bench terracing etc.

3.3 Data Acquisition and Preparation

The data on various aspects was collected from different sources. Soil map of the Catchment Area was prepared from soil map of Rajasthan procured from Regional Centre of National Bureau of Soil Survey & Land Use Planning (NBSS&LUP), New Delhi. For the preparation of DEM and preparation of Slope map, Shuttle Radar Topography Mission (SRTM) 3 Arc-Second Global Digital Terrain Elevation Data (DTED) has been used. For the preparation of land use/ land cover, forest cover map prepared by Forest Survey of India, map prepared by National Remote Sensing Centre (NRSC), Indian Space Research Organisation (ISRO) of Dept. of Space with Partner Institutions viz., State Remote Sensing Application Centre, Dept. of S&T, Govt. of Rajasthan has been used. The rainfall data in the Catchment Area has been sourced from Climatic Research Unit (CRU), a component of the University of East Anglia and one of the leading institutions concerned with the study of natural and anthropogenic climate change.

3.3.1 Rainfall Erosivity (R) Factor

R factor is a function of the falling raindrop and rainfall intensity and is estimated as the product of the kinetic energy (E) of the raindrop and the maximum intensity of rainfall (I30) over duration of 30 min in a storm. The erosivity of rain is calculated for each storm, and these values are summed up for each year. In this study, the storm wise rainfall data were not available for the computation of rainfall erosivity factor (R); therefore, the relationship between seasonal value of R and average rainfall has been used. The rainfall erosivity factor has been defined as R = 81.5 + 0.38X, where, R is the average seasonal erosivity factor (MJ $mm/ha^{-1}/h^{-1}/year^{-1}$), and X is the annual average rainfall (mm).

For the estimation of rainfall erosivity in the Catchment Area, average rainfall of 10 years has been taken from the High-resolution gridded CRU datasets. In the absence of site-specific periodic data, CRU data from the year 2011 to 2020 has been used for the calculation of R factor. In and around the Catchment Area, average rainfall of 10 years have been taken from the rain gauge station for the estimation of rainfall erosivity. The rainfall erosivity factor (R) has been calculated using equation R = 81.5 + 0.38X for annual average rainfall of observed and simulated data. The value of R i.e. 384.51 has been adopted in this study to calculate soil erosion using RUSLE.

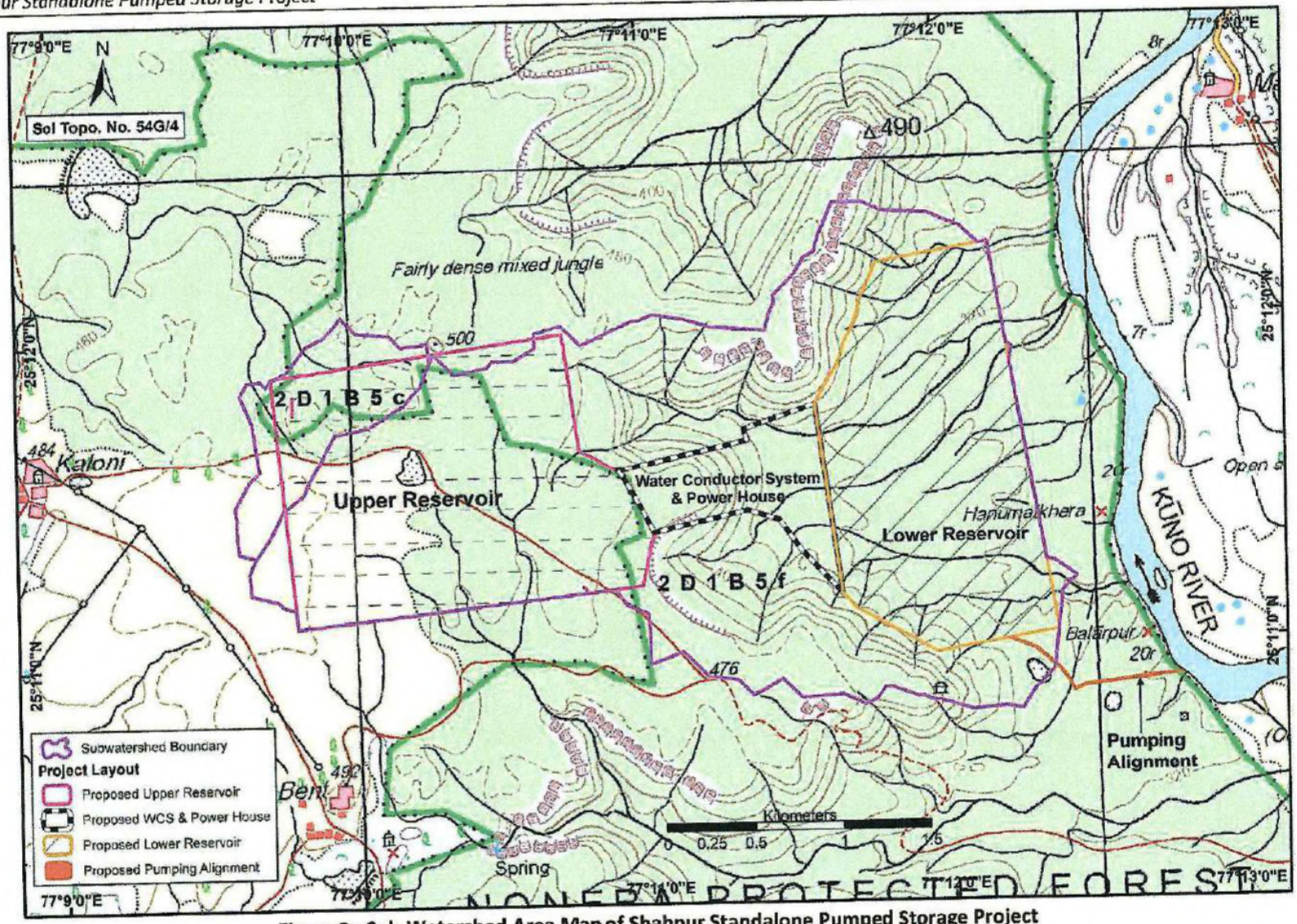

Figure 2: Sub-Watershed Area Map of Shahpur Standalone Pumped Storage Project

3.3.2 *Soil Erodibility (K) Factor*

The K factor is an expression of the inherent erodibility of the soil or surface material at a particular site under standard experimental conditions. It is a function of the particle-size distribution, organic-matter content, structure, and permeability of the soil or surface material. Prior to deciding the K values, soil map for the area is prerequisite. Soil map procured from NBSS & LUP, Nagpur was digitized. Mapping Unit 351, characterised by deep, moderately well drained, fine soils on very gently sloping plateau with clayey surface, slight erosion covers 71.73% of the catchment area. Rest 28.27% of the catchment area is covered by Mapping Unit 340, characterised by rock-outcrops; associated with: shallow, well drained, loamy-skeletal soil, on very gently sloping foot slopes, severely eroded. Soil map has been shown in **Figure 3**. The legend for soil mapping unit classes is given in **Table 2**. As per the soil map of the Catchment Area, the soil can be classified in two categories. Shallow with loamy skeletal texture and severe erosion have high K value i.e. 0.325, because they are less susceptible to particle detachment and they produce runoff at high rates. Deep with fine texture and slight erosion have low K value i.e. 0.15.

Table 2: Description of Soil Mapping Units in the Catchment Area

Mapping Unit	Description	Taxonomic Classification	Area (ha)	Area (%)
340	Rock-outcrops; associated with: Shallow, well drained, loamy-skeletal soil, on very gently sloping foot slopes, severely eroded.	• Rock-outcrops • Lithic Ustochrepts	183.18	28.27
351	Deep, moderately well drained, fine soils on very gently sloping plateau with clayey surface, slight erosion; associated with: Deep, well drained, fine soils, moderately eroded.	• Typic Chromusterts • Typic Chromusterts	464.82	71.73
	Total		**648.00**	**100**

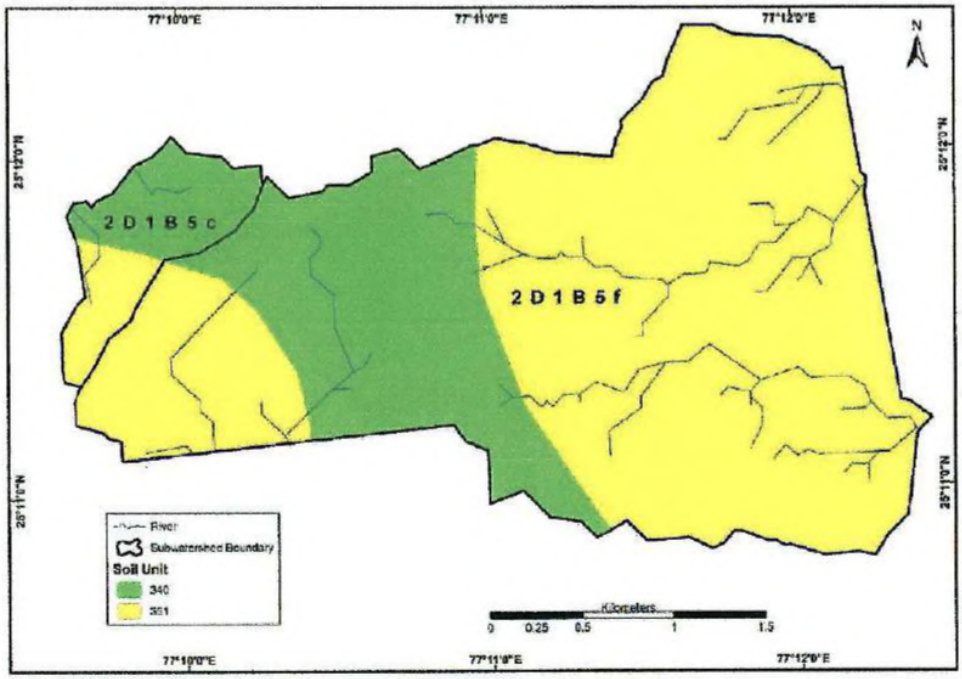

Figure 3: Soil Map of Catchment Area
(For details of Soil Unit legend refer Table 2)

3.3.3 Topographic (LS) Factor

The LS factor is an expression of the effect of topography, specifically hill slope length and steepness, on rates of soil loss at a particular site. The value of 'LS' increases as hill slope length and steepness increase, under the assumption that runoff accumulates and accelerates in the down-slope direction. Digital Elevation Model (DEM) and Slope of a particular area is prerequisite for LS factor. As already discussed, Shuttle Radar Topography Mission (SRTM) 3 Arc-Second Global Digital Terrain Elevation Data (DTED) has been used for DEM and the same DEM has been used for the preparation of slope map. The LS factor prepared for the Catchment Area is given at **Figure 4**.

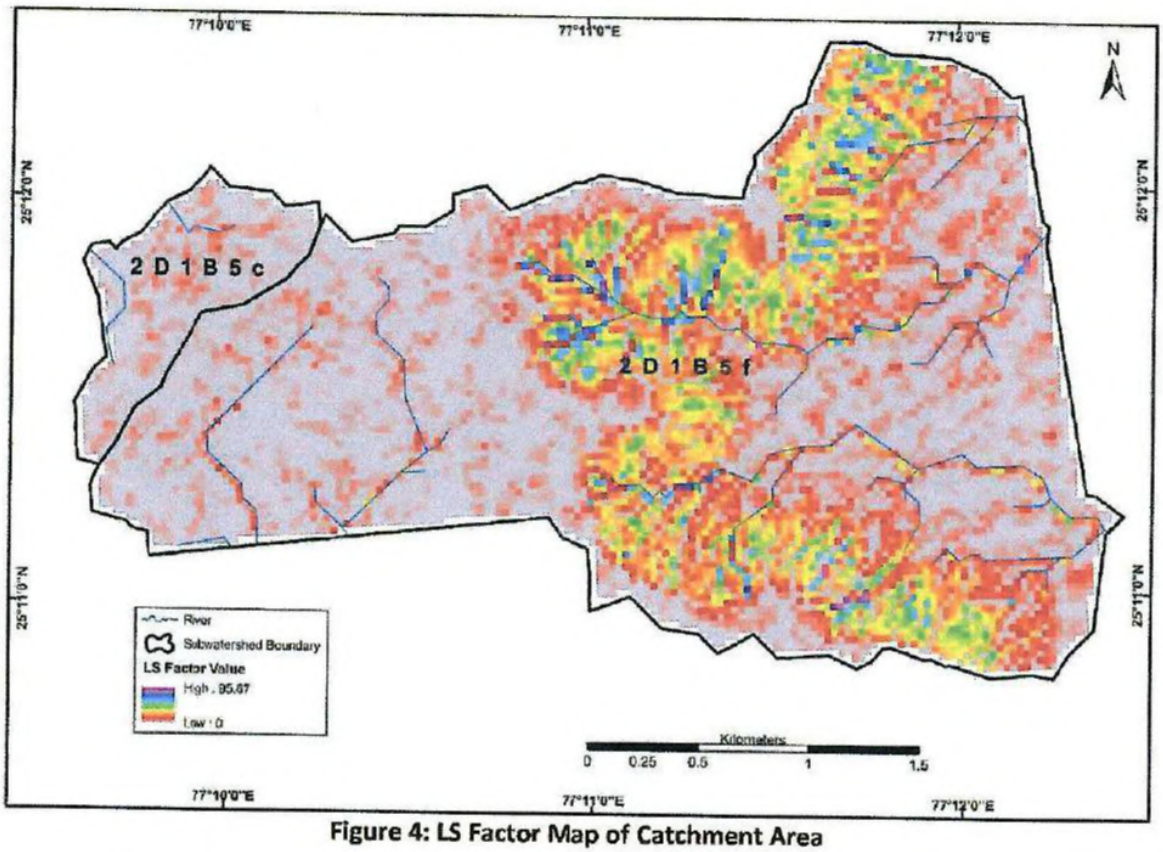

Figure 4: LS Factor Map of Catchment Area

3.3.4 Crop Management (C) Factor

The C factor is an expression of the effect of surface cover and roughness, soil biomass, and soil-disturbing activities on rates of soil loss at a particular site. The value of C decreases as surface cover and soil biomass increase, thus protecting the soil from rain splash and runoff. In the present study, forest cover map prepared by Forest Survey of India and land use/land cover map prepared by National Remote Sensing Centre (NRSC), Indian Space Research Organisation (ISRO) of Dept. of Space with Partner Institutions viz., State Remote Sensing Application Centre, Dept. of S&T, Govt. of Rajasthan has been used in the allocation of C factor for different land use classes.

The classified land use/ land cover map of the Catchment Area is shown as **Figure 5**. The land use/ land cover pattern of the Catchment Area has been given in **Table 3**. As can be seen from the map and table, the land use/ land cover pattern can be classified into six classes, out of

these, majority of the area i.e. 41.04% is covered by Open Forest, followed by Moderately Dense Forest, covering 27.38%. Fallow Land is covering 12.92% of the area. Scrub Land is covering 11.78% of the area. Agricultural Land is covering 6.84% of the area. Rest 0.04% of the area is covered by Waterbody.

Table 3: Area Falling Under Different Land Use/ Land Cover Classes

Land use/ Land cover Classes	Area (ha)	Area (%)
Moderately Dense Forest	177.43	27.38
Open Forest	265.93	41.04
Scrub Land	76.36	11.78
Agricultural Land	44.31	6.84
Fallow Land	83.70	12.92
Waterbody	0.27	0.04
Total	**648**	**100**

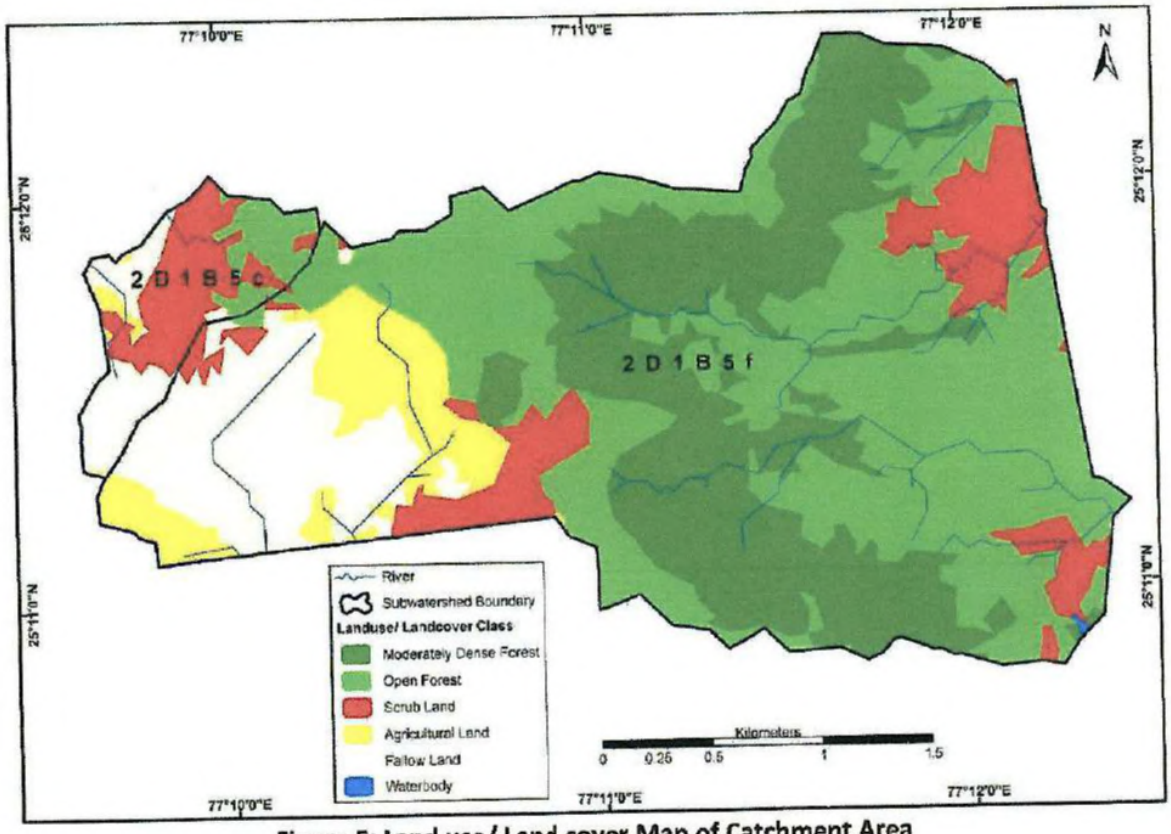

Figure 5: Land use/ Land cover Map of Catchment Area

3.3.5 *Conservation Support Practice (P) Factor*

The P factor is an expression of the effects of supporting conservation practices, such as contouring, buffer strips of vegetation, and terracing, on soil loss at a particular site. It is the ratio of soil loss with specific support practice to the corresponding loss with up-or down-slope cultivation. In the present study, the P factor has been considered as 1.

3.4 Output Presentation

A thematic map for soil loss of the Catchment Area has been prepared using RUSLE model mentioned in the above section. The Catchment Area was then demarcated into different soil

erosion intensity mapping units or classes based upon the extent of soil loss (see **Table 4 & Figure 6**). The Catchment Area under different Erosion Intensity categories is given in **Table 4**. As can be seen from the figure and table, around 44% of the catchment area is prone to less than 1 tons/ha/annum soil erosion, i.e. under negligible erosion intensity category and around 5% of its area is prone to Severe and Very Severe soil erosion.

Table 4: Area falling under different Erosion Intensity Categories

S. No.	Soil loss in tons/hectare/annum	Erosion Intensity Category	Area (ha)	Area (%)
1	<1	Negligible	283.58	43.76
2	1-5	Slight	120.02	18.52
3	5-10	Very Low	63.90	9.86
4	10-20	Low	72.83	11.24
5	20-40	Moderate	75.68	11.68
6	40-80	Severe	25.86	3.99
7	>80	Very Severe	6.12	0.95
Total			**648.00**	**100**

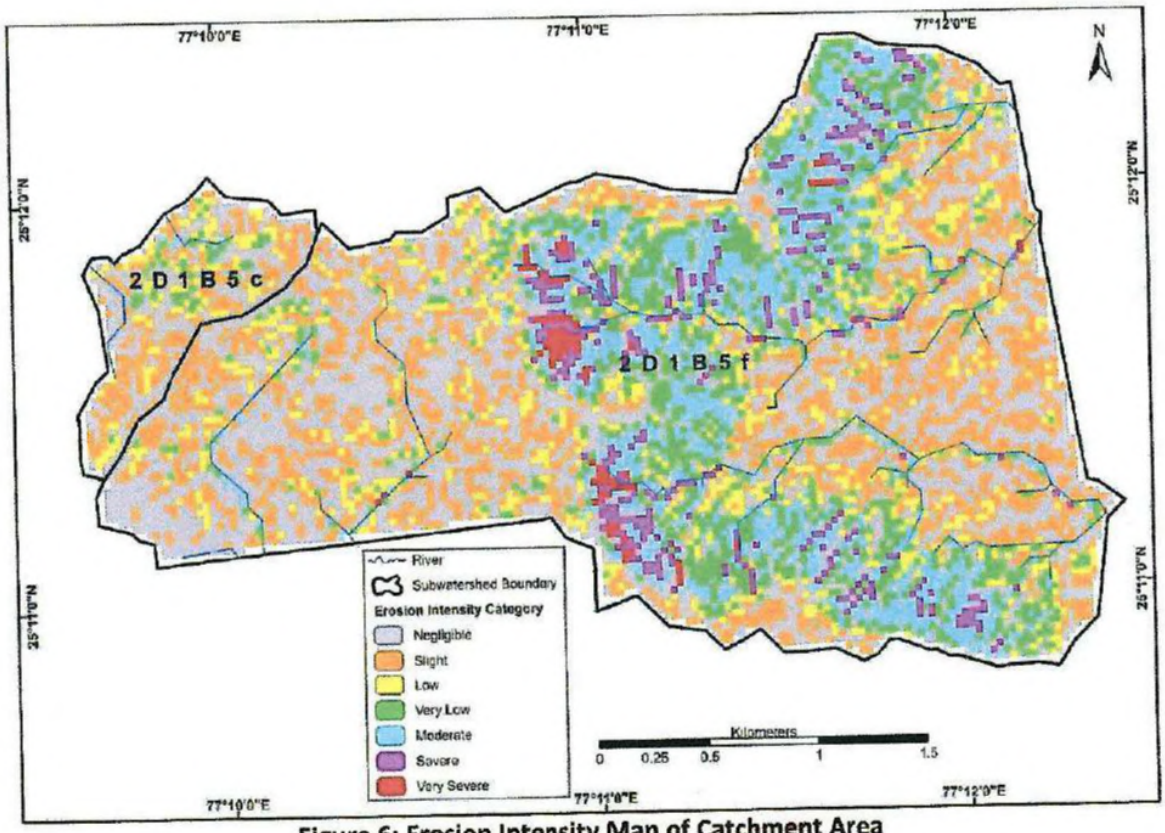

Figure 6: Erosion Intensity Map of Catchment Area

3.5 Prioritization

'Silt Yield Index' (SYI), method conceptualized by Soil and Land Use Survey of India (SLUSI) is being used for prioritization of smaller hydrologic units within river valley project areas. Since the catchment area is only 6.48 sq km and could be delineated into only two subwatersheds therefore, it is proposed to consider same priority for both the subwatersheds.

4.0 TREATMENT PLAN

4.1 Area to be taken up for Treatment.

Areas under severe and very severe erosion intensity category will be taken up for treatment. To arrive at such an area, first of all areas under severe and very severe erosion intensity category were extracted, which comes out to be **31.98 ha** (refer **Table 5**). Thereafter, areas under severe and very severe erosion intensity category falling within the proposed project components such as lower reservoir, upper reservoir, water conductor system, etc. were removed as once the project is constricted this area will not be available for treatment. The area thus arrived at and considered as treatable area comes out to be 25.91 ha (or say **26** ha).

From the map given at Figure 6 it can be seen that the areas under severe and very severe erosion intensity category falls under 2D1B5f subwatershed only. Further, the landuse and landcover classes falling inside this 25.91 ha of severe and very severe erosion intensity category area are Moderately Dense Forest (18.81 ha) and Open Forest (7.10 ha).

The period for implementing Soil Erosion Treatment Plan interventions including maintenance has been taken as 7 years. It is proposed to prepare micro plans, establish administrative setup and implement other entry point activities in the first year itself, followed by implementation of treatment measures in second year. Maintenance period (only for biological measures) will be for subsequent 5 years.

4.2 Treatment Measures

Watershed management is the optimal use of soil and water resources within a given geographical area so as to enable sustainable production. It implies changes in land use, vegetative cover, and other structural and non-structural action that are taken in a watershed to achieve specific watershed management objectives. The overall objectives of watershed management programme are to:

- increase infiltration into soil;
- control excessive runoff;
- manage & utilize runoff for useful purpose.

4.2.1 Biological Measures

The biological measures would comprise of planting under ANR model

4.2.1.1 Assisted Natural Regeneration

In moderately dense forests, conditions are conducive to natural regeneration provided some sort of assistance is provided. Such area shall be taken up under this component. The areas shall be closed to reduce biotic interference. Ground surface will be cleared of slash, debris and felling refuse to afford a clean seed bed to the falling seed. At certain places some soil raking may also have to be done to facilitate germination of seeds. Where natural regeneration is found deficient. It will be supplemented by artificial planting. Patch sowing in suitable areas may also be done. 200 plants per hectare will be planted under this scheme. The plantation will be maintained for subsequent four years. Effective fencing will be done in the plantation areas. Total Rs 44,46,500.00 Will be expenditure in five years. Rate area taken as per prevailing model rate of Forest Department.

4.2.2 *Engineering Measures*

Gullies in their upper reaches only must be treated to prevent further deepening and widening. The purpose of engineering measures is to reduce the gradient, reduce the flow velocity and protect the stream bank. The water is guided safely from a higher elevation to a lower elevation without causing erosion at the gully/nala bed and banks. The water pools behind the engineering promotes the percolation into the soils. Check dam is one such engineering measure. The other engineering measures proposed for soil & water conservation includes Gabion structures, Continuous Contour Trench (CCT), Mini Percolation Tank (MPT) etc. A lumpsum amount of **Rs. 6.00 lakh** has been kept for check dams and gabions and Rs. 4.00 lacs has been kept for various engineering measures like Continuous Contour Trench (CCT), Mini Percolation Tank (MPT) etc. Map showing the nalas on which check dams have been proposed and area for other engineering measures is given as **Figure 7**.

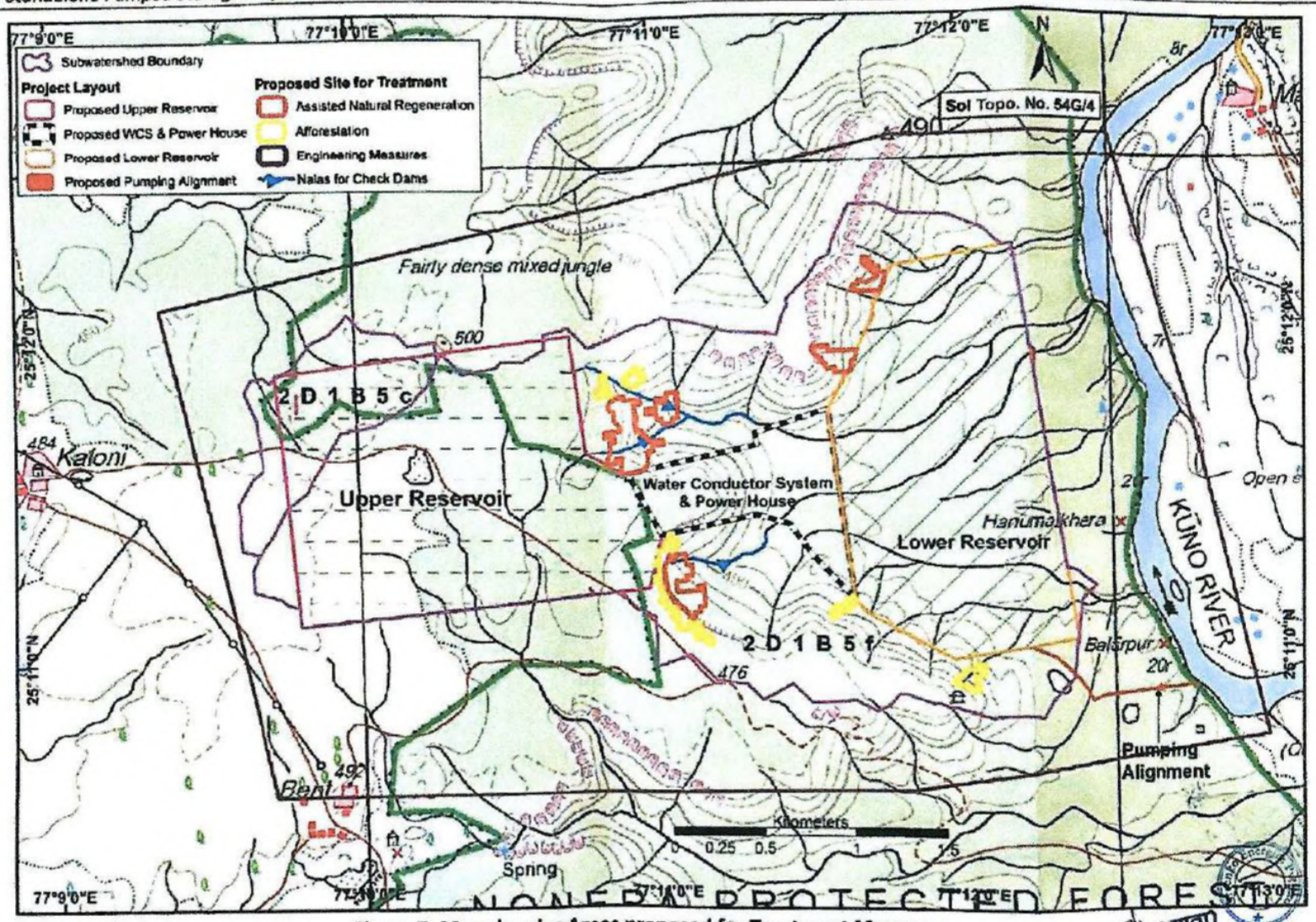

Figure 7: Map showing Areas proposed for Treatment Measures

5.0 OTHER COMPONENTS OF SOIL EROSION TREATMENT PLAN

Apart from the biological and engineering treatment measures in the Soil Erosion Treatment Plan there are other aspects of the Soil Erosion Treatment Plan to be addressed and their cost included in the overall cost estimate of the plan. The charges for operational support, forest protection, social mobilization, documentation and publication, monitoring and evaluation and providing environmental services are some of the integral ingredients which have to be considered and included while formulating the Soil Erosion Treatment Plans.

5.1 Administrative Charges

For an efficient management of forest resources, it is essential that operational support to the Forest Department is adequately developed. Similarly, in remote localities there are no places for shelter for the staff, people and trekkers. Therefore, a budgetary provision of **Rs. 593674.00** has been kept as administrative charges.

5.2 Provision for Micro Planning

The year-wise areas requiring treatment measures have been suggested but have not been marked. The spatial location of specific treatment to be carried out would require extensive detailing during the implementation of mitigation measures and a provision for micro-planning has been made in the total financial allocation. For this purpose, a provision of **Rs. 1.09 lakh** is being made.

5.3 Socio-economic

The following measures would help in rejuvenating the ecosystem and in reducing the soil erosion in the region. It shall be carried out for local villages near the catchment area.

i. Avenue plantation using fuel wood trees with suitable fencing in the villages.
ii. Establishment of training, awareness programmes for water and soil conservation in the village areas
iii. Awareness program for conservation of natural resource.

A budgetary provision of **Rs. 2.72 lakh** has been kept under this component.

5.4 Monitoring & Evaluation

Monitoring and evaluation will be undertaken as a part of project management. A process of self-evaluation at specified intervals of time will ensure the field level verification of suggested treatment measures and efficacy of the Soil Erosion Treatment plan.

The year-wise areas requiring treatment measures have been suggested but have not been marked. The spatial location of specific treatment to be carried out would require extensive detailing during the implementation of mitigation measures and a provision for micro-planning has been made in the total financial allocation. Thereafter, annual work plan would be prepared well in advance after undertaking initial ground surveys during micro-planning, specifying physical and financial targets, sites, locations and beneficiaries of each component of the project activity. Month-wise work schedule of various items of each component for the financial year would also be prepared in advance and its timely implementation would be ensured. Monthly progress report on all activities would be submitted by the Range Officers

to Divisional Forest Officer. The monitoring committee shall be constituted at the project level for this purpose which too would monitor on a regular basis the quality and quantity of works being carried out under the Soil Erosion Treatment Plan area. A provision of **Rs. 1.09 lakh** has been made for this component.

6.0 COST ESTIMATE

The estimated cost of implementation of Soil Erosion Treatment Plan as defined above is **Rs. 65.30 lakh** and is given at **Table 5.** Year wise physical and financial targets are given in **Table 6.**

Table 5: Estimated Cost of Soil Erosion Treatment Plan Implementation

S. No.	Item	Rate (Rs)	Unit	Target	
				Physical	Financial (Rs.)
I	**Biological Measures**				
1	Assisted Natural Regeneration				
	I) Creation	58315	Ha	2x25	29,15,750.00
	ii) Maintenance for 5 years	30616	Ha	2x25	15,30,800.00
	Sub Total I				**44,46,550.00**
II	**Engineering Measures**				
	Check Dams and Gabian		cmt	LS	6,00,000.00
	CCT, MPT etc				4,00,000.00
	Sub Total II				**10,00,000.00**
	Treatment Cost (Sub Total I + II)				**54,46,550.00**
	Socio-economic Activity @5% of Treatment Cost				272327.00
	Micro planning and preparation of DPR @2% of Treatment Cost				108931.00
	Monitoring & Evaluation of the works @2% of Treatment Cost				108931.00
	Total				**5936739.00**
	Administrative Charges @10% of Treatment Cost				593674.00
	Grand Total				**6530413.00**

Technically checked & approved

उप वन संरक्षक
बारां

(दीपक कुमार गुप्ता)
उप वन संरक्षक
बारां

Table 6: Year Wise Phasing of Physical and Financial Targets

Sr.N0.	Name of Activity	Year wise expenditure in Rs				
1		2024-25	2025-26	2026-27	2027-28	2028-29
1	Planting Activity: ANR plantation 2x25 ha =50 ha	2915750	849450	311000	185150	185150
2	Check Dams and Gabions	200000	200000	200000	0	0
3	CCT, MPT etc.	200000	100000	100000	0	0
4	Socio Economic Activity	200000	72327	0	0	0
5	Microplanning and preparation of DPR	108931	0	0	0	0
6	Monitoring and Evolution of works	0	0	0	108931	0
	Administrative Charges	450674	50000	45000	20000	20000
	Grand Total	**4075355**	**1271777**	**656000**	**314081**	**205150**

Gopi Krushna N
Deputy General Manager (DGM)
Authorised Signatory
Greenko Energies Private Limited

प्रतिपूरक वनरोपण निधि योजना

कार्यालय प्रधान मुख्य वन संरक्षक, (हॉफ), राजस्थान, जयपुर

क्रमांक एफ 3(13)प्रमुवसं/ट्री/तक0/21-22/590-605 दिनांक:- 06/12/22

निमित,

1-परियोजना निदेशक, आर.एफ.बी.पी.-2 जयपुर।

2- समस्त सम्भागीय मुख्य वन संरक्षक जयपुर/अजमेर/भरतपुर/कोटा/उदयपुर/बीकानेर/जोधपुर/(वन्यजीव) जयपुर/कोटा/उदयपुर/सवाईमाधोपुर/सरिस्का/जोधपुर/विभागीय कार्य जयपुर

विषयः-नवीन मॉडल कॉस्ट नॉर्म्स न्यूनतम श्रमिक दर रू. 259/- एवं सामग्री दर 2021

महोदय,

उपरोक्त विषयान्तर्गत निवेदन है कि श्रमिक दर 259/-रूपये प्रति दिन के आधार पर प्राप्त हुए वृक्षारोपण मॉडल राज्य स्तरीय मॉडल कमेटी की अनुशंषा पर प्रधान मुख्य वन संरक्षक, (हॉफ) राजस्थान, जयपुर के अनुमोदन उपरान्त संलग्न कर आवश्यक कार्यवाही हेतु प्रेषित किये जा रहे हैं।

(a) ANR (25 ha)
(b) RDF-I (25 ha)
(C) RDF-II (25 ha)
(d) Eco-restoration (25 ha)
(e) Eco-restoration (50 ha)
(f) Forest Guard Chowki
(g) Boundary Pillar

उक्त सभी मॉडल विभागीय वेबसाइट के निम्न लिंक पर उपलब्ध है।

http;//www.forest.rajasthan.gov.in/content/raj/forest/en/forest,-department/departmental-wings/forest-development/model-for-developmental activities.htm|

संलग्न-मॉडल की प्रति।

भवदीय

मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर।

Model Cost Norms
ANR (Assisted Natural Regeneration)

UNIT : 25 Ha
PERIMETER: 90 M/Ha.
LABOUR RATE: Rs.259. /Day
COST ESTIMATE: in Rs./Ha.

0 YEAR (ADVANCE ACTION)

S.No.	ITEMS	Unit	Qty.	Rate	LABOUR	MATERIAL	TOTAL
1	Collection of Data for Microplanning, preparation of microplan and management plan	Prorata			1208.66	101.22	1309.88
2	Survey of area, Layout of contour trenches/ furrows, Pits and marking of segments /plots	Prorata			694.14	77.12	771.26
3	Fencing by stone wall and or by ditch.						
	a). Stone wall fencing 1.20m high 0.80m at base & 0.60m at top(on an average 42 m/ha.)	meter	45	371.95	16737.75	0.00	16737.75
	b). Ditch fencing 1.20m deep,1.50m wide at top & 0.90m at bottom (on an average 42 m/ha.)	meter	45	280.69	12631.05	0.00	12631.05
4	Cost of raising 220 seedlings	Plant no.	220	9.02	1381.20	602.20	1983.40
5	Digging up Trenches :					0.00	
a.	Digging up 400 rmt Staggered Contour Trenches with cross section size: 0.45x0.45 Sqmt.	Meter	400	32.38	12952.00	0.00	12952.00
6	Digging of 200 pits size: 0.45x(0.4+0.5/2)	no.	200	20.27	4054.00	0.00	4054.00
7	Cost of collection and purchase of grass and other seeds of Indegenous trees and shrubs	per ha	1	428.00	214.00	214.00	428.00
8	In situ Soil & Moisture Conservation measures like Check dam, Percolation Tanks, Earthen Bunds etc.	per ha	1	4965.17	4965.17	0.00	4965.17
9	Purchase or Construction of Water Storage tank	Prorata	1			150.00	150.00
10	Construction of Thatched cattle guard hut.	Prorata	1		518.00	72.98	590.98
11	Purchase of tools and plants	Prorata			0.00	90.63	90.63
12	Labour amenities	Prorata			95.94	70.62	166.56
13	Cattle guard wages for 4 months	Prorata			1077.44	0.00	1077.44
14	Restoration of Natural regeneration by cutback cultural operation, pruning and by making crescent shaped ridges on lower side of seedling and saplings	Prorata			1295.00	0.00	1295.00
15	Misc. and unforeseen expenses including running of vehicles	Prorata			490.57	99.23	589.80
	TOTAL YEAR 0				58314.92	1478.00	59792.92

उप वन संरक्षक (प्रशासन)
प्रधान मुख्य वन संरक्षक
प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

(सिंह गौतवाल)
वन संरक्षक (आयोजना),
राजस्थान, जयपुर

	YEAR 3 : MAINTENANCE						
1	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
2	Expenditure on Maintenance including (Repair of fencing/Structures, Subsidiary silvicultural operations, Frost Protection, etc.)	Prorata			472.58	128.60	601.18
	TOTAL YEAR 3.				3703.40	128.60	3832.00
	YEAR 4 : MAINTENANCE						
1	Watch & ward charges for 12 months	Prorata			3230.82		3230.82
2	Expenditure on Maintenance including (Repair of fencing / Structures, Subsidiary silvicultural operations, Frost Protection, etc.)	Prorata			472.58	128.60	601.18
	TOTAL YEAR 4.				3703.40	128.60	3832.00
	GRAND TOTAL				88932.01	3307.91	92239.92

Yearwise Cost Statement ANR (Assisted Natural Regeneration)

No.	Item of Works	Unit	Qty.	Rate (Rs.)	Labour Cost	Material Cost	Total Cost
1	YEAR 0 ADVANCE ACTION				58315	1478	59793
2	YEAR 1 - PLANTING YEAR				16990	1426	18416
3	YEAR 2 - MAINTENANCE I				6220	147	6367
4	YEAR 3 - MAINTENANCE II				3703	129	3832
5	YEAR - 4 MAINTENANCE III				3703	129	3832
	Grand Total				88932	3308	92240

नोट :– मॉडल्स कार्यस्थल विशेष पर कार्य सम्पादित कराने के लिये प्राक्कलन नहीं है वरन केवल मार्गदर्शक है। कार्यस्थल पर कार्य सम्पादित कराने के लिए कार्य स्थल की विशेषताओं/ परिस्थितियों के अनुसार प्राक्कलन के आधार पर कार्य कराये जावें।

उप वन संरक्षक (प्रशासन)
प्रधान मुख्य वन संरक्षक
प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

(आमर सिंह गोठवाल)
उप वन संरक्षक (आयोजना),
राजस्थान, जयपुर

YEAR I (PLANTATION YEAR)

1	Maintenance of 220 seedling in nursery	Plant no.	220	2.17	376.92	100.90	477.82
2	Digging of 30cmx30cm cross section trench along inner side of stone wall fencing and seed sowing	meter	42	21.67	910.14	0.00	910.14
3	Sowing/dibbling of seeds of grass, trees and shrubs including seeds of medicinal plants on the mounds of trench/ditch fencing.	meter	442	0.58	256.36	0.00	256.36
4	Sowing of grass seeds including raking in the interspaces.	Prorata			587.07	0.00	587.07
5	Transportation of 200 plants from nursery to planting site	Plant no.	200	1.46	246.52	44.73	291.25
6	Planting of 200 seedlings including Refilling of pits	Plant no.	200	7.75	911.19	18.83	930.02
7	Purchase and application of insecticide and fertiliser in 200 plants	Plant no.	200	4.92	795.72	188.32	984.04
8	Making of 200 crescent shaped mounds below planted sapling after planting and dibbling of 3 seeds of throny tree species.	Plant no.	200	7.20	1440.00	0.00	1440.00
9	Weeding and Hoeing of 200 plants two times including repairing of plants mound	Plant no.	400	4.66	1864.00	0.00	1864.00
10	Weeding on contour trenches/ V-ditches and spacement / singling	Rmt	442	4.56	2015.52	0.00	2015.52
11	Restoration of Natural regeneration by cutback cultural operation, pruning and by making crescent shaped ridges on lower side of seedling and saplings	Prorata	1	1295.00	1295.00	0.00	1295.00
12	Raising of 10% Plants (20 plants) in Nursery for casualty replacement in year 2	Plant no.	20	9.02	125.56	54.75	180.31
13	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
14	Construction of approach roads / inspection path	Prorata			441.27	0.00	441.27
15	Construction of gate and fixing of sign boards	Prorata			1174.14	138.88	1313.02
16	Misc. and unforeseen expences including (additional watering,hoeing, fencing and frost protection measures and running of vehicles etc.)	Prorata			1319.77	879.59	2199.36
	TOTAL YEAR 1		2367	1358.99	16990.00	1426.00	18416.00

YEAR 2 MAINTENANCE

1	Maintenance of 20 plants in nursery	Plant no.	20	2.17	34.27	9.17	43.44
2	Repair of fencing	Prorata			360.00	0.00	360.00
3	Casualty replacement of 20 plants (10%) including re-digging of pits, transportation, planting, watering and application of insecticides	Plant no.	20	13.42	259.00	9.42	268.42
4	Weeding and Hoeing in 200 plants two times	Plant no.	400	4.66	1864.00	0.00	1864.00
5	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
6	Misc. and unforeseen expences including (additional watering, fencing and frost protection measures and running of vehicles etc.)	Prorata			472.20	128.12	600.32
	TOTAL YEAR 2				6220.29	146.71	6367.00

उप वन संरक्षक (प्रशासन)
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राजस्थान, जयपुर

(अमर सिंह गोठवाल)
मुख्य वन संरक्षक (आयोजना)
राजस्थान जयपुर

Model Cost Norms RDF I

UNIT : 25 Ha
PERIMETER: 90 M/Ha.
LABOUR RATE: Rs.259. /Day
COST ESTIMATE: In Rs./Ha.

0 YEAR (ADVANCE ACTION)

S.No	ITEMS	Unit	Qty.	Rate	LABOUR	MATERIAL	TOTAL
1	Collection of Data for Microplanning, preparation of microplan and management plan	Prorata			1208.66	101.22	1309.88
2	Survey of area. Layout of contour trenches/ furrows, Pits and marking of segments /plots	Prorata			694.14	77.12	771.26
3	Fencing by stone wall and or by ditch.						
	a). Stone wall fencing 1.20m high 0.80m at base & 0.60m at top(on an average 45 m/ha.)	meter	45	371.95	16737.75	0.00	16737.75
	b). Ditch fencing 1.20m deep,1.50m wide at top & 0.90m at bottom (on an average 45 m/ha.)	meter	45	280.69	12631.05	0.00	12631.05
4	Cost of raising 550 seedlings	Plant no.	550	9.02	3453.01	1505.49	4958.50
5	Raising of 240 plants in 10cmX15 cm bags for planting on mounds of trenches and V ditches(includes 20% extra)	Plant	240	2.29	361.85	187.68	549.53
6	Digging up Trenches :					0.00	
a.	Digging up 400 rmt Staggered Contour Trenches with cross section size: 0.45x0.45 Sqmt.	Meter	400	32.38	12952.00	0.00	12952.00
7	Digging of 300 pits size: 0.45x(0.4+0.5/2) cum	no.	300	20.27	6081.00	0.00	6081.00
8	Cost of collection and purchase of grass and other seeds of indegenous trees and shrubs	per ha	1	428.00	214.00	214.00	428.00
9	In situ Soil & Moisture Conservation measures like Check dam, Percolation Tanks, Earthen Bunds etc.	per ha	1	4964.85	4964.85	0.00	4964.85
10	Construction of Thatched cattle guard hut.	Prorata	1		518.00	72.98	590.98
11	Purchase or construction of water storage tank	Prorata	1			150.00	150.00
12	Purchase of tools and plants	Prorata			0.00	90.63	90.63
13	Labour amenities	Prorata			95.94	70.62	166.56
14	Cattle guard wages for 4 months	Prorata			1077.44	0.00	1077.44
15	Restoration of Natural regeneration by cutback cultural operation, pruning and by making crescent shaped ridges on lower side of seedling and saplings	Prorata			1295.00	0.00	1295.00
16	Misc. and unforeseen expenses including running of vehicles	Prorata			490.57	99.23	589.80
	TOTAL YEAR 0				62775.26	2568.97	65344.23

उप वन संरक्षक (प्रशासन)
प्रधान मुख्य वन संरक्षक
प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

(अमर सिंह भाटवाल)
एवं वन संरक्षक (आयोजना),
राजस्थान, जयपुर

उप. वन संरक्षक (प्रशासन)

YEAR I (PLANTATION YEAR)

1	Maintenance of 550 seedling in nursery	Plant no.	550	2.17	942.31	252.25	1194.56
2	Maintenance of 240 plants in 10cmX15 cm bags	Plant	240	1.37	241.80	86.69	328.49
3	Digging of 200 pits size 0.45X(0.4+0.5)/2 Cum	Pit	200	20.27	4053.56	0.00	4053.56
4	Digging of 30cmx30cm cross section trench along inner side of stone wall fencing and seed sowing	meter	42	21.67	910.14	0.00	910.14
5	Sowing/dibbling of seeds of grass, trees and shrubs including seeds of medicinal plants on the mounds of trench/ditch fencing.	meter	442	0.58	256.36	0.00	256.36
6	Purchase of fertilizers and insecticide and its application	Prorata			2029.52	444.05	2473.57
7	Sowing of pellets of grass seeds / pieces of seed mud cakes in between rows & pits	Prorata			586.52	0.00	586.52
8	Transportation of 500 plants from nursery to planting site	Plant no.	500	1.58	775.63	14.98	790.61
9	Planting of 500 seedlings including Refilling of pits	Plant no.	500	7.75	3875.00	0.00	3875.00
10	Transport 200 plants raised in 10 cmX15cm bags upto site including loading and unloading (upto 5 kms.)	Plant	200	0.95	189.11	0.00	189.11
11	Planting of 200 pre germinated plants, including local transport and watering	Plant	200	2.87	427.56	145.52	573.08
12	Restoration of natural regeneration by making crescent shaped mounds on the lower slope of 150 seedlings and saplings	Plant no.	150	4.73	709.85	0.00	709.85
13	Making of 500 crescent shaped mounds below planted sapling after planting and dibbling of 3 seeds of throny tree species.	Plant no.	500	7.20	3600.00	0.00	3600.00
14	Weeding and Hoeing of 500 plants two times including repairing of plants mound	Plant no.	1000	4.66	4660.00	0.00	4660.00
15	Weeding on contour trenches/ V-ditches and spacement / singling	Rmt	442	4.56	2015.52	0.00	2015.52
16	Restoration of Natural regeneration by cultural operations and by making crescent shaped ridges on lower side of seedlings	Prorata	1	1295.00	1295.00	0.00	1295.00
17	Raising of 10% Plants (50 plants) in Nursery for casualty replacement in year 2	Plant no.	50	9.02	314.59	136.41	451.00
18	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
19	Labour hut etc				375.48	40.66	416.14
20	Construction of approach roads / Inspection path	Prorata			441.27	0.00	441.27
21	Construction of gate and fixing of sign boards	Prorata			1174.14	138.88	1313.02
22	Misc. and unforeseen expences including (additional watering,hoeing, fencing and frost protection measures and running of vehicles etc.)	Prorata			3300.00	2199.07	5499.07
	TOTAL YEAR 1		5017	1384.38	35404.18	3458.51	38862.69

उप. वन संरक्षक (प्रशासन)
प्रधान मुख्य वन संरक्षक
प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

(अमर सिंह गोठवाल)
उप वन संरक्षक (आयोजना),
राजस्थान, जयपुर

YEAR 2 MAINTENANCE

1	Maintenance of 55 plants in nursery	Plant no.	55	2.17	94.23	25.22	119.45
2	Repair of fencing	Prorata			360.00	0.00	360.00
3	Casualty replacement of 50 plants (10%) including re-digging of pits, transportation, planting, watering and application of insecticides	Plant no.	50	13.44	649.56	22.47	672.03
4	Weeding and Hoeing in 500 plants two times	Plant no.	1000	4.66	4660.00	0.00	4660.00
5	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
6	Misc. and unforeseen expences including (If watering required, fencing and frost protection measures and running of vehicles etc.)	Prorata			472.20	128.12	600.32
	TOTAL YEAR 2				9466.81	175.81	9642.62

YEAR 3 : MAINTENANCE

1	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
2	Expenditure on Maintenance including (Repair of fencing/Structures, Subsidiary silvicultural operations, Frost Protection, etc.)	Prorata			472.58	128.60	601.18
	TOTAL YEAR 3.				3703.40	128.60	3832.00
	YEAR 4 : MAINTENANCE						
1	Watch & ward charges for 12 months	Prorata			3230.82		3230.82
2	Expenditure on Maintenance including (Repair of fencing / Structures, Subsidiary silvicultural operations, Frost Protection, etc.)	Prorata			472.58	128.60	601.18
	TOTAL YEAR 4.				3703.40	128.60	3832.00
	GRAND TOTAL				115053.05	6460.49	121513.54

Year wise Cost Statement RDF I

No.	Item of Works	Unit	Qty.	Rate (Rs.)	Labour Cost	Material Cost	Total Cost
1	YEAR 0 ADVANCE ACTION				62775	2569	65344
2	YEAR 1 - PLANTING YEAR				35404	3459	38863
3	YEAR 2 - MAINTENANCE I				9467	176	9643
4	YEAR 3 - MAINTENANCE II				3703	129	3832
5	YEAR - 4 MAINTENANCE III				3703	129	3832
	Grand Total				115053	6460	121514

नोट :— मॉडल्स कार्यस्थल विशेष पर कार्य सम्पादित कराने के लिये प्राक्कलन नहीं है वरन केवल मार्गदर्शक है। कार्यस्थल पर कार्य सम्पादित कराने के लिए कार्य स्थल की विशेषताओं / परिस्थितियों के अनुसार प्राक्कलन के आधार पर कार्य कराये जावें।

उप वन संरक्षक (प्रशासन)
प्रधान मुख्य वन संरक्षक
प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

([illegible])
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

Model Cost Norms RDF II

UNIT : 25 Ha

PERIMETER: 90 M/Ha.

LABOUR RATE: Rs.259. /Day

COST ESTIMATE: in Rs./Ha.

0 YEAR (ADVANCE ACTION)

S.No	ITEMS	Unit	Qty.	Rate	LABOUR	MATERIAL	TOTAL
1	Collection of Data for Microplanning, preparation of microplan and management plan	Prorata			1208.66	101.22	1309.88
2	Survey of area, Layout of contour trenches/ furrows, Pits and marking of segments /plots	Prorata			694.14	77.12	771.26
3	Fencing by stone wall and or by ditch.						
	a). Stone wall fencing 1.20m high 0.80m at base & 0.60m at top(on an average 45 m/ha.)	meter	45	371.95	16737.75	0.00	16737.75
	b). Ditch fencing 1.20m deep,1.50m wide at top & 0.90m at bottom (on an average 45 m/ha.)	meter	45	280.69	12631.05	0.00	12631.05
4	Cost of raising 220 seedlings	Plant no.	220	9.02	1381.20	602.20	1983.40
5	Raising of 240 plants in 10cmX15 cm bags for planting on mounds of trenches and V ditches(includes 20% extra)	Plant	240	2.29	361.85	187.68	549.53
6	Digging up Trenches :					0.00	
a.	Digging up 400 rmt Staggered Contour Trenches with cross section size: 0.45x0.45 Sqmt.	Meter	400	32.38	12952.00	0.00	12952.00
7	Digging of 200 pits size: 0.45x(0.4+0.5/2) cum	no.	200	20.27	4054.00	0.00	4054.00
8	Cost of collection and purchase of grass and other seeds of indegenous trees and shrubs	per ha	1	428.00	214.00	214.00	428.00
9	In situ Soil & Moisture Conservation measures like Check dam, Percolation Tanks, Earthen Bunds etc.	per ha	1	4965.17	4965.17	0.00	4965.17
10	Construction of Thatched cattle guard hut.	Prorata	1		518.00	72.98	590.98
11	Purchase or construction of water storage tank	Prorata	1			150.00	150.00
12	Purchase of tools and plants	Prorata			0.00	90.63	90.63
13	Labour amenities	Prorata			95.94	70.62	166.56
14	Cattle guard wages for 4 months	Prorata			1077.44	0.00	1077.44
15	Restoration of Natural regeneration by cutback cultural operation, pruning and by making crescent shaped ridges on lower side of seedling and saplings	Prorata			1295.00	0.00	1295.00
16	Misc. and unforeseen expenses including running of vehicles	Prorata			490.57	99.23	589.80
	TOTAL YEAR 0				**58676.77**	**1665.68**	**60342.45**

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प्रधान मुख्य वन संरक्षक
प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

(अमर [illegible])
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

YEAR I (PLANTATION YEAR)

1	Maintenance of 220 seedling in nursery	Plant no.	220	2.17	376.92	100.90	477.82
2	Maintenance of 240 plants in 10cmX15 cm bags	Plant	240	1.37	241.80	86.69	328.49
3	In situ Soil & Moisture Conservation measures like Check dam, Nadis, Earthen Bunds etc.	Prorata			2935.33	201.16	3136.49
4	Digging of 30cmx30cm cross section trench along inner side of stone wall fencing and seed sowing	meter	42	21.67	910.14	0.00	910.14
5	Sowing/dibbling of seeds of grass, trees and shrubs including seeds of medicinal plants on the mounds of trench/ditch fencing.	meter	442	0.58	256.36	0.00	256.36
6	Sowing of grass seeds including raking in the interspaces.	Prorata			587.07	0.00	587.07
7	Transportation of 200 plants from nursery to planting site	Plant no.	200	1.46	246.52	44.73	291.25
8	Planting of 200 seedlings including Refilling of pits	Plant no.	200	7.75	911.19	18.83	930.02
9	Transport 200 plants raised in 10 cmX15cm bags upto site including loading and unloading (upto 5 kms.)	Plant	200	0.95	189.11	0.00	189.11
10	Planting of 200 pre germinated plants, including local transport and watering	Plant	200	2.87	427.56	145.52	573.08
11	Purchase and application of insecticide and fertiliser in 200 plants	Plant no.	200	4.92	795.72	188.32	984.04
12	Making of 200 crescent shaped mounds below planted sapling after planting and dibbling of 3 seeds of throny tree species.	Plant no.	200	7.20	1440.00	0.00	1440.00
13	Weeding and Hoeing of 200 plants two times including repairing of plants mound	Plant no.	400	4.66	1864.00	0.00	1864.00
14	Weeding on contour trenches/ V-ditches and spacement / singling	Rmt	445	4.56	2029.20	0.00	2029.20
15	Restoration of Natural regeneration by cutback cultural operation, pruning and by making crescent shaped ridges on lower side of seedling and saplings	Prorata	1	1295.00	1295.00	0.00	1295.00
16	Raising of 10% Plants (20 plants) in Nursery for casualty replacement in year 2	Plant no.	20	9.02	125.56	54.75	180.31
17	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
18	Labour hut etc				375.48	40.66	416.14
19	Construction of approach roads / inspection path	Prorata			441.27	0.00	441.27
20	Construction of gate and fixing of sign boards	Prorata			1174.14	138.88	1313.02
21	Misc. and unforeseen expences including (additional watering,hoeing, fencing and frost protection measures and running of vehicles etc.)	Prorata			1319.77	879.59	2199.36
	TOTAL YEAR 1		**3010**	**1364.18**	**21172.96**	**1900.03**	**23072.99**

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राजस्थान, जयपुर

(अगर [illegible])
पथ्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

YEAR 2 MAINTENANCE

1	Maintenance of 20 plants in nursery	Plant no.	20	2.17	34.27	9.17	43.44
2	Repair of fencing	Prorata			360.00	0.00	360.00
3	Casualty replacement of 20 plants (10%) including re-digging of pits, transportation, planting, watering and application of insecticides	Plant no.	20	13.42	259.00	9.42	268.42
4	Weeding and Hoeing in 200 plants two times	Plant no.	400	4.66	1864.00	0.00	1864.00
5	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
6	Misc. and unforeseen expences including (if watering required, fencing and frost protection measures and running of vehicles etc.)	Prorata			472.20	128.12	600.32
	TOTAL YEAR 2				**6220.29**	**146.71**	**6367.00**

YEAR 3 : MAINTENANCE

1	Watch & ward charges for 12 months	Prorata			3230.82	0.00	3230.82
2	Expenditure on Maintenance including (Repair of fencing/Structures, Subsidiary silvicultural operations, Frost Protection, etc.)	Prorata			472.58	128.60	601.18
	TOTAL YEAR 3.				**3703.40**	**128.60**	**3832.00**
	YEAR 4 : MAINTENANCE						
1	Watch & ward charges for 12 months	Prorata			3230.82		3230.82
2	Expenditure on Maintenance including (Repair of fencing / Structures, Subsidiary silvicultural operations, Frost Protection, etc.)	Prorata			472.58	128.60	601.18
	TOTAL YEAR 4.				**3703.40**	**128.60**	**3832.00**
	GRAND TOTAL				**93476.82**	**3969.62**	**97446.44**

Year wise Cost Statement RDF II

No.	Item of Works	Unit	Qty.	Rate (Rs.)	Labour Cost	Material Cost	Total Cost
1	YEAR 0 ADVANCE ACTION				58677	1666	60342
2	YEAR 1 - PLANTING YEAR				21173	1900	23073
3	YEAR 2 - MAINTENANCE I				6220	147	6367
4	YEAR 3 - MAINTENANCE II				3703	129	3832
5	YEAR - 4 MAINTENANCE III				3703	129	3832
	Grand Total				93477	3970	97446

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प्रशिक्षण, अनुसंधान, शिक्षा एवं प्रसार
राजस्थान, जयपुर

(अमर सिंह)
मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

MODEL COST ESTIMATE FOR ECO- RESTORATION

Unit : 25 Ha
PERIMETER: 90 M/HA
LABOUR RATE: 259/- DAY
COST ESTIMATES IN Rs./ha.
First Year

S.No	Item	Unit	Qty.	Rate	Labour	Material	Total Cost
1	Survey and demarcation of area, dividing of the area in sub plot and their semi permanent demarcation and also preparation of treatement map and accordingly prepare estimate of site	Ha	1	484.47	379.47	105	484.47
							0
2	Fencing of Areas.						
	A. Ditch fencing 1.20m. Deep 1.50m Wide at top and 0.80m. At bottom (on an average 25m/ha.)	Rmt	25	280.69	7017.25	0	7017.25
	B. Loose stone wall fencing 1.50 m. height, 0.80 at base and 0.60m at top (on an average 25m/ha.)	Rmt	25	464	11600	0	11600
	C. Masonary pucca wall height 1.5m., width 0.45m. With pillar having width 0.6m. Length 0.45m. At the interval of 2.25m., At forest boundary where the forest area is encroachment or mining pron (on an average 15m/ha.)	Rmt	15	3500	21000	31500	52500
	D. Barbed Wire fencing of Height 1.5 mtr with RCC pole of height 2.1 Mtr supported by welded mesh wire (jaali) of height 1.5 mtr (on an average 25m/ha.)	Rmt	25	218	1362.5	4087.5	5450
3	Treatement of nallas by construction series of loose stone check dams and dry random rubble/earthen/Dykes/silt detention dams/ small anicuts/nadis/ MPT/PT/ Gabion structure	Prorata			9819	1494.79	11314
4	Restoration of natural regeneration by cut back cultural operation of root stock,pruning and making crescent shaped ridges on lower side of seedling and saplings.	Prorata			1260	0	1260
5	Eradication of weeds like Juliflora /Parthenium/Lantana etc.	Prorata			200	2300	2500
6	Digging of 400 rmt. of staggered / contlonus contour trenches of cross section 45×45 cm	Meter	400	32.38	15064	1336	16400
7	Collection and purchage of seeds of indegenous trees and shurbs species & grasses and including the cost their sowing or dibbling . 4kg seeds/Ha.	No.	1		173	445	618
		No.	1		518	81	599
8	construction of Thatched cattele guard hut						
9	Construction of apporach road, inspection path and walking trails.	No.	1		2030	268.57	2299
10	Watch and ward for 3 months.	month	3	269.35	808	50	858
11	Purchase of sign board ,gate & their fixing.	Prorata			60	540	600
12	Miscellaneous and unforeseen expend true.	Prorata			228	104.86	333
	Total				71519.22	42312.72	113832.7
13	Contigency charges- Labour aminities, mate, nurse, water, shade etc. 3% of total cost				0	1269.38	1269.38
	TOTAL				71519.22	43582.1	115102.1

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राजस्थान, जयपुर

अपर प्रधान वन संरक्षक (आयोजना),
राजस्थान, जयपुर

Second year							
1	Eradication of weeds like Juliflora /Parthenium/Lantana etc.	Prorata			100	1150	1250.00
	Repairing of Ditch fencing	Rmt	2.5	192	480	0	480
2	Collection and purchage of seeds of indegenous trees and shurbs speciles & grasses and including the cost their sowing or dibbling . 2kg seeds/Ha.	No.	1		86.5	222.5	309.00
3	Restoration of natural regeneration by cut back cultural operation of root stock,pruning and making crescent shaped ridges on lower side of seedling and saplings.	Prorata			630	0	630.00
4	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				4528.5	1472.5	6001.00
Third Year							
1	Repairing of Ditch fencing	Rmt	2.5	192	480	0	480
2	Repairing Loose stone wall fencing		1.5	232	348	0	348
3	Repairing Barbed Wire fencing of Height		1.5	109	164	0	163.5
4	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				4224	100	4323.5
FourthYear							
1	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				3232	100	3332
Fifth Year							
1	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				3232	100	3332
	Grand Total				86735.72	45354.6	132090.6

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राजस्थान, जयपुर

(अवतार सिंह गोठवाल)
संयुक्त वन संरक्षक (आयोजना)
राजस्थान, जयपुर

MODEL COST ESTIMATE FOR ECO- RESTORATION

Unit : 50Ha
PERIMETER: 60M/HA
LABOUR RATE: 259/- DAY
COST ESTIMATES IN Rs./ha.
First Year

S.No	Item	Unit	Qty.	Rate	Labour	Material	Total Cost
1	Survey and demarcation of area and also preparation of treatement map and accordingly prepare estimate of site	Ha.	1	484.47	379.47	105	484.47
2	Fencing of Areas.						0
	A. Ditch 1.20m, Deep 1.50m Wide at top and 0.80m At bottom (on an average 15m/ha.)	Rmt	15	280.69	4210.35	0	4210.35
	B. Loose stone wall 1.50 m. height, 0.80 at base and 0.60m. At top (on an average 15m/ha.)	Rmt	15	464	6960	0	6960
	C. Masonary pucca wall height 1.5m., width 0.45m. With pillar having width 0.6m. Length 0.45m. At the interval of 2.25m., on the outer forest boundary (on an average 15m/ha.)	Rmt	15	3500	21000	31500	52500
	D. Barbed Wire fencing of Height 1.5 mtr with RCC pole of height 2.1 Mtr supported by welded mesh wire (jaali) of height 1.5 mtr. (on an average 15m/ha.)	Rmt	15	218	817.5	2452.5	3270
3	Treatement of nallas by construction series of loose stone check dams and dry random rubble/earthen/Dykes/silt detention dams/ small anicuts/nadis/ MPT/PT/ Gabion structure	Prorata			9819	1494.79	11313.79
4	Restoration of natural regeneration by cut back cultural operation of root stock,pruning and making crescent shaped ridges on lower side of seedling and saplings.	Prorata			971	10.7	981.7
5	Eradication of weeds like juliflora /Parthenium/Lantana etc.	Prorata			200	2300	2500
6	Digging of 400 rmt. Of staggered / contlonus contour trenches of cross section 45×45 cm and width as per requirement	Meter	400	32.38	15064	1336	16400
7	Collection and purchage of seeds of indegenous trees and shurbs species & grasses and including the cost their sowing or dibbling . 4kg seeds/Ha.	No.	1		173	445	618
8	construction of Thatched cattele guard hut	No.	1		259	40	299
9	Construction of apporach road, inspection path and walking trails.	No.	1		2030	268.57	2298.57
10	Watch and ward for 3 months	month	3	150	405	45	450
11	Purchase of sign board, gate & their fixing	Prorata			30	270	300
12	Miscellaneous and unforeseen expend true.	Prorata			228	104.86	332.86
	Total				**62546.32**	**40372.4**	**102918.74**
13	Contigency charges-Labour aminities, mate, nurse, water, shade etc 3% of total cost				0	1211.17	1211.17
	Total				**62546.32**	**41583.6**	**104129.913**

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राजस्थान, जयपुर

(अमर सिंह गोठवाल)
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

Second year							
1	Eradication of weeds like Juliflora /Parthenium/Lantana etc.	Prorata			100	1150	1250.00
	Repairing of Ditch fencing	Rmt	1.5	192	288	0	288
2	Collection and purchage of seeds of indegenous trees and shurbs species & grasses and including the cost their sowing or dibbling . 2kg seeds/Ha.	No.	1		86.5	222.5	309.00
3	Restoration of natural regeneration by cut back cultural operation of root stock,pruning and making crescent shaped ridges on lower side of seedling and saplings.	Prorata			485.5	0	485.50
4	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				**4192**	**1472.5**	**5664.50**
Third Year							
1	Repairing of Ditch fencing	Rmt	1	192	192	0	192
2	Repairing Loose stone wall fencing		1	232	232	0	232
3	Repairing Barbed Wire fencing of Height		1	109	109	0	109
4	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				**3765**	**100**	**3865**
FourthYear							
10	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				3232	100	**3332**
Fifth Year							
10	Watch and ward for 12months	month	12	269.35	3232	100	3332
	Total				**3232**	**100**	**3332**
	Grand Total				**76967.32**	**43256.1**	**120323.41**

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राजस्थान, जयपुर

(अजय सिंह गोदारा)
मुख्य वन संरक्षक (आयोजना).
राजस्थान, जयपुर

Model Estimate (Guard Chowki)

(Sanitory Installation Work)

BSR : Jaipur (City Circle-2019)

S.No.	B.S.R	Particular	Qty	Unit	Rate	Amount
1	1.2.1	P & F Indian type white glazed vitreous china 1st quality W.C. orissa pan (IS :2556 Mark) with 100 mm vitreous china P or S trap including cutting and making good the wall and floor; Size 530x410mm.	1	No	2400	2400
2	1.36.2	WASH BASINS: 1.36 P & F WVC Wash basin (Ist quality IS:2556 Mark) of approved make with C.I. brackets duly painted 1 No. 15 mm C.P. Pillar cock (IS:8934 Mark) & 32 mm C.P. brass waste coupling of approved make, P.V.C Waste pipe with PVC nut 32 mm complete including cutting & making good the wall : Size 510 mm x 400 mm	1	No	2189	2189
3	1.38.9.2	KITCHEN & LAB. SINKS: 1.38 P & F Kitchen & Lab. Sink of approved make with C.I. brackets duly painted; 40 mm C.P. waste coupling, C.P. Brass chain with rubber plug, 40 mm G.I. waste pipe up-to floor level complete including cutting and making good the wall & floor : 1.0 mm thick stainless steel AISI -304 & IS 13983-1994 kitchen sink of approved make as per Engineer-in-charge with large waste coupling. Overall size Bowl size 22 x 18 x 7 20x16x7	1	No	3936	3936
4	1.23	P & F WVC (10 litres) low-level flushing cistern with cover.	1	No	753	753
5	1.44.1	P & F Bevelled edge Mirror/mirror with teak wood lipping around of special glass of approved make as per direction of Engineer-in-charge complete with 6mm thick commercial ply base fixed to wooden screws & washers. Size 600 x 450mm x 4 mm thick	1	No	523	523
6	1.47.1	P & F Towel Rail or Ring of approved quality/make: C.P. brass Towel Rail elbow type with concealed screws size 450mm (Heavy duty).	1	No	425	425
7	1.47.8	P & F Towel Rail or Ring of approved quality/make: C.P. Brass Towel Ring revolving type	1	No	231	231
8	1.52.2	P & F Soap Dish or Tray of approved quality/make C.P. brass heavy and superior quality.	1	No	142	142
9	1.55.2	P & F Bath Shower of approved quality/make. C.P. brass of Heavy & superior quality 150mm.	1	No	342	342
10	1.59	P & F Jet spray for water closet with C.P. Copper Tube flange of approved make.	15	No	346	5190
11	2.1.1	P & F G.I. pipes (Internal Work) with G.I. Fittings excluding union (IS:1239 Mark) & MS clamps including cutting and making good the walls and floors: (a) Exposed on wall 2.1.1 15 mm dia nominal bore 'B' Class	1	RMT	209	209
12	2.7.1	P & F Bib Cock (IS : 8931 Mark), Superior quality of approved make: Brass 400 gm,15mm nominal bore.	4	No	271	1084
13	2.15.1	P & F Full-way Valve (IS:778 Mark) or wheel valve of approved make : Gun-metal 15mm nominal bore.	2	No	206	412

उप वन संरक्षक (प्रशासन)
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राजस्थान, जयपुर

(अमर सिंह मोरपाल)
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

14	2.26.3	P & F PVC Storage Tank ISI Marked (IS : 12701) indicating the BIS license No), of approved make with cover, 25mm dia 1M long G.I. over-flow pipe & 25 Cm. long wash out pipe with plug & socket, including making connection etc., complete of approved design; 500 litres capacity.	1	No	3564	3564
15	3.16.2	RIGID PVC PIPE 3.16 P&F rigid PVC Pipe (IS:4985 mark) class II/ (4 Kg. /Cm2 .) approved quality /make including joining the pipe with solvent cement rubber ring and lubricant. 75 mm dia	3	RMT	161	483
16	3.16.3	RIGID PVC PIPE 3.16 P&F rigid PVC Pipe (IS:4985 mark) class II/ (4 Kg. /Cm2 .) approved quality /make including joining the pipe with solvent cement rubber ring and lubricant. 110 mm dia	6	RMT	256	1536
17	3.17.1	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Coupler (socket)				0
		75mm dia	3	No	79	237
		110mm dia	2	No	98	196
18	3.17.3	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Plain Tee				0
		75mm dia	1	No	104	104
		110mm dia	0	No	170	0
19	3.17.4	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Door Tee 110mm dia	1	No	194	194
20	3.17.9	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Bend 87 .5				0
		75mm dia	4	No	88	352
		110mm dia	1	No	146	146
21	3.17.23	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: P- Trap 110mm dia	3	No	347	1041
22		VENT COWER	1	No	51	51
23	.3.24.1	Construction of Soakage well in all types of soil of approved drawing, top 90 Cm .Portion in 450mm thick masonry with CM 1:6, 80 mm thick stone slab covering, jointing of slab in CM 1:3 ,Ralthal, kharanja 40mm thick M-15 grade C.C flooring, earth work etc . complete including disposal of surplus earth within a lead of 50 mtr , Inner dia 90 Cm & 10 to 12 Mtr deep.	1	No	4948	4948
		Total				30688

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राजस्थान, जयपुर

(अमरसिंह गोदारा)
मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

Model Estimate (Rain Water harvesting Structure/Water Tank)

BSR : Jaipur (City Circle-2019)

S.No.	B.S.R	Particular	No	L	B	H	Qty	Unit	Rate	Amount
1	1.6	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5 m , disposed earth to be levelled and neatly dressed: All kinds of soil	3.14	1.65	1.65	3.3	28.21	Cum	159	4485
2	3.1.6	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).	3.14	1.65	1.65	0.2	1.71	Cum	3002	5133
3	3.1.3	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. M15 grade Nominal Mix 1: 2: 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size).	3.14	2.95	3	0.15	4.17	Cum	4131	17219
4	4.10.1	Centering & shuttering with plywood or steel sheets including strutting, propping bracing both ways with steel props and removal of formwork for upto floor five level for : Walls (any thickness) including attached pilasters, buttresses plinth and string course.	2	3.14	2.95	3	55.58	Sqm	263	14617
5	10.16	Stone slab roofing on ground floor with fine grained stone slab from approved quarry including filling of joints of parapet and slab on both sides in cement sand mortar 1:4, with ceiling pointing in cement sand mortar 1 : 3 complete as per specification and instruction of Engineer In Charge	1	3.14	1.5	1.5	7.07	Sqm	1498	10583
6	6.18.1	Supplying and fixing stone lintels/bed plates of approved quarry rough dressed in cement mortar 1:4 : Upto 15 cm. thick.	2	3	0.23	0.1	0.14	Cum	8746	1207
7		Supplying & Fixing R.C.C. Manholes covers with frame of approved make (Light duty). Size 450 X 450mm					1.00	No	290	290
Total										53535

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मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

Model Estimate (Guard Chowki)

Based on BSR : Jaipur (City Circle-2019)

S.No.	B.S.R.	Particular	No	L	B	H	Qty	Unit	Rate	Amount
1	1.6	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5 m, disposed earth to be levelled and neatly dressed: All kinds of soil								
			1	3.28	0.9	1.05	3.10			
			2	4.19	0.9	1.05	7.92			
			1	2.67	0.9	1.05	2.52			
			2	2.06	0.9	1.05	3.89			
			2	4.5	0.9	1.05	8.51			
			2	5.11	0.9	1.05	9.66			
			1	3.28	0.9	1.05	3.10			
			2	2.67	0.9	1.05	5.05			
			1	4.19	0.9	1.05	3.96			
			1	2.06	0.9	1.05	1.95			
		Total					49.65	Cum	159	7894
2	3.1.6	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).								
			1	3.28	0.9	0.20	0.20			
			2	4.19	0.9	0.20	1.51			
			1	2.67	0.9	0.20	0.48			
			2	2.06	0.9	0.20	0.74			
			2	4.5	0.9	0.20	1.62			
			2	5.11	0.9	0.20	1.84			
			1	3.28	0.9	0.20	0.59			
			2	2.67	0.9	0.20	0.96			
			1	4.19	0.9	0.20	0.75			
			1	2.06	0.9	0.20	0.37			
		Total					9.07	Cum	3002	27219
3	6.1.6	Random Rubble stone masonry /or with hard stone in foundation and plinth in Cement Sand mortar above 30 CM thick wall in: Cement Mortar 1:6 (1 Cement : 6 Sand).								
		steps-I	1	3.28	0.75	0.40	0.98			
			2	4.19	0.75	0.40	2.51			
			1	2.67	0.75	0.40	0.80			
			2	2.06	0.75	0.40	1.24			
			2	4.5	0.75	0.40	2.70			
			2	5.11	0.75	0.40	3.07			
			1	3.28	0.75	0.40	0.98			
			2	2.67	0.75	0.40	1.60			
			1	4.19	0.75	0.40	1.26			
			1	2.06	0.75	0.40	0.62			
		steps-II	1	3.28	0.60	0.45	0.89			
			2	4.19	0.60	0.45	2.26			
			1	2.67	0.60	0.45	0.72			
			2	2.06	0.60	0.45	1.11			
			2	4.5	0.60	0.45	2.43			
			2	5.11	0.60	0.45	2.76			
			1	3.28	0.60	0.45	0.89			
			2	2.67	0.60	0.45	1.44			
			1	4.19	0.60	0.45	1.13			
			1	2.06	0.60	0.45	0.56			
		steps-III	1	3.28	0.40	0.60	0.79			
			2	4.19	0.40	0.60	2.01			
			1	2.67	0.40	0.60	0.64			
			2	2.06	0.40	0.60	0.99			
			2	4.5	0.40	0.60	2.16			
			2	5.11	0.40	0.60	2.45			
			1	3.28	0.40	0.60	0.79			
			2	2.67	0.40	0.60	1.28			
			1	4.19	0.40	0.60	1.01			
			1	2.06	0.40	0.60	0.49			
		Steps	1	6.42	0.6	0.15	1.59			
		Total					44.15	Cum	2580	113903

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राजस्थान, जयपुर

(अजय सिंह गहलोत)
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राजस्थान, जयपुर

4	3.7.2	Providing and laying damp-proof course with cement concrete grade M-150 (1 : 2 : 4) mortar prepared with 1% solution of water proof compound complete as per specification 75mm thick.								
			1	3.28	0.23		0.75			
			2	4.19	0.23		1.93			
			1	2.67	0.23		0.61			
			2	2.06	0.23		0.95			
			2	4.5	0.23		2.07			
			2	5.11	0.23		2.35			
			1	3.28	0.23		0.75			
			2	2.67	0.23		1.23			
			1	4.19	0.23		0.96			
			1	2.06	0.23		0.47			
		Total					12.08	Sqm	496	5994
5	5.2.3	Brick work with F.P.S. bricks of class designation 75 in superstructure above plinth level upto floor V level in all shapes and sizes in : Cement mortar 1 : 6 (1 cement : 6 coarse sand)								
			1	3.28	0.23	3.20	2.41			
			2	4.19	0.23	3.20	6.12			
			1	2.67	0.23	3.20	1.97			
			2	2.06	0.23	3.20	3.03			
			2	4.5	0.23	3.20	6.62			
			2	5.11	0.23	3.20	7.52			
			1	3.28	0.23	3.20	2.41			
			2	2.67	0.23	3.20	3.93			
			1	4.19	0.23	3.20	3.08			
			1	2.06	0.23	3.20	1.52			
		Prepat	1	25.21	0.23	0.45	2.61			
		Total					41.28			
		Deduction								
		D1	4	1.07	0.13	2.13	1.19			
		D2	2	0.75	0.23	2.13	0.73			
		WINDOW	2	1.07	0.23	1.23	0.61			
			4	1.23	0.23	1.23	1.39			
		VENT	1	0.60	0.23	0.60	0.08			
		Total					4.00			
		Net Total					37.28	Cum	4536	169096
6	5.8.3	Half brick masonry in Superstructure , above plinth level upto floor V level using bricks of designation 75								
		Kitchen	3	0.60	0.75		1.35			
			1	8.70	0.45		3.92			
			2	0.61	0.45		0.55			
		Total					5.81	Sqm	478	2779
7	4.10.2	Centering & shuttering with plywood or steel sheets including strutting, propping bracing both ways with steel props and removal of formwork for upto floor five level for : Suspended floors, roofs, landings, staircases, balconies, girders, cantilevers, bands, coping bed plates, anchor blocks, sills, chhajjas, lintel, beam, plinth beam etc.								
		Outer	1	35	0.15		5.25			
			1	4.19	1.83		7.67			
			1	3.96	3.05		12.08			
			1	2.44	1.83		4.47			
			1	4.27	4.88		20.84			
			1	2.44	3.05		7.44			
			1	8.7	0.60		5.22			
		Beam	3	4.42	0.23		3.05			
			3	1.83	0.23		1.26			
		Total					67.27	Sqm	309	20787
8	4.2	Providing and laying in position specified grade of cement concrete for RCC structural elements upto floor five level including curing, compaction, finishing with rendering in cement sand mortar 1:3 (1 cement: 3 coarse sand) and making good the joints and cost of plasticizers (if required) excluding the cost of centering, shuttering and reinforcement for Walls (any thickness) including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. M20 grade Nominal Mix / Design Mix								
			1	8.92	5.94	0.120	6.36			
			1	2.67	2.06	0.120	0.66			
			1	3.28	2.67	0.120	1.05			
			1	4.42	0.23	0.23	0.23			
			1	1.83	0.23	0.23	0.10			
		Total					8.40	Cum	5099	42830

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राजस्थान, जयपुर

(आर [illegible])
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

9	4.13.3	STEEL REINFORCEMENT: 4.13 Providing and fabricating reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding (including cost of binding wire) all complete up to floor five level. (Original producers who manufacture billet directly from iron ores and roll the billets to produce steel conforming to IS:1786) Thermo-mechanically Treated Bars (Conforming of relevent IS code) (100 kg per cum of r.c.c)						840.00	Kg	65	54600
10	12.2.2	Plaster on new surface on walls in cement sand mortar 1:4 including racking of joints etc. complete fine finish : 20mm thick									
		Kit	2	2.44		3.20	15.62				
			2	3.05		3.20	19.52				
		B/R	2	4.27		3.20	27.33				
			2	4.88		3.20	31.23				
		Toilet	2	2.44		3.20	15.62				
			2	1.83		3.20	11.71				
		Office	2	3.96		3.20	25.34				
			2	3.05		3.20	19.52				
		Veramda	1	4.19		3.20	13.41				
			1	1.83		3.20	5.86				
			2	0.45		3.20	2.88				
			2	0.23		3.20	1.47				
			1	3.80		0.60	2.28				
			1	1.50		0.60	0.90				
		Total					192.68				
		Deduction									
		W1	2	1.07	1.23		2.63				
		W1	4	1.23	1.23		6.05				
		VENT	1	0.60	0.60		0.36				
		D1	4	1.07	2.13		9.12				
		D2	2	0.75	2.13		3.20				
		Veramda	1	1.83	2.34		4.47				
			1	3.63	2.44		8.86				
		Total					34.68				
		Net Total					158.01	Sqm	188	29705	
		Outer	2	11.81		3.80	89.76				
			2	7.40		3.80	56.24				
		Paraper Inner	1	25.21		0.45	11.34				
		Total					157.34	Sqm	168	26433	
11	12.5	6 mm thick cement plaster to ceiling of mix 1:3 (1cement : 3 fine sand)									
			1	2.44	3.05		7.44				
			1	4.27	4.88		20.84				
			1	4.19	1.83		7.67				
			1	2.44	1.83		4.47				
			1	4.19	1.83		7.67				
			1	9.15	0.60		5.49				
		Total					53.57	Cum	116	6214	
12	12.22.1	Providing and applying white cement based putty over plastered surface to prepare the surface even and smooth complete New Plastered Surface (three or more coats)					368.92	Sqm	76		
13	12.36	Distempering with dry distemper of approved brand and shade (two or more coats) and of required shade on new work, over and including, priming coat of whiting to give an even shade including all scaffolding.					211.58	Sqm	48		
14	12.41.1	Finishing wall with water proofing cement paint of approved brand and manufacture and or required shade to give an even shade including all scaffolding: New work (Two or more coats applied @ 3.84 kg/10 sqm).					157.34	Sqm	48		
15	12.45.1	PAINTING Applying priming coat : With ready mix pink or gray primer of approved brand and manufacture on wood work hard and soft wood.									
			21	0.6		2.05	25.83				
			8	0.95		2.05	15.58				
		Total					41.41	Sqm	26	1077	
16	12.45.3	PAINTING Applying priming coat : With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/steel works									
			4	1.07		1.23	5.26				
			8	1.23		1.23	12.10				
			1	0.6		0.60	0.36				
		Total					17.73	Sqm	21	372	
17	12.46.1	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade : Two or more coats on new work									
			21	0.6		2.05	25.83				
			8	0.95		2.05	15.58				
			4	1.07		1.23	5.26				
			8	1.23		1.23	12.10				
			1	0.6		0.60	0.36				
		Total					59.14	Sqm	63	3726	

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18	6.18.1	Supplying and fixing stone lintels/bed plates of approved quarry rough dressed in cement mortar 1:4 : Upto 15 cm. thick. Window/D.	14	1.50	0.23		4.83	Cum	8746	42243
19	6.16.2	Providing dab stone over Chajjas duly fixed in cement sand mortar 1:6 complete : 50mm thick.	7	1.80	0.23		2.90	Sqm	750	2174
20	6.15	Providing and fixing horizontal chajja of Red/ White sand stone 40 mm thick and upto 80 cm projection in cement mortar 1:4 (1 cement : 4 coarse sand) including pointing in white cement mortar 1:1 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade.								
		Chaja	7	1.5	0.23		2.42			
			1	0.75	0.60		0.45			
		Kitchen	1	3.05	0.60		1.83			
			1	1.83	0.60		1.10			
		Total					5.79	Sqm	803	4652
21	1.25	Filling available excavated earth (excluding rock) in trenches, plinth side of foundation etc. in layers not exceeding 20 cm. in depth, consolidating each deposited layer by ramming and watering including lead up to 50 meter and with all lift.								
			1	2.30	2.90	0.60	4.00			
			1	2.30	1.70	0.60	2.35			
			1	4.13	4.73	0.60	11.72			
			1	4.00	1.70	0.60	4.08			
			1	3.50	2.90	0.60	6.09			
		Total					24.24	Cum	58	1406
22	11.26	Random rubble dry stone Kharanja under floor.								
			1	2.30	2.90	0.15	1.00			
			1	2.30	1.70	0.15	0.59			
			1	4.13	4.73	0.15	2.93			
			1	4.00	1.70	0.15	1.02			
			1	3.50	2.90	0.15	1.52			
		Total					5.06	Cum	847	5132
23	3.1.3	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. M15 grade Nominal Mix 1: 2: 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size). (Flooring)								
			1	2.94	3.05	0.05	0.45			
			1	2.44	1.83	0.05	0.22			
			1	4.27	4.88	0.05	1.04			
			1	3.96	3.05	0.05	0.60			
			1	4.29	1.83	0.05	0.38			
		Steps	4	4.30	0.30	0.05	0.26			
		Total					2.96	Cum	4131	12223
24	11.18.1	Kota stone slab flooring 25 mm thick over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) For area of each slab from 901 to 2000 Sq.Cm : Sqm 864.00								
			1	2.64	3.25		8.58			
			1	4.47	5.08		22.71			
			1	4.16	3.25		13.52			
			1	4.39	2.03		8.91			
			4	4.30	0.30		5.16			
			4	4.30	0.15		2.58			
		Total					61.46	Sqm	864	53101
25	7.22.1	Providing and fixing 1st quality MAT & GLOSSY finished ceramic tile confirming to IS : 13755 and IS : 15622 colour such as white, grey, ivory, fume red brown, light green, light blue and other light shades in floors,steps, pillars etc. laid on a bed of neat cement slurry finished with flush pointing in the white cement mixed with pigment to match the shade of the tile complete (including the cost of cement mortar bed 1:4). Size 250mm x 375mm Sqm 661.00	1	2.4	1.83		4.39	Sqm	661	2003
26	7.23.1	P & F 1st quality Heavy Duty Vitrified Polished Digital tiles on floor, skirting and steps etc.in different sizes (thickness minimum 10mm) with water absorption less than or equal 0.08% and conforming to IS 15622 of approved make in all colour and shade, laid with 20 mm thick CM 1: 4 including grounting the joints with white cement and matching pigment etc complete. Size 298mm x 298mm Sqm 641.00								
			2	2.44		2.10	10.25			
			2	1.83		2.10	7.69			
			2	3.05		1.20	7.32			
			1	0.6		1.20	0.72			
			1	2.44		1.20	2.93			
		Total					28.90			
		Deduction								
			2	0.75		2.10	3.15			
			2	1.07		1.20	2.57			
			1	1.07		1.20	1.28			
		Total					7.00			
		Net Total					21.90	Sqm	641	14038

उप वन संरक्षक (प्रशासन)
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राजस्थान, जयपुर

(अशोक [illegible])
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

27	10.17.1	Grading roof for water proofing treatment with water proffing compound. Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)								
			1	8.92	5.94	0.05	2.65			
			1	2.67	2.06	0.05	0.28			
			1	3.28	2.67	0.05	0.44			
		Total					3.36	Cum	4075	13701
28	3.8	Providing & fixing precast cement concrete coping 1 : 2 : 4 mix 50mm thick complete as per specification :								
			1	25.21	0.30		7.56			
			1	10	0.15		1.50			
		Total					9.06	Sqm	334	3027
29	8.13.2.2	Providing and fixing external grade board solid core single leaf flush door shutters ISI 2202-67 marked using Phenol formal dehyderesin in glue both sides with approved steel fittings complete as per annexure 'A': 30 mm thick Decorative teak veneer One side								
			4	0.95	2.00		7.60			
			2	0.6	2.00		2.40			
		Total					10.00	Sqm	1848	18480
30	9.28.1	Providing and fixing steel glazed window frame made out of 80x40 mm hollow sheet section of 16 gauge thickness, joint mitred welded and grinded including hold fast of steel lugs 13mm x 3mm and 15 Cm long embedded in C C block 15 x 10 x 10 Cm of 1:3:6 nominal concrete and including fixing of pivoted hinges of superior quality, window shutters made out of 50 x 25.0 mm hollow steel section 15 mm paltam of 18 gauge thickness, joint mitred and grinded including 10mm x 10mm square bars welded to frame for paltam fixing float glass 4mm thick panes with glazing clips and metal sash putty and fixing of shutters frames peg stay, U shape handle 100 mm long, tower bolts 100 mm long of steel powder coated superior quality including fixing and jointing with frame hinges priming coat with steel primer complete in all respect as per direction of Engineer-in-charge Window openable.								
			2	1.07	1.23		2.63			
			1	1.23	1.23		1.51			
			1	0.60	0.60		0.36			
		Total					4.51	Sqm	3457	15574
31	15.25.1	Providing and fixing in CM 1 : 4 double paltam (rebated) stone door window and ventilator frames of approved quarry : Size 100 x 75mm.								
			12	2.10			25.20			
			4	0.95			3.80			
			2	0.75			1.50			
		Total					30.50	mtr	180	5490
32	7.5.1	Providing and fixing Granite stone slab mirror polished and machine edge cut in walls, pillars, steps, Shelves, Sills Counters, Floors etc. laid on 12mm (Av.) thick base of cement mortar 1:3 (1 cement : 3 coarse sand) jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing complete. Jhunjhunu / Jalore (Red/Choclate/Black/Pink Colour) Up to 1500 Cm2 Tiles Sqm. 1812.00								
			2.44	3.05	0.6		4.47			
			3.05	2.83	0.075		0.42			
		Total					4.88	Sqm	1812	8849
33	6.17.1	Supplying and fixing in walls machine cut and polished stone shelves, tands and in CM 1:3 with machine cut edges : Sand or other approved stone 25mm thick.	3	3.05	0.6		5.49	Sqm	458	2514
34	7.8.2.1	Granite/Kota Stone Work Full Edge moulding	1	4.9			4.90	Mtr	212	1039
		Total								719175
		Sanitary Work								31000
		Electricity Fitting								50000
		Under Ground 15000 Litre Capicity Water Tank								53535
		G. Total								853710

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राजस्थान, जयपुर

मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

Model Estimate (Range Office)

Based on BSR : Jaipur (City Circle-2019)

S.No.	B.S.R.	Particular	No	L	B	H	Qty	Unit	Rate	Amount
1	1.6	Earth work in excavation by mechanical means (Hydraulic excavator)/ manual means over areas (exceeding 30cm in depth, 1.5m in width as well as 10 sqm on plan) including disposal of excavated earth, lead upto 50m and lift upto 1.5 m , disposed earth to be levelled and neatly dressed: All kinds of soil								
			2	7.4	0.90	1.05	13.99			
			1	6.56	0.90	1.05	6.20			
			3	4.5	0.90	1.05	12.76			
			2	4.98	0.90	1.05	9.41			
			2	3.89	0.90	1.05	7.35			
			1	4.53	0.90	1.05	4.28			
			1	2.13	0.90	1.05	2.01			
			1	3.05	0.90	1.05	2.88			
			1	9.45	0.60	0.45	2.55			
		Total					61.43	Cum	159	9768
2	3.1.6	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. 1:4:8 (1 cement : 4 coarse sand : 8 graded stone aggregate 40 mm nominal size).								
			2	7.4	0.90	0.20	2.66			
			1	6.56	0.90	0.20	1.18			
			3	4.5	0.90	0.20	2.43			
			2	4.98	0.90	0.20	1.79			
			2	3.89	0.90	0.20	1.40			
			1	4.53	0.90	0.20	0.82			
			1	2.13	0.90	0.20	0.38			
			1	3.05	0.90	0.20	0.55			
		Total					11.22	Cum	3002	33670
3	6.1.6	Random Rubble stone masonry for with hard stone in foundation and plinth in Cement Sand mortar above 30 CM thick wall in: Cement Mortar 1:6 (1-Cement : 6-Sand).								
			2	7.4	0.75	0.40	4.44			
			1	6.56	0.75	0.40	1.97			
			3	4.5	0.75	0.40	4.05			
			2	4.98	0.75	0.40	2.99			
			2	3.89	0.75	0.40	2.33			
			1	4.53	0.75	0.40	1.36			
			1	2.13	0.75	0.40	0.64			
			1	3.05	0.75	0.40	0.92			
			2	7.4	0.60	0.45	4.00			
			1	6.56	0.60	0.45	1.77			
			3	4.5	0.60	0.45	3.65			
			2	4.98	0.60	0.45	2.69			
			2	3.89	0.60	0.45	2.10			
			1	4.53	0.60	0.45	1.22			
			1	2.13	0.60	0.45	0.58			
			1	3.05	0.60	0.45	0.82			
			2	7.4	0.40	0.90	5.33			
			1	6.56	0.40	0.90	2.36			
			3	4.5	0.40	0.90	4.86			
			2	4.98	0.40	0.90	3.59			
			2	3.89	0.40	0.90	2.80			
			1	4.53	0.40	0.90	1.63			
			1	2.13	0.40	0.90	0.77			
			1	3.05	0.40	0.90	1.10			
		Steps	5	1.5	0.35	0.3	0.79			
		Total					58.74	Cum	2580	151538

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प्रशिक्षण, अनुसंधान, शिक्षा एवं [illegible]
राजस्थान, जयपुर

([illegible])
मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

4	3.7.2	Providing and laying damp-proof course with cement concrete grade M-150 (1 : 2 : 4) mortar prepared with 1% solution of water-proof compound complete as per specification 75mm thick								
			2	7.4	0.40		5.92			
			1	6.56	0.40		2.62			
			3	4.5	0.40		5.40			
			2	4.98	0.40		3.98			
			2	3.89	0.40		3.11			
			1	4.53	0.40		1.81			
			1	2.13	0.40		0.85			
			1	3.05	0.40		1.22			
		Total					24.92	Sqm	496	12362
5	5.2.2	Brick work with F.P.S. bricks of class designation 75 in superstructure above plinth level upto floor V level in all shapes and sizes in : Cement mortar 1 : 6 (1 cement : 6 coarse sand)								
			2	7.4	0.23	3.20	10.89			
			1	6.56	0.23	3.20	4.83			
			3	4.5	0.23	3.20	9.94			
			2	4.98	0.23	3.20	7.33			
			2	3.89	0.23	3.20	5.73			
			1	4.53	0.23	3.20	3.33			
			1	2.13	0.23	3.20	1.57			
			1	3.05	0.23	3.20	2.24			
		Prepat	1	34.4	0.23	0.45	3.56			
		Total					49.42			
		Deduction								
		WINDOW	8	1.23	0.23	1.23	2.78			
		D1	5	1.07	0.23	2.10	2.58			
		D2	2	0.75	0.23	2.10	0.72			
		VENT	2	0.60	0.23	0.60	0.17			
		Total					6.26			
		Net Total					43.16	Cum	4536	195786
6	5.8.3	Half brick masonry in Superstructure , above plinth level upto floor V level using bricks of designation 75								
		Prepat	1	9.45	0.45		4.25			
			2	0.75	0.45		0.68			
			1	2.44	3.20		7.81			
			1	3.66	3.20		11.71			
			1	0.60	3.20		1.92			
		Kitchen	3	0.60	0.75		1.35			
		Total					27.72	Sqm	478	13249
7	4.10.2	Centering & shuttering with plywood or steel sheets including strutting, propping bracing both ways with steel props and removal of formwork for upto floor five level for : Suspended floors, roofs, landings, staircases, balconies, girders, cantilevers, bands, coping bed plates, anchor blocks, sills, chhajjas, lintel, beam, plinth beam etc.								
			1	14	8.23		115.22			
		Beam	2	9.45	0.23		4.35			
		Beam	6	1.50	0.23		2.07			
			2	4.72	0.23		2.17			
		Total					123.81	Sqm	309	38257
8	4.2	Providing and laying in position specified grade of cement concrete for RCC structural elements upto floor five level including curing, compaction, finishing with rendering in cement sand mortar 1:3 (1 cement: 3 coarse sand) and making good the joints and cost of plastizers (if required) excluding the cost of centering, shuttering and reinforcement for Walls (any thickness) including attached pilasters, buttresses, plinth and string courses, fillets, columns, pillars, piers, abutments, posts and struts etc. M20 grade Nominal Mix / Design Mix								
			1	14	8.23	0.120	13.83			
			1	9.45	0.23	0.230	0.50			
			3	2.1	0.23	0.230	0.33			
		Total					14.66	Cum	5099	74749

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(आलोक गोयल)
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राजस्थान, जयपुर

9	4.13.3	STEEL REINFORCEMENT: 4.13 Providing and fabricating reinforcement for R.C.C. work including straightening, cutting, bending, placing in position and binding (including cost of binding wire) all complete up to floor five level. ('Original producers' who manufacture billet directly from iron ores and roll the billets to produce steel conforming to IS:1786) Thermo-mechanically Treated bars (Conforming of relevant IS code) (100 kg per cum of C.C.)					1465.96	Kg.	65	95287
10	12.2.2	Plaster on new surface on walls in cement sand mortar 1:4 including racking of joints etc. complete fine finish : 20mm thick								
			2	3.66		3.20	23.42			
			2	4.3		3.20	27.52			
			2	3.05		3.20	19.52			
			2	2.13		3.20	13.63			
			2	4.72		3.20	30.21			
			2	5.64		3.20	36.10			
			2	2.44		3.20	15.62			
			2	1.53		3.20	9.79			
			2	1.7		3.20	10.88			
			2	1.53		3.20	9.79			
			2	4.27		3.20	27.33			
			2	4.57		3.20	29.25			
		Veramda	1	9.45		3.20	30.24			
			2	1		3.20	6.40			
		Total					289.70			
		Deduction								
		D1	5	1.07	2.1		11.24			
			2	0.75	2.1		3.15			
		W	2	1.23	1.23		3.03			
		Total					17.41			
		Net Total					272.29	Sqm	188	51190
		Outer	1	14.77	3.75		55.39			
			2	7.9	3.75		59.25			
			1	4.05	3.75		15.19			
			2	0.85	3.75		6.38			
		Parapet Inner	1	45.35		0.75	34.01			
		Total					170.21	Sqm	168	28596
11	12.5	6 mm thick cement plaster to ceiling of mix 1:3 (1cement : 3-fine sand)								
			1	3.66	4.3		15.74			
			1	4.72	5.64		26.62			
			1	3.05	2.13		6.50			
			1	2.44	1.53		3.73			
			1	1.7	1.53		2.60			
			1	4.27	4.57		19.51			
			1	9.45	1.53		14.46			
			2	9.45	0.23		4.35			
			7	1.53	0.23		2.46			
		Total					95.97	Cum	116	11133
12	12.22.1	Providing and applying white cement based putty over plastered surface to prepare the surface even and smooth complete New Plastered Surface (three or more coats)					538.47	Sqm	76	
13	12.36	Distempering with dry distemper of approved brand and shade (two or more coats) and of required shade on new work, over and including, priming coat of whiting to give an even shade including all scaffolding.					368.26	Sqm	48	
14	12.41.1	Finishing wall with water proofing cement paint of approved brand and manufacture and or required shade to give an even shade including all scaffolding: New work (Two or more coats applied @ 3.84 kg/10 sqm).					170.21	Sqm	48	
15	12.45.1	PAINTING Applying priming coat : With ready mix pink or gray primer of approved brand and manufacture on wood work hard and soft wood.								
			10	0.95		2.05	19.48			
			4	0.61		2.05	5.00			
		Total					24.48	Sqm	26	636

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राजस्थान, जयपुर

(अमर सिंह गोदारा)
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राजस्थान, जयपुर

16	12.45.3	PAINTING Applying priming coat : With ready mixed red oxide zinc chromate primer of approved brand and manufacture on steel galvanised iron/steel works								
			16	1.23		1.23	24.21			
			4	0.61		0.61	1.49			
		Total					25.69	Sqm	21	540
17	12.46.1	Painting with synthetic enamel paint of approved brand and manufacture to give an even shade : Two or more coats on new work.								
			10	0.95		2.05	19.48			
			4	0.61		2.05	5.00			
			16	1.23		1.23	24.21			
			4	0.61		0.61	1.49			
		Total					50.17	Sqm	63	3161
18	6.18.1	Supplying and fixing stone lintels/bed plates of approved quarry rough dressed in cement mortar 1:4 : Upto 15 cm. thick. Windwo/D	13	1.50	0.23		4.49			
			2	0.75	0.23		0.35			
		Total					4.83	Cum	8746	42243
19	6.16.2	Providing dab stone over Chajjas duly fixed in cement sand mortar 1:6 complete : 50mm thick.	7	1.80	0.23		2.90	Sqm	750	2174
20	6.15	Providing and fixing horizontal chajja of Red/ White sand stone 40 mm thick and upto 80 cm projection in cement mortar 1:4 (1 cement : 4 coarse sand) including pointing in white cement mortar 1:2 (1 white cement : 2 stone dust) with an admixture of pigment matching the stone shade.								
			1	1.53	0.60		0.92			
			1	3.05	0.60		1.83			
			7	1.50	0.60		6.30			
			2	0.90	0.60		1.08			
		Total					10.13	Sqm	803	8133
21	1.25	Filling available excavated earth (excluding rock) in trenches, plinth side of foundation etc. in layers not exceeding 20 cm. in depth, consolidating each deposited layer by ramming and watering including lead up to 50 meter and with all lift.								
			1	3.50	4.15	0.60	8.72			
			1	4.57	5.50	0.60	15.08			
			1	2.90	1.98	0.60	3.45			
			1	2.30	1.40	0.60	1.93			
			1	1.50	1.40	0.60	1.26			
			1	4.12	4.40	0.60	10.88			
			1	9.30	1.35	0.60	7.53			
		Total					40.13	Cum	58	2327
22	11.26	Random rubble dry stone Kharanja under floor.								
			1	3.50	4.15	0.15	2.18			
			1	4.57	5.50	0.15	3.77			
			1	2.90	1.98	0.15	0.86			
			1	2.30	1.40	0.15	0.48			
			1	1.50	1.40	0.15	0.32			
			1	4.12	4.40	0.15	2.72			
			1	9.30	1.35	0.15	1.88			
		Total					12.21	Cum	847	10343
23	3.1.3	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. M15 grade Nominal Mix 1: 2: 4 (1 cement : 2 coarse sand : 4 graded stone aggregate 40mm nominal size). (Flooring)								
			1	3.50	4.15	0.05	0.73			
			1	4.57	5.50	0.05	1.26			
			1	2.90	1.98	0.05	0.29			
			1	2.30	1.40	0.05	0.16			
			1	1.50	1.40	0.05	0.11			
			1	4.12	4.40	0.05	0.91			
			1	9.30	1.35	0.05	0.63			
		Total					4.07	Cum	4131	16814

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मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

24	11.18.1	Kota stone slab flooring 25 mm thick over 20 mm (average) thick base laid over and jointed with grey cement slurry mixed with pigment to match the shade of the slab including rubbing and polishing complete with base of cement mortar 1 : 4 (1 cement : 4 coarse sand) For area of each slab from 901 to 2000 Sq.Cm : Sqm 864.00								
			1	3.25	2.33		7.57			
			1	3.86	4.5		17.37			
			1	4.92	5.84		28.73			
			1	4.47	4.77		21.32			
			1	9.55	1.73		16.52			
			4	1.50	0.30		1.80			
			4	1.50	0.3		1.80			
		Total					95.12	Sqm	864	82183
25	7.22.1	Providing and fixing 1st quality MAT & GLOSSY finished ceramic tile confirming to IS : 13755 and IS : 15622 colour such as white, grey, ivory, fume red brown, light green, light blue and other light shades in floors,steps, pillars etc. laid on a bed of neat cement slurry finished with flush pointing to the white cement mixed with pigment to match the shade of the tile complete (including the cost of cement mortar bed 1:4). Size 250mm x 375mm Sqm 661.00	1	2.44	1.53		3.73			
			1	1.7	1.53		2.60			
		Total					6.33	Sqm	661	4187
26	7.23.1	P & F 1st qualityHeavy Duty Vitrified Polished Digital tiles on floor, skirting and steps etc.in different sizes (thickness minimum 10mm) with water absorption less than or equal 0.08% and conforming to IS 15622 of approved make in all colour and shade, laid with 20 mm thick CM 1: 4 including grounting the joints with white cement and matching pigment etc complete. Size 298mm x 298mm Sqm 641.00								
			2	2.44		2.10	10.25			
			1	1.53		2.10	3.21			
			1	0.75		2.10	1.58			
		Total					15.04	Sqm	641	9638
27	10.17.1	Grading roof for water proofing treatment with water proofing compound Cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size)								
			1	14	8.23	0.05	5.76			
		Total					5.76	Cum	4075	23476
28	9.8	Providing & fixing precast cement concrete coping 1 : 2 : 4 mix 50mm thick complete as per specification :								
			1	34.4	0.30		10.32			
			1	11	0.15		1.65			
		Total					11.97	Sqm	334	3998
29	8.13.2.2	Providing and fixing external grade board solid core single leaf flush door shutters ISI 2202-67 marked using Phenol formal dehyderesin in glue both sides with approved steel fittings complete as per annexure 'A' : 30 mm thick Decorative teak veneer One side								
			2	0.61	2.05		2.50			
			9	0.95	2.05		17.53			
		Total					20.03	Sqm	1848	37013

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राजस्थान, जयपुर

मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

30	9.28.1	Providing and fixing steel glazed window frame made out of 80x40 mm hollow sheet section of 16 gauge thickness, joint mitred welded and grinded including hold fast of steel lugs 13mm x 3mm and 15 Cm long embedded in C C block 15 x 10 x 10 Cm of 1:3:6 nominal concrete and including fixing of pivoted hinges of superior quality, window shutters made out of 50 x 15.0 mm hollow steel section 15 mm paltam of 18 gauge thickness, joint mitred and grinded including 10mm x 10mm square bars welded to frame for paltam fixing float glass 4mm thick panes with glazing clips and metal sash putty and fixing of shutters frames peg stay, U shape handle 100 mm long, tower bolts 100 mm long of steel powder coated superior quality including fixing and jointing with frame hinges priming coat with steel primer complete in all respect as per direction of Engineer-in –charge Window openable.									
			8	1.23	1.23		12.10			
			2	0.61	0.61		0.74			
		Total					12.85	Sqm	3457	44413
31	15.25.1	Providing and fixing in CM 1 : 4 double paltam (rebated) stone door window and ventilator frames of approved quarry : Size 100 x 75mm.								
			7	2.10			14.70			
			7	1.07			7.49			
		Total					22.19	mtr	180	3994
32	7.5.1	Providing and fixing Granite stone slab mirror polished and machine edge cut in walls, pillars, steps, Shelves, Sills Counters, Floors etc. laid on 12mm (Av.) thick base of cement mortar 1:3 (1 cement : 3 coarse sand) jointing with white cement mortar 1:2 (1white cement : 2 marble dust) with pigment to match the shade of the marble slab including grinding, rubbing and polishing complete. Jhunjhunu / Jalore (Red/Choclate/Black/Pink Colour) Up to 1500 Cm2 Tiles Sqm. 1812.00								
			1	1.53	0.6		0.92			
			1	1.53	0.6		0.92			
			2	1.53	0.1		0.31			
		Total					2.14	Sqm	1812	3881
33	6.17.1	Supplying and fixing in walls machine cut and polished stone shelves, tands and in CM 1:3 with machine cut edges : Sand or other approved stone 25mm thick.	4	4.3	0.6		10.32			
			3	3.05	0.6		5.49			
		Total					15.81	Sqm	458	7241
34	7.8.2.1	Granite/Kota Stone Work Full Edge moulding	2	1.53			3.06	Mtr	212	649
		Total								1022628
		Sanitory Work								47500
		Electricity Fitting								73000
		Under Ground 15000 Litre Capicity Water Tank								53535
		G. Total								1196663

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राजस्थान, जयपुर

(अपर प्रधान वन संरक्षक)
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

Model Estimate (Range Office)

(Saintory Installation Work)

BSR : Jaipur (City Circle-2019)

S.No.	B.S.R	Particular	Qty	Unit	Rate	Amount
1	1.2.1	P & F Indian type white glazed vitreous china 1st quality W.C. orissa pan (IS :2556 Mark) with 100 mm vitreous china P or S trap including cutting and making good the wall and floor; Size 530x410mm.	1	No	2400	2400
2	1.3	P & F European type white glazed vitreous china 1st quality W.C pan (IS : 2556 Mark) with P or S trap including cutting and making good the wall and floor	1	No	2200	2200
3	1.7.2	P & F water closet Seat Covers with brass hinges complete : Solid PVC (IS 2548 marked) grade-I White for EWC	1	No	441	441
4	1.36.2	WASH BASINS: 1.36 P & F WVC Wash basin (Ist quality IS:2556 Mark) of approved make with C.I. brackets duly painted 1 No. 15 mm C.P. Pillar cock (IS:8934 Mark) & 32 mm C.P. brass waste coupling of approved make, P.V.C Waste pipe with PVC nut 32 mm complete including cutting & making good the wall : Size 510 mm x 400 mm	2	No	2189	4378
5	1.38.9.2	KITCHEN & LAB. SINKS: 1.38 P & F Kitchen & Lab. Sink of approved make with C.I. brackets duly painted, 40 mm C.P. waste coupling, C.P. Brass chain with rubber plug, 40 mm G.I. waste pipe up-to floor level complete including cutting and making good the wall & floor : 1.0 mm thick stainless steel AISI -304 & IS 13983-1994 kitchen sink of approved make as per Engineer-in-charge with large waste coupling. Overall size` Bowl size 22 x 18 x 7 20x16x7	1	No	3936	3936
6	1.23	P & F WVC (10 litres) low-level flushing cistern with cover.	2	No	753	1506
7	1.44.1	P & F Bevelled edge Mirror/mirror with teak wood lipping around of special glass of approved make as per direction of Engineer-in-charge complete with 6mm thick commercial ply base fixed to wooden screws & washers. Size 600 x 450mm x 4 mm thick	2	No	523	1046
8	1.47.1	P & F Towel Rail or Ring of approved quality/make: C.P. brass Towel Rail elbow type with concealed screws size 450mm (Heavy duty).	2	No	425	850
9	1.47.8	P & F Towel Rail or Ring of approved quality/make: C.P. Brass Towel Ring revolving type	2	No	231	462
10	1.52.2	P & F Soap Dish or Tray of approved quality/make C.P. brass heavy and superior quality.	2	No	142	284
11	1.55.2	P & F Bath Shower of approved quality/make. C.P. brass of Heavy & superior quality 150mm.	2	No	342	684
12	1.59	P & F Jet spray for water closet with C.P. Copper Tube flange of approved make.	20	No	346	6920
13	2.1.1	P & F G.I. pipes (Internal Work) with G.I. Fittings excluding union (IS:1239 Mark) & MS clamps including cutting and making good the walls and floors: (a) Exposed on wall 2.1.1 15 mm dia nominal bore 'B' Class	1	RMT	209	209
14	2.7.1	P & F Bib Cock (IS : 8931 Mark), Superior quality of approved make: Brass 400 gm,15mm nominal bore.	7	No	271	1897

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15	2.15.1	P & F Full-way Valve (IS:778 Mark) or wheel valve of approved make : Gun-metal 15mm nominal bore.	3	No	206	618
16	2.26.3	P & F PVC Storage Tank ISI Marked (IS:: 12701) indicating the BIS license No), of approved make with cover, 25mm dia 1M long G.I. over-flow pipe & 25 Cm. long wash out pipe with plug & socket, including making connection etc., complete of approved design: 500 litres capacity.	2	No	3564	7128
17	3.16.2	RIGID PVC PIPE 3.16 P&F rigid PVC Pipe (IS:4985 mark) class II/ (4 Kg. /Cm2 .) approved quality /make including joining the pipe with solvent cement rubber ring and lubricant. 75 mm dia	6	RMT	161	966
18	3.16.3	RIGID PVC PIPE 3.16 P&F rigid PVC Pipe (IS:4985 mark) class II/ (4 Kg. /Cm2 .) approved quality /make including joining the pipe with solvent cement rubber ring and lubricant. 110 mm dia	9	RMT	256	2304
19	3.17.1	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Coupler (socket)				0
		75mm dia	6	No	79	474
20		110mm dia	4	No	98	392
21	3.17.3	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Plain Tee				0
		75mm dia	2	No	104	208
		110mm dia	1	No	170	170
22	3.17.4	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Door Tee 110mm dia	2	No	194	388
23	3.17.9	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: Bend 87 .5				0
		75mm dia	6	No	88	528
		110mm dia	1	No	146	146
24	3.17.23	P&F rigid PVC pipe fittings (IS: 4985 mark) of approved quality /make including joining the pipe with solvent cement rubber ring and lubricant: P- Trap 110mm dia	5	No	347	1735
25		VENT COWER	2	No	51	102
26	3.24.1	Construction of Soakage well in all types of soil of approved drawing, top 90 Cm .Portion in 450mm thick masonry with CM 1:6, 80 mm thick stone slab covering, jointing of slab in CM 1:3 ,Raithal, kharanja 40mm thick M-15 grade C.C flooring, earth work etc . complete including disposal of surplus earth within a lead of 50 mtr . Inner dia 90 Cm & 10 to 12 Mtr deep.	1	No	4948	4948
		Total				47320

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राजस्थान, जयपुर

Detailed Estimate of Coumpound Wall of Forest Chouki

Length of compound wall = 100 mtr and
Height of compound wall = 2.10mtr (1.20 stone wall + 0.90mtr Chain link fencing)
BSR - PWD Integrated BSR of Rajasthan 2022

Sr. No.	BSR Item No.	Item Description	Unit	Nos	Length	Width	Height/ Depth	Qty	Rate	Amount
1	2019/1.8	Earth work in excavation by mechanical means (Hydraulic Excavator)/ manual means in foundation trenches or drains (not exceeding 1.5 m in width or 10 sqm on plan) including dressing of sides and ramming of bottoms, lift upto 1.5 m, including taking out the excavated soil and depositing and refilling of jhiri with watering & ramming and disposal of surplus excavated soil as directed with in a lead of 50 meter. All kinds of soils	CUM	1.00	100.00	0.60	0.75	45.00	178.00	8010.00
2	2019/ 3.1.7	Providing and laying in position cement concrete including curing, compaction etc. complete in specified grade excluding the cost of centering and shuttering - All work up to plinth level. 1:5:10 (1 cement : 5 coarse sand : 10 graded stone aggregate 40mm nominal size).	CUM	1.00	100.00	0.60	0.10	6.00	2956.00	17736.00
3	2019/ 6.1.6	Random Rubble stone masonary for foundation and plinth in Cement Sand Mortar above 30 Cm. thick wall in : Cement Mortar 1:6 (1-Cement:6-Sand) First Footing								
		Pillars	CUM	20.00	0.60	0.60	0.38	2.74		
		Walls	CUM	1.00	88.00	0.53	0.38	17.72		
		Second Footing								
		Pillars	CUM	20.00	0.50	0.50	0.38	1.90		
		Walls	CUM	1.00	90.00	0.45	0.38	15.39		
								37.75	2838.00	107132.23
4	2019/ 6.2.6	Random Rubble stone masonary for superstructure above plinth level one storey height above 30 Cm. thick walls in : Cement Mortar 1:6 (1-Cement:6-Sand).								
		Pillars	CUM	20.00	0.45	0.45	1.20	4.86		
		Walls	CUM	1.00	91	0.38	1.20	41.50		
								46.36	3479.00	161272.52
5	2019/ 3.10	Providing and laying damp-proof course with cement concrete grade M-150 (1 : 2 : 4) mortar prepared with 1% solution of water-proof compound complete as per specification . 50mm thick.								
		Pillars	Sqm	20.00	0.45	0.45		4.05		
		Walls	Sqm	1.00	91	0.38		34.58		
								38.63	391.00	15104.33

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6	2019/ 12.3.1	Plaster on new surface on walls in cement sand mortar 1:6 including racking of joint etc. complete fine finish : 25mm thick.								
		Pillars	Sqm	80.00		0.035	1.20	3.36		
				40.00		0.45	1.20	21.6		
								24.96	211.00	5266.56
7	2019/ 12.31.2	Pointing on stone masonry in cement sand mortar 1:3 (1 cement : 3 sand) :								
		Wall	Sqm	2.00	91		1.20	218.4	233.00	50887.20
8	2019/ 9.36.1	Supplying and fixing of chain link fencing with angle iron posts 50x50x6mm placed at every 3 Mtr. apart 30cm in ground embedded in cement concrete 1:3:6 (30x30x45cm) corner and every tenth post to be strutted with (50 x 50 x 6cm) angle iron provided and fixed and fitted with posts including earth work in excavation etc. complete with chain link size.								
9		50mm x 50mm x 3.15mm.	Sqm	1.00	100.00		0.90	90	629.00	56610.00
	2019/ 12.37.1	Distempering with oil bound washable distemper of approved brand and manufacture to give an even shade including all scaffolding: New work (two or more coats) over and including scrapping and priming coat with cement primer.								
10			Sqm					17.65	75.00	1323.75
11										1657.41
									Total	425000.00

Per running meter cost = 4250.00

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(अमरनाथ गोदियाल)
मुख्य वन संरक्षक (आयोजना),
राजस्थान, जयपुर

Model Estimate

Construction of Tube well / Solar Pump Moter / Solar Light / Unfroseen & Miscellaneous

S.No.		Particulars	QTY	unit	Rate	Amount
I		Construction of tube well up to 100 metre depth and above from ground level to				
	1	Nominal bore 200mm dia. Depth uo to 100 mtr	175.00	Mtr	1464.00	256200.00
	2	Supply of strainer pipes made of ERW M.S. black pipe ISI mark of following sizes at the saite of work including required size of slotrring as per IS:8110-1985	50.00	Mtr	2630.00	131500.00
	3	Installation of solar pump motor with acessories 5 HP		Nos.	LS	450000.00
	4	Installation of solar Lighting system with 2 KW		Nos.	LS	150000.00
	5	Unfroseen and miscellaneous expenditure				12300
		Total				**1000000.00**

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राजस्थान, जयपुर

Model Estimate

Construction of Septic Tank

S.No.	Particulars	QTY	unit	Rate	Amount
2	Construction of Septic Tank size 2.30 X 1.10 X 1.50 Mtr. In all types soil with 40 cm thick masonary in cm 1:6, 15 cm thick CC bed of 1:5:10, M - Floor, 50 mm thick stone slab partitio walls, Supply of Soling Stone 23cm, 15cm Stone Agg. 40 mm, 20mm, 6-12mm, PVC Pipe 110mm, Bend 45 degree, Plain Tee, 4 nos. stone Fotrest of approved design, two No. 450 mm dia each per approved drawing including desposal of surplus earth with in a lead of 50 mtr size 203 X 110 X 150 cm (for 20 users) with 1.15 mm thick RCC (M-20) slab with Tor steel reinforcement 10 mm @ 15cm CC bothways including shuttering complete in all respect.	LS	LS	LS	40,000.00

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(अमर सिंह [illegible])
मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर

Model Cost Norms for Boundary Pillar

Cost estimate – 9000/ unit

S.No	Description of work	Bsr l.no	Unit	Quantity	Rate	Cost
1	2	3	4	5	6	7
1	Earth work in excavation in soil.foundation length 1.20m, width 1.20m, depth 0.30m per pillar volumn 0.432 cum.	PWD-BSR2019 Jaipur circle Item no-1.8 ch-B1	cum	0.432	162.00	69.98
2	Cement concrete in foundation & 40mm size aggregate 1:4:8 mixer.pillar size -1.20m.l x1.20m w x0.30m d.=0.432cum	PWD-BSR2019 Jaipur circle Item no-3.1.6 ch-B3	cum	0.432	3002/ p.cum	1296.86
3	Cement concrete in sub structure & 40mm aggregate 1:4:8 mixer cement concrete Lower size – 1.20 m.l x 1.20 m.w (A1) Upper size – 0.80 m.l x 0.80 m.w (A2) height – 1.00 m (H) volumn – (H/3)x(A1+A2+√A1xA2) = (1.00x3)(1.44+0.64+√1.44 x0.64 = 1.0133 cum Top 0.30x0.30x0.30 = 0.027 cum Total Qty = 1.04 cum	PWD-BSR2019 Jaipur circle Item no-3.2.4 ch-B3	cum	1.04	3927 /p.cu.m	4084.08

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4	Providing and fabricating reinforcement for R.C.C work including straightening, cutting, bending, placing in position and binding(including cost of binding wire) all complete for whole structure. Cold twisted deformed bars(IS:1786)4 x0.35=1.40m 2 x1.10=2.20m Total=3.60m (3.60 x 0.395=1.42kg or1.5 kg			1.5kg	77	115
5	Centering & shuttering to settle column and pillar. ground –4 x1.2 x.30= 1.44 middle- 4x0.80+1.20x1.02=4.08 2 Top-4x0.3x0.3=0.36	PWD-BSR2019 Jaipur circle Item no-4.10.3 ch-B4	Sq m	5.88	341 /p.sqm	2005
6	Plaster on 15mm thick as 1:6 1x4x1.20+.80x1.00=4.00 2 Top–1 x.80 x.80= 0.64 1x4x0.30x0.30=0.36 Total Plaster = 5.00 sq.m	PWD-BSR2019 Jaipur circle Item no-12.3.3 ch-B12	Sq m	5.00	133/ p.sq.m	665
7	Water Curing				Lum-sum	400
8	Paint and carving on pillar			on market price	Lum-sum	400
					Total	9035 Say-9000

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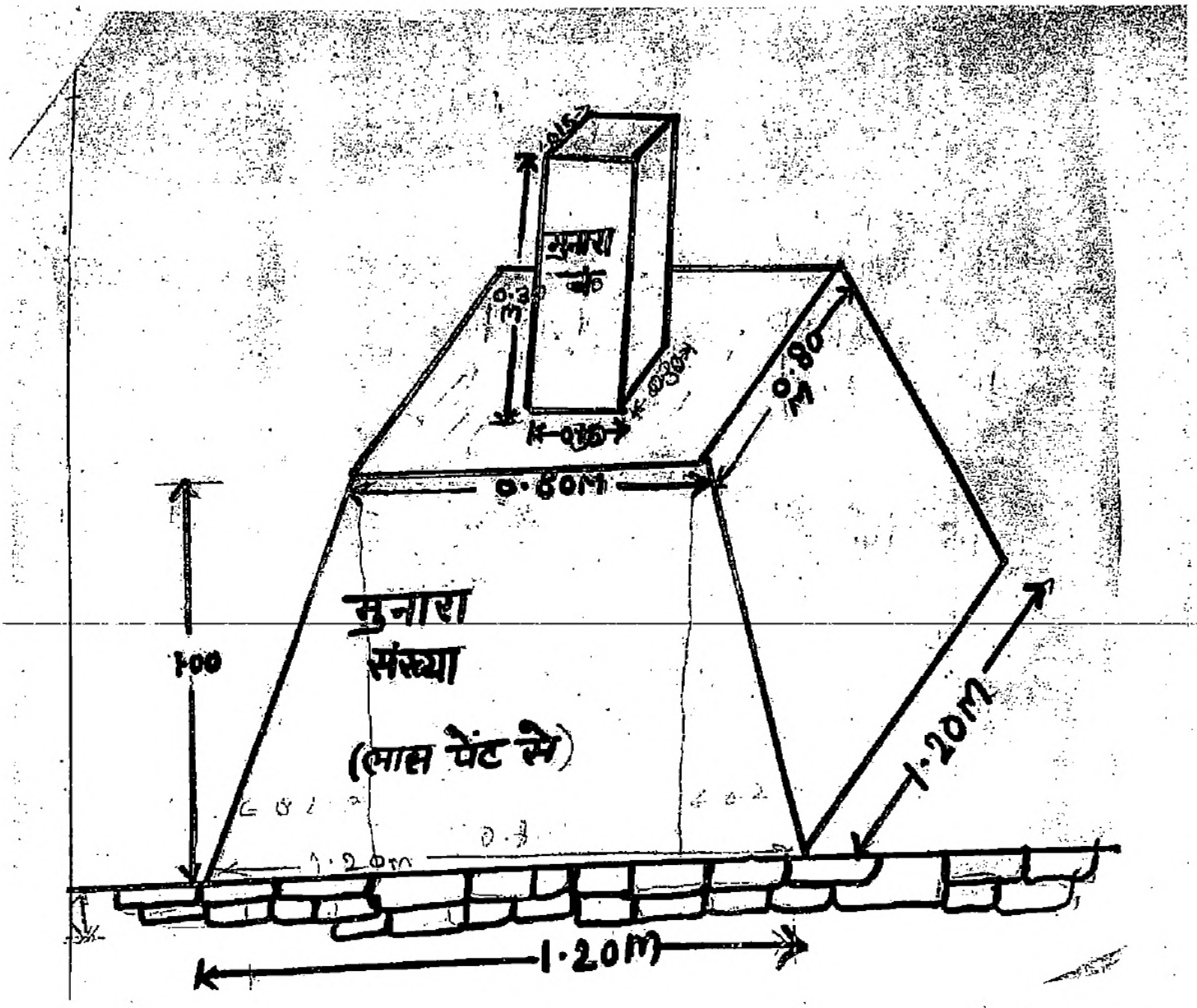
(अमर सिंह भोटियाल)
मुख्य वन संरक्षक (आयोजना)
राजस्थान, जयपुर



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राजस्थान, जयपुर

(अग्रसिंह गोठवाल)
मुख्य वन संरक्षक (अयोजना)
राजस्थान, जयपुर

Full title of the Project	:	Construction of Shahpur (1800 MW) Pumped Storage Project by M/s Greenko Energies Private Limited, in Hanumanthkhera, Mungawali villages, G.P-Subhdhara; Baint Village, G.P-Bichi; SahjanpurVillages, G.P-Kasba Nonera; Kaloni, Shahpur Villages, G.P-Mundiyar; Tehsil-Shahbad; Baran District, Rajasthan.
Proposal no	:	FP/RJ/HYD/121439/2021
Date of Proposal	:	03-02-2021
Diversion Area	:	407.8227 Ha

Undertaking

M/s. Greenko Energies Private Limited hereby affirm and undertakes that the Non-Forest Land (NFL) proposed for creation of Compensatory Afforestation shall be transferred, mutated andhanded over to the State Forest Department free from all sorts of encumbrances and encroachments before Stage-II approval under the FC Act.

Date: 15.02.2024

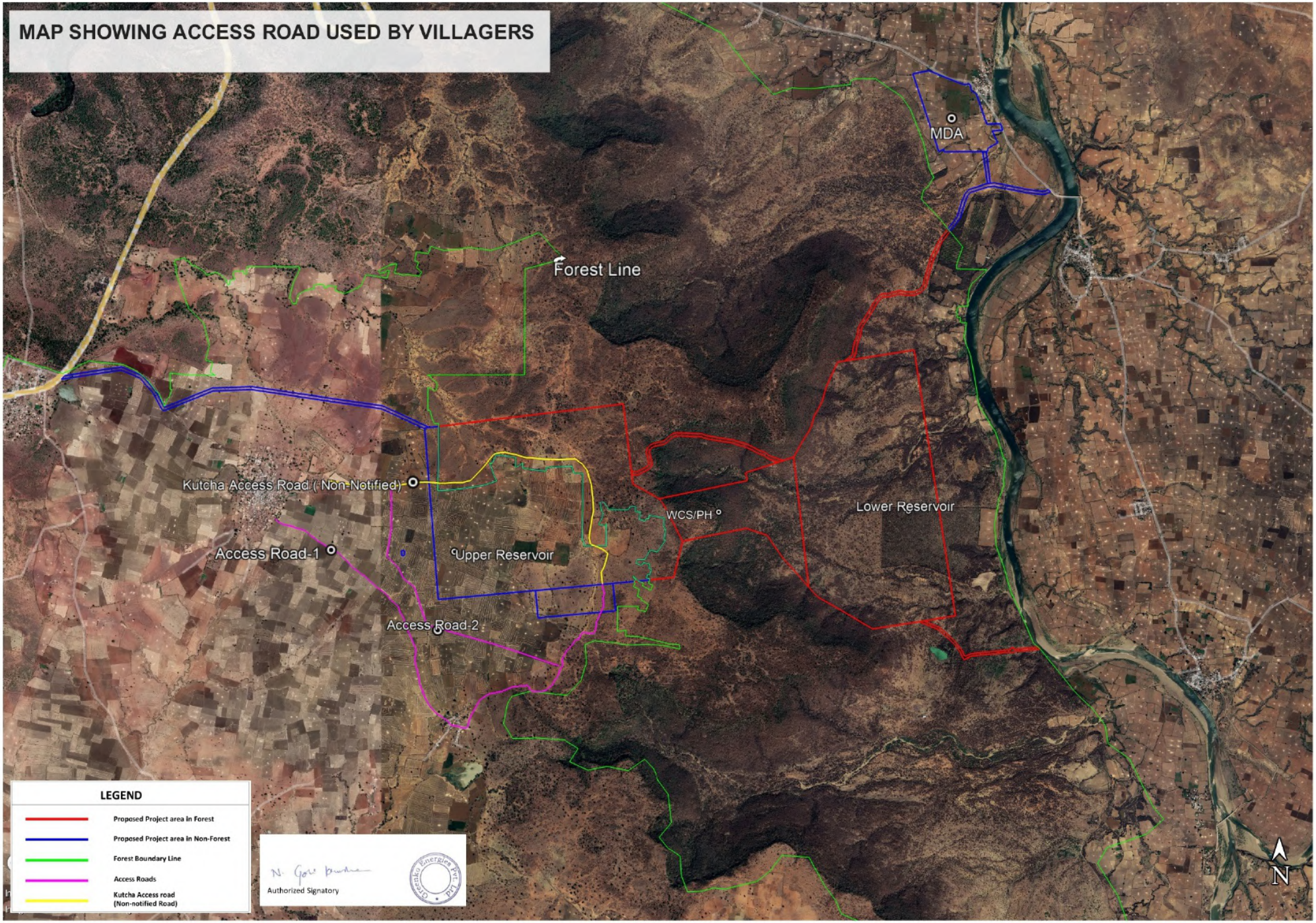
Name: Gopi Krushna N

N. Gopi Krushna

Gopi Krushna N
Deputy General Manager (DGM)
Authorised Signatory
Greenko Energies Private Limited

Place: Hyderabad

Authorized Signatory


MAP SHOWING ACCESS ROAD USED BY VILLAGERS
MDA
Forest Line
Kutcha Access Road (Non-Notified)
Access Road-1
Upper Reservoir
WCS/PH
Lower Reservoir
Access Road-2
LEGEND
Proposed Project area in Forest
Proposed Project area in Non-Forest
Forest Boundary Line
Access Roads
Kutcha Access road (Non-notified Road)
Authorized Signatory
N

MAP SHOWING ACCESS ROAD USED BY VILLAGERS