SCHEME FOR COMPENSATORY AFFORESTATION OVER AN AREA OF 12.523 HA. IN DEGRADED FOREST LAND IN KAPILASH RF(KAPILASH WILDLIFE CENTUARY) OF SADANGI RANGE UNDER DHENKANAL FOREST DIVISION.

AGAINST THE FOREST LAND USED BY-

GAIL (INDIA)LTD.

FOR LAYING OF 24"/18" DIA NATURAL GAS PIPELINE ALONG WITH OFC FROM SRIKAKULAM, (ANDHRA PRADESH) TO ANGUL,(ODISHA) PIPELINE LAYING THROUGH FOREST AREA UNDER DHENKANAL FOREST DIVISION, ATHAGARH FOREST DIVISION,KHURDHA FOREST DIVISION, NAYAGADA FOREST DIVISION, GHUMUSUR SOUTH FOREST DIVISION & PARLAKHEMUNDI FOREST DIVISION

BY

DHENKANAL FOREST DIVISION

DHENKANAL

CERTIFICATE ON DSS ANALYSIS FOR CA/ACA/PCA

This is certify that DSS Analysis of land identified for CA/ACA/PCA and subsequent ground truthing have been done. The outcome is as mentioned below:

GAIL (India, Ltd.)

Sl. No.	Name of the Range	Name of the Forest Block (RF/PRF/PF/DPF /Revenue Forest)	Area indentified for CA/ACA/PCA/ (in Ha.)	Classification of indentified land (in Ha.)							Area suitable for plantation (in Ha.)				Plantation Model (AR/ ANR)	Remarks
				Very Dense Forest	Moderately Dense Forest	Open Forest	Non forest	Scrub	Water	Total	Open Forest	Non-Forest	Scrub	Total		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Sadangi	Kapilash Reserve Forest (Kapilash Wildlife Sanctuary)	CA	-	-	12.523 Ha.	-	-	-	12.523 Ha.	12.523 Ha.	-	-	12.523 Ha.	AR	-

Divisional Forest Officer,
Dhenkanal Forest Division

Divisional Forest Officer
Dhenkanal Division

Countersigned

Regional Chief Conservator of Forests,
Angul Circle

TABLE OF CONTENTS

LAND SUITABILITY CERTIFICATE BY DIVISIONAL FOREST OFFICER, DHENKANAL FOREST DIVISION

This is to certify that, 12.523 ha. of degraded Forest land is identified in Kapilash RF **(Kapilash Wildlife Sentuary)** under Sadangi Range of Dhenkanal Forest Division in compartment No- 25. The degraded Forest land is suitable for the purpose of Compensatory Afforestation under **Block Plantation(AR) @1000 Plants per Hectare (18 months old seedlings)** in lieu of Forest land 6.1487 ha. i.e. 2.314 ha. in Dhenkanal Forest Division, 1.2975 ha. in Athagarh Forest Division, 0.0728 ha. in Khurdha Forest Division, 0.6266 ha. in Nayagada Forest Division, 1.8357ha. in Ghumusura South Forest Division and 0.0021ha. in parlakhemundi Forest Division to be diverted for Laying Of 24''/18'' Dia Natural Gas Pipeline Along With OFC From Srikakulam, (Andhra Pradesh) To Angul, (Odisha) Pipeline Laying Through Forest Area **By Gail (India)LTD.**

Place:Dhenkanal
Date 19th October, 2022

Divisional Forest Officer
Dhenkanal Division

Divisional Forest Officer
Dhenkanal Division

Official Seal.....

P.T.O.

Compensatory Afforestation Scheme over an area of 12.523 Ha. in degraded forest land in Kapilash RF (Kapilash Wildlife Sanctuary) under Sadangi Range of Dhenkanal Forest Division against diversion in lieu of Forest land 6.1487 ha. i.e. 2.314 ha. in Dhenkanal Forest Division, 1.2975 ha. in Athagarh Forest Division, 0.0728 ha. in Khurdha Forest Division, 0.6266 ha. in Nayagada Forest Division, 1.8357ha. in Ghumusura South Forest Division and 0.0021ha. in parlakhemundi Forest Division to be diverted for Laying Of 24"/18" Dia Natural Gas Pipeline Along With OFC From Srikakulam, (Andhra Pradesh) To Angul, (Odisha) Pipeline Laying Through Forest Area.

by

Gail (India) LTD.

1. INTRODUCTION:

M/s. GAIL (India) Limited, has proposed to lay Srikakulam-Angul Natural Gas Pipeline (SAPL) Project including associated Spur Pipelines under Authorization from MoPNG (Ministry of Petroleum and Natural Gas), Govt. of India. The approximate length of the SAPL Pipeline is 690 kms with an initial system capacity of at least 5 MMSCMD. The said Pipeline shall be passing through the various parts of Andhra Pradesh & Odisha for supply and distribution of Natural Gas / RLNG to various industries and City Gas Distribution networks.

The proposed Srikakulam-Angul Pipeline along with surp line will be laid across land falling along / across the ROU (Right of Use) and various utilities such as roads, canal, river etc. The said Pipeline shall be laid at the minimum depth of 1.2 mts. below NGL (Natural ground level).

The present proposal is for laying of underground Natural Gas Pipeline along with Optical Fiber Cable (OFC) from Srikakulam to Angul (Odisha Section). The Srikakulam-Angul Natural Gas Pipeline (SAPL) Odisha Section by GAIL (India) Ltd. involves 6.1487 ha. of forest land and 586.7539 ha. of non-forest land passing through 286 Village in Odisha Section. This (SAPL) Odisha Section involved o8 forest division namely Angul, Dhenkanal, Athagard, Khurdha, Nayagada, Ghumusura (South) Division, Brahmapur & Paralakhemundi and 07 Districts namely Angul, Dhenkanal, Cuttack, Khurdha, Nayagada, Ganjam and Gajapati.

FOREST AREA INVOLVE:

Sl No.	Division	Forest area In ha.
1	Angul	0.0000
2	Dhenkanal	2.3140
3	Athagarh	1.2975
4	Khurdha	0.0728
5	Nayagarh	0.6266
6	Ghumusar (South)	1.8357
7	Brahmapur	0.0000
8	Parlakhemundi	0.0021
	Total	**6.1487**

NEED AND BASIS OF PIPELINE:

The projected demand and supply of natural gas in the states of Andhra Pradesh and Odisha are provided by the Marketing department of GAIL. The Gas demand is going to come from existing anchor industries in the state of Odisha like Vedanta Limited. Utkal Alumina (Hindalco), Nalco,and other demands for domestic /Industrial/Commercial/ Transport sectors in Ganjam/Nayagada Districts. This pipeline will connect various RLNG terminal like, Dhamra, Dahej, etc. and domestic gas fields of KG basin etc. to the customers in Eastern region through JHBDPL and Southern region through KSPL. Therefore it will provide connectivity to multiple sources to the enroute customers also. In view of the same, it has strategic importance and part of the National Gas Grid.

SCHEME FOR SITE SPECIFIC COMPENSATORY AFFORESTATION:

As per Para 2.8(ii) of Guideline to Forest (Conservation) Act, 1980 for Govt. of India Projects Compensatory Afforestation will be raised in degraded forest twice in extent. Therefore, 12.523 Ha degraded forest is required for compensatory Afforestation. Accordingly CA Scheme shall be prepared for minimum of 1000 saplings per hectare of identified CA land with ten-year maintenance.

3.1 Selection of Site:

Accordingly degraded forest land over 12.523 Ha identified in Kapilash RF (Kapilash Wildlife Sanctuary) under Khankira Section, of Sadangi Range in Dhenkanal Forest Division, which will accommodate 1000 plants per Ha.

The land particulars of the proposed compensatory afforestation area is depicted below

Patch	Division	Range	Section	Name of RF	Compartment No.	Area considered for Compensatory Afforestation (Ha.)
1	Dhenkanal	Sadangi	Khankira	Kapilash RF (Kapilash Wildlife Sanctuary)	25	12.523

The site is located on survey of India Topo Sheet No F45-T/14 between Latitude: 20° 44' 23.84618" - Longitude: 85° 54' 27.98057" (Separate packet).

3.2 Description of the existing vegetation:

Though there is no valuable tree growth in the land but open mixed Jungle.

Topography & Soil:

The topography of area is undulated. The depth of the soil is good and the existing vegetation indicates the PH value.

3.3 Rainfall & Temperature:

The annual rainfall varied from 1200 mm to 1400mm. The maximum rainfall is received during the rainy season from July to September. The average temperature varied from 28°C minimum in December to 41° C maximum in May.

3.4 Objective of the scheme:

The main objective of the present scheme is to (I) increase vegetation through taking up Block (AR) plantation, (ii) clearly demarcating the area with posting up boundary pillars, (iii) enforcing protection measures by involving people around under JFM and (iv) above all checking soil erosion and run off which will go in combination for enrichment of the vegetation and soil and building up ecosystem. The total 12.523ha. shall be covered under Block (AR) Plantation with 1000 plants per / ha.

3.5 Items of work to be taken up:

To achieve the above objectives, the following items of work are mainly prescribed to be taken up with the full involvement and co-operation of local forest dwellers.

P.T.O.

3.6 Survey and Demarcation:

The DGPS Surveyed has been taken up duly certified by the ORSAC and accordingly DGPS Map and CD enclosed.

3.6.1 Block Plantation:

The total allotted area shall be covered by Block Plantation. For protection of the plantation from grazing with solar fencing will be provided around the plantation site.

Care should be taken to select only indigenous species as far as possible keeping in view of the existing natural vegetation in and around the area and also the climatic and edaphic factors. The choices of species are as follows:

Local Name	Scientific Name
Tentuli	Terminalia belerica
Karanja	Pongomia pinnata
Aswastha	Ficus religiosa
Kusuma	Schleichera oleosa
Asana	Terminalia aomentosa
Kaitha	Limonia acidissimal
Chhatian	Alstonia scholaris
Bara	Ficus bengalensis
Ambeda	Spondias pinnata
Wild mango	Mangifera indica
Mundi	Mitragyna parvifolia
Kumbhi	Careya arborea
Pahadi sissoo	Dalbergia latifolia
Amla	Emblica officinalis
Bela	Jasminum sambac
Bahada	Terminalio bellirica
Arjuna	Terminalio arjuna

It is proposed to take up pitting with a pit size of 45cm x 45cm x 45cm during February / March for allowing weathering of the soil. The planting should be taken up only with 18 months old seedlings. The size of Polythene bags will be 12 inch x 10" x 300 gause with desired quantity of inputs. The seedlings will be graded and sorted at regular intervals to make those healthy and sound and avoid root coiling.

3.7 Development of Nursery:

A good nursery is the per-requisite for a successful plantation. Therefore, all care should be taken to rise healthy and sound seeding of required sizes before they are put to the plantation site.

P.T.O

The site being subjected to different biotic interference, it is proposed to raise two year old seedlings for plantation. This should be particularly adopted in case of slow growing species like Tentuli, Karanja, , Aswastha, , Kusuma, Asana, Kaitha, Chatian, Bara, Ambeda, Wild mango, Mundi, Kumbhi, Pahadi Sissoo, Amla, Bela, Bahada and Arjuna etc. Accordingly, the Nursery Programme can be planned out one year in advance. The two years seedling to be raised in polythene bags of 12 inch x 9 inch and one year old manual should be taken up at all stages of nursery operation so that a good stock of healthy seedling can be raised. 10% extra seedlings should be raised to cover the short fall due to casualty in nursery stage. In case of all the seedlings, shifting, grading of polythene bags should be done from time to time not allow the tap roots to strike the ground. Nursery site should be selected, preferably near to plantation site and in a well-drained locality having water sources.

3.8 Planting:

The best time of planting of the potted seedling is soon after the onset of regular monsoon or after a good shower of rain. Before planting, the pits are to be prepared by putting mixture of half cubic feet of alluvial soil and farmyard manure. Basal dose of 50 gram of NPK fertilizer are to be applied to the pits before planting as basal dose. The excavated earth from the pits already weathered and free from stones should be filled in the pits. Before removal of the plants from the Nursery the following precaution should be taken:

Roots escaping from the container should be trimmed.

i. Posts containing the plant are watered, if necessary.
ii. Maximum care should be taken at the time of transportation and handling of seedling so that the ball of earth of the poly pots does not get disturbed and the primary leading shoots are broken. Manual transportation should be given priority.

Planting should be taken up on rainy/cloudy days by adopting all standard techniques of plantation.

Casualty of seedlings occurs due to various causes, like heavy rains, drought, fire, grazing etc. But in a well-managed plantation, where the planting stock consists of healthy and stout seedlings, say, about 10% may die during the period between planning and 1st weeding. Sidings to be used for casualty replacement should be earmarked and kept reserved at the time of planting. Only healthy and stout seedlings slightly larger than those planted at the time of operation should be used. This is important because only such seedlings can catch up growth with those that have survived and are growing. Before planting for casualty replacement, the following operations are to be taken up:

a. The failure pit is to be properly dug again
b. Another dose of fertilizer, and insecticide should be given to the pit
c. If the casualties are due to white ant attack. Little more quantity of phorate pesticide may be applied to the pit.
d. If the casualties are due to water logging and wilting, care should be taken to drain out the pits by making small channels to downhill side.
e. Watering can be taken up as per provision in Watering Model-1 of One-time Cost Norm for Compensatory Afforestation.

3.9 Fencing:

To protect the plantation form grazing and other biotic interference, fencing shall be taken up Solar Fencing (400 Pillars /RKM in Fencing Model F-III One-time Cost Norm for Compensatory Afforestation.

Peoples participation:

It is experienced that, no scheme shall be effective if the local villagers are not involved in the implementation of the scheme itself. The villagers who are having a right on the NTFP items in the adjoining forest area are to be associated with the implementation of the scheme at all different levels. For that, Van Samarakhyana Samittee (VSS) is proposed to the guidelines of the government of Odisha issued on 3rd July'1993, the villagers are to be motivated and inspired and above all, explained the benefits they will be getting if plantation is protected by them.

3.10 Monitoring and execution:

The scheme shall be executed and monitored by the Divisional Forest Officer, Dhenkanal Division from time to time. To facilitate this, the User Agency shall bear the cost of infrastructure required and shall provide also the infrastructural facilities.

3.11 Total cost of the Scheme:

The total cost of the project will be Rs. **1,19,73,528/- or 1,19,73,600/-** which will be deposited by the User Agency in the State CAMPA Account as per the Demand Notice issued by the Divisional Forest Officer, Dhenkanal Forest Division.

Divisional Forest Officer,
Dhenkanal Division

Divisional Forest Officer
Dhenkanal Division

ANNEXURE-4

BASE COST NORM FOR COMPENSATORY AFFORESTATION (BLOCK PLANTATION) @ 1000 PLANTS PER HECTARE (18 MONTHS OLD SEEDLING)						
WAGE RATE Rs. 311/- PER MANDAY						
Sl. No.	**Items of work**	**Preferable period of Execution**	**No of Men days**	**Labour Cost (In Rs.)**	**Material Cost (In Rs.)**	**Total Cost (In Rs.)**
1	2	3	4	5	6	6
0th Year (Advance works) Per-Planting Operation						
1	Survey, Demarcation and Pillar Posting	Nov/Dec	2	622	0	622
2	Preparation of Treatment Map (Digital Map)	Nov/Dec	1	311	100	411
3	Site Preparation (Cleaning & removal of debrises)	Nov/Dec	12	3732	0	3732
4	Creation of 4.00 mt. wide Inspection Path	Feb/Mar	1	311	0	311
5	Alignment and stacking of pits	Feb/Mar	1	311	0	311
6	Digging of pits (45 cm × 45 cm × 45 cm)in hard and gravelly soil	Feb/Mar	40	12440	0	12440
7	Construction of Temporary Labour Shed, Drinking Water facility and First-Aid etc.	Jan/Mar	0	0	3500	3500
	Total		**57**	**17727**	**3600**	**21327**
1th Year/Planting Year						
1	Refilling of pits by altering the dugout soil of the pits, application of organic compounds/CDM/ FYM & mixing the same properly.	Jun/Jul	7.5	2332.50	5000	73322.50
2	Transportation of 18 months old Polythene bag seedling in hired truck/tractor from the Permanent/Mega nursery to planting site including loading & unloading.	Jul/Aug	0	0	6600	6600
3	Watering Polypot seedling at planting site	Jul/Aug	2	622	0	622
4	Conveyance of polypot seedling on head load from the stacking site to individual dugout pits within the planting site, applying insecticide, fertilizers & planting after scooping the soil with other applied materials & pressing the soil perfectly around the planted seedlings.	Jul/Aug	22.5	6997.50	0	6997.50
5	Cost of Fertilizer & Insecticide (a)NPK/Bio-Fertilizer @ 50 gms/plant as basal dose=50kg@ Rs.30/-per kg=Rs.1500.00 (b)Urea/Vermicompost/Mo Khata/any other fertilizer in two subsequent doses @ Rs.750.00 (c)Insecticide/Bio-pescticide @ 5gms/plant=5kg @ Rs.150/-per kg=Rs.750.00	Jul/Aug	0	0	3000	3000
6	Casualty Replacement @ 10% (100 nos.)	Jul/Aug	2.5	777.5	0	777.5
7	1st weeding & Manuring	Jul/Sept	12	3732	0	3732
8	2nd Weeding. Soil working (1mt. diameter around the plants) & Manuring	Oct/Nov	15	4665	0	4665
9	Fire line tracing (2m. wide fire line over 400m long)including maintenance of inspection path	Feb/Mar	3	933	0	933
10	Watch & Ward including watering per requirement	Aug/Mar	12	3732	0	3732
	Total		**76.50**	**23791.50**	**14600.00**	**38391.50**
2nd Year Maintenance						
1	Transportation of 100 seedling from Nursery to plantation site including loading, unloading & conveyance by Tractor @ Rs.6/-per seedling	Jul	0	0	600	600

2	Casualty replacement-10%	Jul	2.5	777.5	0	777.5
3	Cost of Fertilizer & Insecticide (a) Cost of Insecticide/Bio-Fertilizer @ 5 gms/plant =0.5 kg@ Rs.150/-per kg=Rs.75/- (b)Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer in two subsequent doses @ Rs.2800/-	July/Aug	0	0	2875	2875
4	Weeding (Complete weeding). Manuring & soil working.(1mt. diameter around the plants)	Sep/Oct	15	4665	0	4665
5	Fire line tracing 92m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
6	Watch & Ward including watering as per requirement	Feb/Mar	18	5598	0	5598
7	Maintenance of Temporary Labour Shed. Drinking water facility and First Aid etc.	Feb/Mar	-	0	1000	1000
	Total		**38.5**	**11973.5**	**4475**	**16448.5**
	3rd Year Maintenance					
1	Cost of fertilizer(Urea/NPK/Bio-fertilizer/Vermicompost/Mo Khata/any other fertilizer	July/Aug	0	0	2800	2800
2	Weeding (Complete weeding). Manuring & soil working.(1mt. diameter around the plants)	Sep/Oct	15	4665	0	4665
3	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
4	Watch & Ward including watering as per requirement	Apr/Mar	18	5598	0	5598
5	Maintenance of Temporary Labour Shed. Drinking water facility and First Aid etc.	Apr/Mar	0	0	1000	1000
	Total		**36.0**	**11196**	**3800**	**14996**
	4th Year Maintenance					
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward including maintenance of vegetative fencing	Apr/Mar	18	5598	0	5598
	Total		**21**	**6531**	**0**	**6531**
	5th Year Maintenance					
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward	Apr/Mar	18	5598	0	5598
	Total		**21**	**6531**	**0**	**6531**
	6th Year Maintenance					
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Pruning of branches, Singling out of multiple shoots	Jan/Mar	3	933	0	933
3	Watch & Ward	Apr/Mar	18	5598	0	5598
	Total		**24**	**7464**	**0**	**7464**
	7th Year Maintenance					
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward	Apr/Mar	18	5598	0	5598
	Total		**21**	**6531**	**0**	**6531**
	8th Year Maintenance					
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward	Apr/Mar	18	5598	0	5598
	Total		**21**	**6531**	**0**	**6531**

9th Year Maintenance						
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward	Apr/Mar	18	5598	0	5598
	Total		**21**	**6531**	**0**	**6531**
10th Year Maintenance						
1	Fire line tracing(2m.wide fire line over 400m long) including maintenance of inspection path	Feb/Mar	3	933	0	933
2	Watch & Ward	Apr/Mar	18	5598	0	5598
	Total		**21**	**6531**	**0**	**6531**

Year wise Abstract of cost Norm (showing seedling cost separately)

SL. NO	Year	No of Mendays	Labour Cost (In Rs.)	Material Cost (In Rs.)	Monitoring,Evaluation, Learning, Documentation and Other Contingency (5%) of (4+5)	Cost of Seedlings @ Rs.50.31 pre seedlings	Total Cost (In Rs.)
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**
1	0th	57.0	17727.0	3600.0	973.00	0.00	22300.00
2	1th	76.5	23791.5	14600.0	1918.50	55341.00	95651.00
3	2th	38.5	11973.5	4475.0	821.50	5031.00	22301.00
4	3th	36.0	11196.0	3800.0	749.00	0.00	15745.00
5	4th	21.0	6531.0	0.0	326.00	0.00	6857.00
6	5th	21.0	6531.0	0.0	326.00	0.00	6857.00
7	6th	24.0	7464.0	0.0	373.00	0.00	7837.00
8	7th	21.0	6531.0	0.0	326.00	0.00	6857.00
9	8th	21.0	6531.0	0.0	326.00	0.00	6857.00
10	9th	21.0	6531.0	0.0	326.00	0.00	6857.00
11	10th	21.0	6531.0	0.0	326.00	0.00	6857.00
	Total	**358.0**	**111338.0**	**26475.0**	**6791.0**	**60372.0**	**204976.0**

ANNEXURE-II

Cost Norms for creation of Compensatory Afforestation with Stabilization of Soil & Conservation of Moisture (1000)			
WAGE RATE Rs.311/-per day			
Sl.No.	**Item of Works**	**Preferable Peroid of Execution**	**Total Cost**
0th Year (Pre-Planting Operation)			
1	Nil		0
1th Year			
2	Soil Conservation measure structures like Staggered Trench, Percolation pit, Contour trench, Graded earthen bund, LBCD. Wire mesh LBCD, Sub surface Dyke & WHS as per the slope & site requirement on LS	Apr/Sept.	20,215
2th Year			
3	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
3rd Year			
4	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
4th Year			
5	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
5th Year			
6	Maintenance of SMC structures @ 15 % of initial year cost	Apr/Jul	3,032
	Total		**32,343,0**

Abstract

Sl. No.	Year	No. Person Days	Labour Cost @ Rs.311/- per day	Material Cost	Total Cost (Rs.)
1	0th	0.0	0.0	0.0	0.0
2	1th	0.0	0.0	20,215.00	20,215.00
3	2th	0.0	0.0	3,032.00	3,032.00
4	3th	0.0	0.0	3,032.00	3,032.00
5	4th	0.0	0.0	3,032.00	3,032.00
6	5th	0.0	0.0	3,032.00	32,343.00
	Total	**0.00**	**0.00**	**32,343.00**	**32,343.00**

Watering Model-W=ll		
Watering Provision to CA Plantation		
Diesel pump set with Bore Well (1 pump set+ Bore Well for 5 Ha. Plantation), Wage rate @ Rs.311/-		
Year of Installation (0th Year)		
1	Cost of Borewell	1,50,000
2	Cost of Diesel pump set 5HP	60,000
3	Diesel pump set & accessories like commander, Pipes, etc.	30,000
4	Water Storage	1,50,000
	TOTAL	**2,55,000**
Cost of Water per plant (2,55,000/5000)=Rs.51/- Cost of Water per Ha. =Rs.51,000/-		51,000
1st Year Watering		
1	Recurring expenditure i.e Diesel, Mobil, Engine Oil, etc.for pumping Water-21 × 1000=	21,000
2	Watering 1000 Plants (April-June & Nov-Mar-8 Months) @ 200 plants/MD with 7 days rotation 20 MD× 8 Months=160 MD×311=	31,100
	Total	**52,100**
2st Year Watering		
1	Recurring expenditure i.e. Diesel, Mobil, Engine Oil, etc. for pumping Water-21 × 1000=	21,000
	Maintenance Diesel pump set etc. @ 15 % of the installation cost.	7,650
2	Watering 1000 Plants (April-June & Nov-Mar-8 Months) @ 200 plants/MD with 7 days rotation 20 MD× 8 Months=160 MD×311=	49,760
	Total	**78,410**
3rd Year Watering		
1	Recurring expenditure i.e Diesel, Mobil, Engine Oil, etc. for pumping Water-21 × 1000=	21,000
	Maintenance Diesel pump set etc. @ 15 % of the installation cost.	7,650
2	Watering 1000 Plants (April-June & Nov-Mar-8 Months) @ 200 plants/MD with 7 days rotation 20 MD× 8 Months=160 MD×311=	49,760
	Total	**78,410**
4th Year Watering		
1	Recurring expenditure i.e Diesel, Mobil, Engine Oil, etc.for pumping Water-21 × 1000=	21,000
	Maintenance Diesel pump set etc. @ 15 % of the installation cost.	7,650
2	Watering 1000 Plants (April-June & Nov-Mar-8 Months) @ 200 plants/MD with 7 days rotation 20 MD× 8 Months=160 MD×311=	49,760
	Total	**78,410**
5th Year Watering		
1	Recurring expenditure i.e Diesel, Mobil, Engine Oil, etc. for pumping Water-21 × 1000=	21,000
	Maintenance Diesel pump set etc. @ 15 % of the installation cost.	7,650
2	Watering 1000 Plants (April-June & Nov-Mar-8 Months) @ 200 plants/MD with 7 days rotation 20 MD× 8 Months=160 MD×311=	49,760
	Total	**87,410**

Abstract					
Sl. No	**Year**	**No. Person days**	**Labour cost @ Rs. 311/-per day**	**Material Cost**	**Total Cost (Rs.)**
1	0th Year	0.0	0.00	51000.00	51000.00
2	1st Year	100.0	31100.00	21000.00	52100.00
3	2nd Year	160.0	49760.00	28650.00	78410.00
4	3rd Year	160.0	49760.00	28650.00	78410.00
5	4th Year	160.0	49760.00	28650.00	78410.00
6	5th Year	160.0	49760.00	28650.00	78410.00
	Total	**740.0**	**230140.00**	**186600.00**	**4,16,740.00**

Fencing Model-F-III

Estimate for Solar Fencing (400 Pillars/Rkm)		
WAGE RATE Rs-311/-PER DAY		
0TH Year (PPO)		
a)	Earth Excavation of foundation in hard soil with initial lead of 50 mtr and lift of 1.5 mtr and finishing the base =400 nos. ×0.45 mtr length ×0.40 mtr depth ×0.25 mtr width =18.00 cum @ Rs.133.73/-per Cum=	2,407.00
b)	Fixing of Pillars with 4cm Hg metals in C.M 1.4.8 Pit size 400 NOS.×0.45mtr×0.40 mtr×0.25mtr=18.00cum Deduct 1/3rd but of pillars i.e 6cum 18 cum-6cum=12 cum×Rs.3755.94 per cum	45,071.00
c)	Construction of RCC pillars (1:2:4) cement concreate works of 400 nos. (I)Base of the pillars of the size (Under ground) 0.35 length ×0.075 in width ×0.2m hight×400 nos. =2.1cum. (II)Pillar above ground size. 400×1.5mtr. ×(0.1mtr+0.075mtr/2)×0.075 mtr=3.94 cum Total 6.04 cum Cost of 400 pillars=6.04 cum ×@Rs.5486.77	33,140.00
d)	Cost of rods including cutting, bending & binding of 6.04 cum ×0.09 quintals M.s rod=5.436 quintals @ Rs.11621.44	63,174.00
e)	Contingency including curing, stacking and provision of insulator hooks etc on L.S	14,800.00
f)	Stand wire: 5 steps. 1000×5=5000 Rmt 5000 Rmt× 0.375 kg=1875 kg =1875 kg×@ Rs.85/- kg	1,59,375.00
g)	Labour for straightening of the stand wire, fixing and clipping with pillars-50 MD per KM @ 311/-per.	15,550.00
h)	Carriage of RCC pillars and stand wire from Range Officer Campus to work site @ Rs.1000 per TLD and cost of loading and unloading with 5 km distance approximately-8 TLD @Rs.800/-TLD	14,400.00
	Total	**3,47,917.00**
	Cost of one energizer for each 3 km length	**55,000.00**
	Total	**4,02,917.00**
	Cost/Ha.(250 Rmt)-4,02,917/4=1,00,729/-	
1st Year Maintenance		
	Nil	0.0
2nd Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
3rd Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
4th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
5th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
6th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
7th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
8th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
9th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00
10th Year Maintenance		
	Maintenance cost @ 5% of initials year cost of installation	5,036.00

Abstract

Sl No.	Year	No. Person days	Labour cost @ Rs. 311/-per day	Material Cost	T otal Cost (Rs.)
1	0th Year	0.0	0.0	1,00,729.00	1,00,729.00
2	1th Year	0.0	0.0	0.0	0.00
3	2nd Year	0.0	0.0	5,036.00	5,036.00
4	3rd Year	0.0	0.0	5,036.00	5,036.00
5	4th Year	0.0	0.0	5,036.00	5,036.00
6	5th Year	0.0	0.0	5,036.00	5,036.00
7	6th Year	0.0	0.0	5,036.00	5,036.00
8	7th Year	0.0	0.0	5,036.00	5,036.00
9	8th Year	0.0	0.0	5,036.00	5,036.00
10	9th Year	0.0	0.0	5,036.00	5,036.00
11	10th Year	0.0	0.0	5,036.00	5,036.00
	Total	**0.0**	**0.0**	**1,46,053.00**	**1,46,053.00**

Matrix for Model-l A Conventional CA Plantation (AR) 1000 PLANTS PER Ha.

Year→	2022-23 (Pre-Plantation Operation)	2023-24 (1st Year Creation)	2024-25 (2nd Year) Maintenance	2025-26 (3rd Year) Maintenance	2026-27 (4th Year) Maintenance	2027-28 (5th Year) Maintenance	2028-29 (6th Year) Maintenance	2029-30 (7th Year) Maintenance	2030-31 (8th Year) Maintenance	3031-32 (9th Year) Maintenance	2032-33 (10th Year) Maintenance	Total per Ha.
Cost of Plantation per Ha.	23,415	10,54,56	25,814	19,137	8,752	9,189	11,027	10,130	10,638	11,169	11,727	2,46,454

Matrix for (SMC)

Year→	2022-23 (Pre-Plantation Operation)	2023-24 (1st Year Creation)	2024-25 (2nd Year) Maintenance	2025-26 (3rd Year) Maintenance	2026-27 (4th Year) Maintenance	2027-28 (5th Year) Maintenance	Total per Ha.
Cost of SMC per Ha.	0	22287	3509	3686	3869	4064	37415

Matrix for Fencing Model-lll (Solar Fencing with RCC Pillars)

Year→	2022-23 (Pre-Plantation Operation)	2023-24 (1st Year) Creation	2024-25 (2nd Year) Maintenance	2025-26 (3rd Year) Maintenance	2026-27 (4th Year) Maintenance	2027-28 (5th Year) Maintenance	2028-29 (6th Year) Maintenance	2029-30 (7th Year) Maintenance	2030-31 (8th Year) Maintenance	2031-32 (9th Year) Maintenance	2032-33 (10th Year) Maintenance	Total per Ha.
Cost of Fencing per Ha.	105765	0	5830	6122	6427	6748	7085	7440	7812	8203	8613	170045

Matrix for Watering Model-W-ll (Diesel Pump set Fitted with Bore well per Ha.

Year →	2022-23 (Pre-Plantation Operation)	2023-24 (1st Year Creation)	2024-25 (2nd Year) Maintenance	2025-26 (3rd Year) Maintenance	2026-27 (4th Year) Maintenance	2027-28 (5th Year) Maintenance	Total per Ha.
Cost of Watering per Ha.	53550	57440	90761	95310	100072	105076	502209

P.T.O.

TOTAL FINANCIAL OUTLAY OF THE 10 YEARS PLANTATION PROGRAMME WITH MAINTENANCE ONE TIME COST NORM

ABSTRACT

Sl. No	Item	Base Cost Per Ha. (Rs.)	Total Cost Per Hectare for 10 years plantation from 2024-25 to 2034-35(Rs.)	Total cost of 12.523 Ha. from 2024-25 to 2034-35 (Rs.)
1	Block Plantation	2,04,976/-	2,46,454/-	30,86,343/-
2	SMC	32,343/-	37,415/-	4,68,548/-
3	Fencing	1,46,053/-	1,70,045/-	21,29,474/-
4	Watering	4,16,740/-	5,02,209/-	62,89,163/-
	Total	**8,00,112/-**	**9,56,123/-**	**1,19,73,528/- or 1,19,73,600/-**

Divisional Forest Officer,
Dhenkanal Division.

Divisional Forest Officer
Dhenkanal Division