Full Title of the Project: **Diversion of 9.7884 hac (7.5146 hac. in Gurugram) of hac. of forest land for construction of new road Re-alignment of Rewari-Sohna-Palwal road NH-919 old NH-71B from km 47.100 to 49.350 in Sohna Hilly Portion on EPC Mode in the State of Haryana, under Forest Division& Distt. Gurugram.**

File No. : **FP/HR/ROAD/155111/2022**
Date of Proposal: ----------

CHECK LIST SERIAL NUMBER: - 18
"SCHEME FOR COMPENSATORY AFFORESTATION"

Detail scheme for Compensatory Afforestation in lieu of proposal for diversion of **9.7884 hac(7.5146 hac. in Gurugram and 2.2738 hac. in Nuh)**of forest land **for Construction of new realignment of Rewari-Sohna-Palwal road NH 919 (OLD NH-71B) from 47.100 to 49.350 in Sohna Hilly Portion on EPC mode, under Forest Division& Distt. Gurugram.**

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1. **Details of non-forest land: -**
   District: **-Gurugram** Tehsil: **Sohna**
   Forest Division: - **Gurugram** Range**: Sohna**
   Block/Compt/Survey No: Mandawar & Sahjawas (Area under Aravali Planation Project)
   Area to be afforested: = 2* 9.7884 = 19.5768ha
   GPS Reading: - 28°18'32.04"N 77°09'52.92"E, 28°18'20.16"N 77°09'52.20"E,

2. **Description of the Area:**
   - **Whether the site selected for Compensatory Afforestation is a land bank (Yes or No):** No
   - **If the CA site is other than the land bank, reasons are given:** There is no land bank in District Gurugram.

Rule 13 (1) of Van (Sanrakshan Evam Samvardhan Adhiniyam) Rules, 2023 provides that *"...An user agency shall provide land which is neither notified as forest under the Indian Forest Act, 1927 (16 of 1927) or any other law nor managed as forest by the Forest Department and it shall also bear the cost of raising Compensatory Afforestation over such land and the requirement of Compensatory Afforestation land shall be as per the Schedule II annexed to these rules..."*
Schedule II provides that

Sl. No.	Description of Compensatory Afforestation Land	Size of Compensatory Afforestation land as compared to forest land to be diverted for non-forest purpose
(1)	(2)	(3)
1.	Land to which provisions of the Act are not applicable.	Equivalent
2.	Land recorded as 'forest' in Government record but does not fulfill all of the following conditions: - (a) notified as forest under any other law for the time being in force (b) managed as forest-by-Forest Department. *(This dispensation is allowed to proposals of Central Government and State Government or Union territory Administration only.)*	Two times.

Further, Rule 13(3) d of Van (Sanrakshan Evam Samvardhan Adhiniyam) Rules, 2023 **(Guidelines & Clarifications)** reads as

(d) " land falling under section 4&5 of PLPA, 1900 gair mumkin Pahar, gair mumkin darkhtan, in the state of Haryana, Panjab and Himachal Pradesh, which are not under the management and administrative control of the state Forest Department, provided that such lands will be transferred and mutated in the name of state forest Department, unless as specified and agreed to the State Forest Department to notify them under Indain Forest Act 1927 (16 of 1927) without transferring them to the state Forest Department, on case to case basis"

Accordingly, The land in the revenue estate of Mandawar & Sahjawas Village, which is covered under Aravali Plantation Project and therefore is in the category of forest lands not under management and/or administrative control of the Forest Department and on which the provisions of FC Act, 1980 are applicable by virtue of orders of Hon'ble Supreme Court, has been identified and proposed to be notified as Protected Forest under the provisions of Indian Forest Act, 1927 for the purpose of fulfilling Compensatory Afforestation obligation by the User Agency.

- **In case of Non-Forest area identified for CA, then what is the distance of CA site from adjoining forest boundary:** The CA is proposed to be carried out in Mandawar, the land which was covered under Aravali Plantation Project, which is deemed as forest by virtue of the orders of Hon'ble Supreme Court of India.
- **Soil type:** Huge boulders & sand stones on Aravalli Hills and Hill Slopes and sandy loam to sandy in foothills. The proposed areas is characterized by poor soil depth.
- **Topography:**
  a. Hilly/Undulating/Plain :Hilly
  b. Slope: Steep/Medium/Gentle : Gentle slope.
- **Whether the area is bearing any root stock of vegetation:** Rootstock at some places is available; the area has degraded vegetation of Aravallisand extensive bushes of *Prosopis, juliflora.*

3.<u>Plantation Model:-</u>

Rule 13(1) , para 2 of Van (sanrakshan Evam Samvardhan) Rules, 2023 provides that

"...Provided further that if the non-forest land being made available for Compensatory Afforestation already bears vegetation of 0.4 canopy density or more, there shall not be an additional requirement of planting of trees on such land but a programme for improvement of the forest crop shall be implemented by the Forest Department in a time-bound manner...."

The land proposed to be notified as P.F. for compensatory afforestation was covered under Aravali Plantation Project. On account of previous plantation efforts carried out under the Aravali Plantation Project, the land is covered by *Prosopis juliflora* which is not a native species of Aravali and has suppressed growth and regeneration of native species in the areas. However, *Prosopis juliflora* is a leguminous plant is a good nitrogen fixer in the soil. It would now be appropriate to assist the present vegetation with conservation and introduction of native spp. so that the ecological succession reaches the next seral stage and ultimately the climax over the years.

Therefore, the Compensatory Afforestation programme to proposed to be implemented shall require that **existing vegetation of *P.juliflora* to be systematically thinned/pruned/singled/removed in phased manner** to create open spaces and allow growth of

native species suppressed by extensive overgrowth of mesquite. With thinning/pruning/singling mesquite shrub-form trees would also be encouraged to grow in tree form. Canopies of Prosopis juliflora will be opened to allow sunlight to reach new planted saplings and the chopped canopies are used as fencing material to protect saplings from herbivores. Growth in Prosopis juliflora and L. camara are to be controlled by using Cut Root-Stock Method. **Native species saplings will be planted and will be assisted with moisture conservation measures like trenches.** This will ensure conserving biodiversity of the area and enriching by planting Aravali species which are not readily germinating in this area. Planting of trees species shall be **accompanied by planting of native shrubs and climbers along with sowing/seeding of grasses.** The plantation activities shall be augmented with sowing of seeds in trenches/Tappa sowing and casting of seeds/seedballs.

The afforestation efforts shall focus on the keystone species which is *Anogeiuss pendula* along with its associates viz. Ronj, Khairi, Hingot, Chamrod, Barna, Hins etc. for the Aravali hills in Haryana.
The project shall also include ancillary activities necessary for the success of Afforestation and ecological restoration of Aravali Landscape and include measures for protection as well as measures for effective participation and engagement of community. Further, strengthening and capacity building of both forest department as well as community are also included.

The Plantation of native species shall be carried out with Pit-cum-Trenches method. Staggered trench along the contour is the excavation of trenches along a uniform level across the slope of the land in upper reaches of the catchment areas. Trenches along the contour decrease the length of slope into smaller sections which retard the rate of runoff and soil erosion. Water collected in these trenches increase the moisture regime and supports the vegetation growth. Contour trenches breaks the velocity of runoff and water percolates through the soil slowly and travels down which recharge ground water table. They are used both on hill slopes as well as table tops and foot hills having gentle slope for soil and moisture conservation and afforestation purposes. They can also be constructed in all slope gradients irrespective of rainfall conditions and varying soil type and depths. The Staggered trenches of size 2.0 m x 0.45m x 0.45m will be dug and placed in such a way that they face the vacant spaces between two trenches in both the upper and lower trench rows, thus intercepting the runoff from vacant space. It is proposed that 350 Staggered Trenches will be dug out in an area of one hectare. A planting pit (45cmx45cmx45cm) will be dug 15 cm away from the trench. The Plantation of suitable species will be carried out in this area. Plantation is an important factor as it not only holds the soil preventing erosion but also helps the water to percolate through the soil. The dug-out soil will be deposited on the lower slop and seed sowing will be done. The seeds of Khairi, Ronj, dhak, berietc, will be sown on dug out soil before the monsoon season so that a vegetative barrier may be created which will helps in reducing soil erosion and effectively result in runoff interception. Summary of plantation model adopted for restoration of degraded/open forest is as under:

- **200 cm x 45cm x 45 cm trenches along with the pit for planation to help water retention**
- **350 pit cum trench in 1 Ha Area**
- **In addition, 350 shrub s shall also be planted in pits along the trenches**
- **Mesquite removal, singling/thinning to create space for the native species**
- **Seeding/sowing of shrubs and grass to be included in the model to develop vegetational understory**
- **Mesquite shrubs removed to be used for erecting temporary fence to protect planted plants from being grazed.**

Compensatory Afforestation is not mere planation of tree species. The Afforestation effort shall include eco restoration of degraded forest patches in the area with plantation of not only native tree species but also native shrubs, herbs and climbers for creation of multistory vegetation. Parts of the area with substantial tree cover will be assisted in rejuvenation /regeneration with planation of

native species in the gaps. The landscape will be enriched with planation, sowing and seed dispersal of native shrubs and grasses. The approach that is to be adopted shall be holistic revival of landscape with all ecosystems namely tree, shrubs, grasslands and wetlands.

Encroachments along forests are commonly observed near habitations for carrying out activities like unauthorized constructions, agriculture, herding of cattle, stacking of dung cakes & fire wood, parking etc. In some areas there is very heavy lopping & felling for fuel wood by local villagers in winter season. The entire area is also characterized today by intense biotic pressures. Therefore, it is proposed to **construct permanent stone wall fencing around the areas notified as P.F.** The stone wall fencing shall prevent any encroachment and protect from the biotic pressure viz cattle grazing.

4. <u>Schedule of Plantation Programme:-</u>

The Plantation cost is calculated for planting of **Plants in trench and pit method.** The wages rate of is assumed at Rs 445/- per day in year 2023-24. 350 trenches pits would be dug up in each 1 hectare of land. The trenches would aid in the moisture retention in the area and 350plants and 350 shrubs would be planted along the trenches in 1 ha of land in the pits. Existing shrubs of mesquite would be trimmed/pruned and trained for to be developed in the tree form. Additionally grass seeds would cast in the area for enrichment of area as habitat for wildlife. Per hectare cost of planation is as under:

Sr. No.	Year	Cost/Ha. in Rs (wagerate@445)	Cost per Plant (wagerate@445)
1	1st Year Plantation	₹ 3,80,827	₹ 544.04
2	2nd Year Maintenance	₹ 55,510	₹ 79.30
3	3rd Year Maintenance	₹ 40,136	₹ 57.34
4	4th Year Maintenance	₹ 40,064	₹ 57.23
5	5thYear Maintenance	₹ 20,589	₹ 29.41
6	6th Year Maintenance	₹ 20,589	₹ 29.41
7	7th Year Maintenance	₹ 20,589	₹ 29.41
8	8th Year Maintenance	₹ 20,589	₹ 29.41
9	9th Year Maintenance	₹ 20,589	₹ 29.41
10	10th Year Maintenance	₹ 20,589	₹ 29.41
	Total Cost.	₹ 6,19,482	₹ 884.97

Detail given in Annexure-I.

The Compensatory afforestation planation shall also need to be fenced to protect against encroachmentand degradation due to anthropogenic pressure. The **cost of erecting fencing is estimated at₹ 1,15,17,993 per running kilometre.**

Detail given in Annexure-II

Particularsof the CA requirement for the Project

- Area to be diverted**: 9.7884 hac (7.5146 hac. in Gurugram and 2.2738 hac. in Nuh)**
- Area to be planted (One/two/ten times the diverted area) = **19.5768Ha (two times the diverted area)**
- No. of trees to be felled= **4**
- No. of Plants to be damaged=**6700**
- Number of Plants to be planted = **350 Plants and 350 Shrubs will be planted, Plantation would be augmented by seed sowing by tappa method, grass seed casting.**

Year-wise Cost of Plantation @ wage rate Rs. 445/- per day is tabulated below

SN.	Description	Plantation Cost		
		Cost Rs./Ha	Area (ha)	Total Cost
1	1st Year Plantation	₹ 3,80,827	19.5768	₹ 74,55,371
2	2nd Year Plantation	₹ 55,510	19.5768	₹ 10,86,717
3	3rd Year Plantation	₹ 40,136	19.5768	₹ 7,85,733
4	4th Year Plantation	₹ 40,064	19.5768	₹ 7,84,325
5	5th Year Plantation	₹ 20,589	19.5768	₹ 4,03,066
6	6th Year Plantation	₹ 20,589	19.5768	₹ 4,03,066
7	7th Year Plantation	₹ 20,589	19.5768	₹ 4,03,066
8	8th Year Plantation	₹ 20,589	19.5768	₹ 4,03,066
9	9th Year Plantation	₹ 20,589	19.5768	₹ 4,03,066
10	10th Year Plantation	₹ 20,589	19.5768	₹ 4,03,066
		₹ 6,19,482		**₹ 1,21,27,476**

Compensatory Afforestation Charges proposed to be levied are summarized below:-

Sr. No.	Description	QTY	Rate	Total Amount(Rs.)
A	**Compensatory Afforestation Charge**	6852 plants& 6852 shrubs in 19.5768 Ha. land	884.97 per plant	₹ 1,21,27,476
B	**Supervisory/Overhead/Miscellaneous Charges**		10% On the total CA Charges	₹ 12,12,748
C	**Soil & Moisture Conservation Charges**		30% of Total CA	₹ 36,38,243
D	**Felling Charges Volume=**	6.37 m^3	Rs.1200/- per m^3	₹ 7,644
E	**Fencing**	6.2 RKM	₹ 1,15,17,993 per RKM	₹ 7,14,11,557
F	**Other Charges**			
	One room inspection hut for protection watcher	1	L.S	₹ 5,00,000
	Solar Pump	1	L.S	₹ 10,00,000
G	**Exigency Charges 2% of the Total Cost of (A+B+C+D+E+F)**			**₹ 17,97,953**
TOTAL (A+B+C+D+E+F+G)				**₹ 9,16,95,620**

5. **Technical details:-**

Technical details of Compensatory Afforestation Scheme are as follows: -

a) General Details: -**Plantation will be carried out in 19.5758 Ha. of land identified in Aravalli Plantation Area in Mandawar. The Plantation will be carried out with pit cum trench model. A wall fence shall be erected around the Plantation area.** 350 trenches would be dug up in each 1 hectare of land. The trenches would aid in the moisture retention in the area and 350 plants of native species and 350 shrubs

would be planted in 1 ha of land in the pits alongside the trenches. Existing shrubs of mesquite would be trimmed/pruned and trained for to be developed in the tree form. Additionally grass seeds would cast in the area for enrichment of area as habitat for wildlife.

b) Spacing: - **Gap plantation along the contoured trenches**
c) Species: - **Kikar, Neem, Ronjh, Khairi, Dhak, Papri etc.**
d) Plantation Method: - **Pit-Cum Trench method**
e) Soil and Moisture Conservation Works: - **Nil**
f) Protection (Fencing, Watch man, People's Participation etc.): - Wall**Fencing**
g) Proposed Monitoring Mechanism: **-Checking of plantation works will be done by RFO, DCF, CF, and DCF, (M&E)**
h) Any other information: **-Nil**

Date.....
Place :- Gurugram

Divisional Forests Office
Gurugram