

STATUS REPORT PREPARED IN COMPLIANCE OF ORDER DATED 29/08/2022 PASSED BY HON'BLE NGT, WESTERN ZONE BENCH, PUNE IN APPEAL BEARING NO.32/2022(WZ) AND TO ASCERTAIN THE POSITION OF THE SPOT AS TO WHETHER RESTITUTION HAS ALREADY TAKEN PLACE NATURALLY OR NOT - APPELLANT MR. SUVARN RAJARAM BANDEKAR

1.0 Background

In the appeal No. 32/2022, the order dated 01.07.2022 has been challenged whereby application/representation made by the Appellant, seeking restoration of the Survey Nos. 16/4 and 16/4A of Village Sernabatim, district South Goa has been rejected, where earlier a road had been constructed on sand dune which is said to have been demolished by order dated 24.08.2011 passed by the Goa Coastal Zone Management Authority (GCZMA) and the same remained upheld upto the level of Hon'ble High Court.

The Learned Counsel for the Appellant had moved an application before the Hon'ble National Green Tribunal (WZ) being Original Application No. 480/2018, seeking restoration wherein the Hon'ble NGT had passed order dated 13.12.2018 permitting the Appellant to withdraw the original application with liberty to seek redressal before the appropriate forum.

The Learned Counsel for the Appellant has not annexed the Original Application No. 480/2018 but it has been apprised to the Hon'ble National Green Tribunal (WZ) that in that application it was prayed that the GCZMA be directed to ensure restoration and damages be realized from the Project Proponent of the above-mentioned survey numbers.

Pursuant to the order of the Hon'ble NGT dated 13.12.2018, the Learned Counsel for the Appellant has filed the present Appeal seeking quashing of the impugned order dated 01.07.2022 and direction to Respondent No.3 (a to h) to jointly and severally carry out restitution/restoration of the damaged property of the Appellant and reverse the damage to the environment by reconstructing the damaged sand dune in the above-mentioned survey numbers.

The Hon'ble NGT had made the following observations on the impugned order wherein the representation of the Appellant dated 14.01.2019 has been rejected:-

"The First such report was prepared by Team of Expert Members of GCZMA which is dated 17.02.2014. The Expert Members GCZMA in the said report dated 17.12.2014 concluded as follows: -

- 1) *This stretch that was dug up can be restored to its original morphology by simply transferring back the dug-up sand.*
- 2) *Planting of ipomoea creepers is expected to restore the profile of the dune strip to its original state within 1-2 years, provided the area is not disturbed further.*



Dr. Badarees KO (NCSCM)



Shri. Flaviano Jose Miranda



Shri. Devendra Gankar

The order dated 29/08/2022 of the Hon'ble NGT states that GCZMA again solicited reports from the Goa State Biodiversity Board (GSBB), Saligao along with Expert Member GCZMA, which are instrumental in matter of sand dune restoration as well as other forms of restoration work allotted by this Authority. The Expert Member GCZMA further inspected the site on 28.10.2020 along with officials of GSBB. On the basis of report, the Expert Member GCZMA concluded as follows:-

- (i) *It was observation during the site inspection that the entire stretch of road is fully covered with vegetation including bushes and shrubs except a small portion of it being seen free from natural vegetation is seen.*
- (ii) *Over the year, since the area was kept fallow and untouched, sand/mud deposition has taken place over which growth of vegetation is seen.*
- (iii) *Restoration of sand dune for the demolished road surface Sernabatim beach is seen happening by a natural process evidences are seen on the ground that herbaceous growth is taking place. Keeping the undisturbed and free from human intervention except few scientific coastal dune protocols such as platting native coastal vegetation may in long run facilitate coastal stabilization process.*
- (iv) *Hence, it is recommended that the area may be allowed to reclaim naturally as far as possible and by planting native dune vegetations. Any debris or physical barriers created in the area must be removed and facilitate natural recovery of coastal dunes under the scientific guidance and supervision of Goa State Biodiversity Board (GSBB). The cost towards scientific consultancy of GSBB shall be borne by the project proponent.*
- (v) *Ecological restoration aims recreate, initiate, or accelerate the recovery of an ecosystem that has been disturbed. The practice of ecological restoration includes wide scope of projects including: erosion control, reforestation, removal of non-native species and weeds, re-vegetation of disturbed areas, day lighting streams, reintroduction of native species, as well as habitat and range improvement for targeted species etc. in the present case, natural restoration has occurred over a period of time since June, 2012.*

The order dated 29/08/2022 of the Hon'ble NGT states that the Authority observed that in the report of the Goa State Biodiversity Board (GSBB), Saligao it has been clearly observed that there was natural restoration which has occurred over time. It is recorded that the said area and road was seen to have considerable vegetation including bushes, shrubs & sand dune specific vegetation and eco system features were also seen emerging including butterflies and birds and that the Expert Member GCZMA in his report has concurred with above findings of Goa State Biodiversity Board (GSBB), Saligao.



Dr. Badarees KO (NCSCM)



Shri. Flaviano Jose Miranda



Shri. Devendra Gankar

The order dated 29/08/2022 of the Hon'ble NGT further states that Goa State Biodiversity Board (GSBB), Saligao in its report has clearly observed that best strategy would be to allow nature to take over and allow the sand dune to restore itself. The said finding further was seconded by the Expert Member GCZMA who noted that natural process has started at the said site.

The Authority found considerable merit in the approach/strategy of Goa State Biodiversity Board (GSBB), Saligao along with the Expert Member GCZMA, as in the preset matter natural restoration of the sand dune has occurred over time."

The order dated 29/08/2022 of the Hon'ble NGT further states that from the above observation in the impugned order, it is apparent that according to the GCZMA the land stands restored already as it has happened naturally.

The order dated 29/08/2022 of the Hon'ble NGT further states that in view of the above, a committee consisting of the following institution/authority is formed to ascertain the position of the spot as to whether restitution has already taken place naturally.

- (i) One member of National Center for Sustainable Coastal Management, Chennai (NCSCM);
- (ii) One Member of Goa Coastal Zone Management Authority(GCZMA)

Accordingly, a Joint Committee was formed with the following members from NCSCM and GCZMA. Where GCZMA as a nodal agency for coordination.

1. Dr. Badarees KO (Scientist, NCSCM)
2. Shri. Flaviano Jose Miranda (E.M GCZMA)
3. Sri. Devendra Gaonkar (F.S. GCZMA)

The committee conducted the site inspection in the presence of the Appellant and the Respondents/Private Respondents/Complainant, on 29/08/2022 at 11 AM. The details of members present during field visit is given as **Annexure I**.

Dr. Badarees KO (NCSCM)

Shri. Flaviano Jose Miranda

Shri. Devendra Gaonkar

ANNEXURE I

GOA COASTAL ZONE MANAGEMENT AUTHORITY

C/o Department of Environment, (Govt. of Goa)
4th Floor, Dempo Tower, Patta Plaza,
Panaji-Goa 403001

PROCEEDINGS OF SITE INSPECTION

FILE NO:- GCZMA/SHL/SERNA/12-13/01

DATE: 19/10/2022

SUB: Site Inspection in terms of order dated 29/08/2022
Passed by Hon'ble National Green Tribunal in Appeal
No. 32/2022 filed by Mr. Suvarna Bandekar

REF:

Village: Sernabatem Taluka: Salcete Survey: 16 Sub.Div.No. 4 & 4A

Parties/Officers Present:-

- ① Shri. Flaviano Jose Miranda (E.M GCZMA) *[Signature]*
- ② Dr. Badarees K.O. (Scientist NCSCM) *[Signature]* 19/10/2022
- ③ Shri. Devendra Gaonkar (F.S GCZMA) *[Signature]*
- ④ Prof. M.R. Barhan on behalf of appellant
- ⑤ Ad. S. Henriquez on behalf of appellant *[Signature]*
- ⑥ Mr. Jovell Candozo (Respondent) *[Signature]*
- ⑦ Ad. T. Kerkar (Advocate for Suvarna Bandekar) *[Signature]*

Brief description of proceedings:-

Site inspection is commenced at 11:00 am in the presence of above parties/officials. The inspection was carried out as per order in appeal No. 32/2022 (W-2) of Hon'ble National Green Tribunal Bench Zone 1 Pune date of hearing on 29/08/2022. The site inspection is concluded at 12:15 P.M.

[Signature] *[Signature]* *[Signature]* *[Signature]*
19/10/22 19/10/2022

[Signature]

Dr. Badarees KO (NCSCM)

[Signature]

Shri. Flaviano Jose Miranda

[Signature]

Shri. Devendra Gaonkar

2.0 Issues before the Committee

Issues raised as mentioned in Hon'ble NGT order, are as follows:

The Committee is directed to visit the place and submit a factual report on the position of the spot as to whether restitution has already taken place naturally. The Joint committee went into above issues and prepared a report and attached as **Annexure II**.

ANNEXTURE II

1.0 Location

The project site is situated at Sernabatim Village, Salecete Taluk of South Goa District, Goa, within the Latitude, Longitude of 15°15'51.684"N, 73°55'2.294"E (Fig. 1: Location Map).



Figure 1: Location map

[Signature]

Dr. Badares KO (NCSCM)

[Signature]

Shri. Flaviano Jose Miranda

[Signature]

Shri. Devendra Gankar

2.0 Coastal Sand Dunes and formation

The size and morphology of coastal dunes is dependent on the complex interaction between controlling winds, sediment supply, and the geomorphology of the nearshore and beach environment. At the most basic level, dunes can be divided into those that form from the direct supply of sediment from the beach face (primary dunes), and those that form from the subsequent modification of primary dunes (secondary dunes). In the present study area, the coastal dune is very close to shore and is classified as Primary dunes.

2.1 Primary Dunes

Davies (1980) defined "primary dunes" as dunes with a sand supply derived primarily from the beach and "impeded primary" dunes as those in which vegetation plays a major role (i.e., impedes downwind transport) in the development of the dune. They are the dunes closest to the shoreline, dynamically linked to beach processes, and significantly influenced by wave action as both a constructional and erosional force.

2.1.1 Foredunes and incipient foredunes

Foredunes develop at the rear of the backshore environments (landward of the active beach) and generally comprise shore-parallel, convex, symmetrical to asymmetrical dune ridges.

Incipient foredunes are the initial dunes which accumulate above the high spring tide mark and form due to the presence of some roughness element at the rear of the beach that rapidly reduces wind flow velocities, resulting in sediment accumulation (Hesp 1999, 2002, Sloss *et al*). The incipient dunes may survive and grow to become a larger established foredune, or become relict and stable as a new incipient foredune develops to seaward (Hesp 1999, 2002).

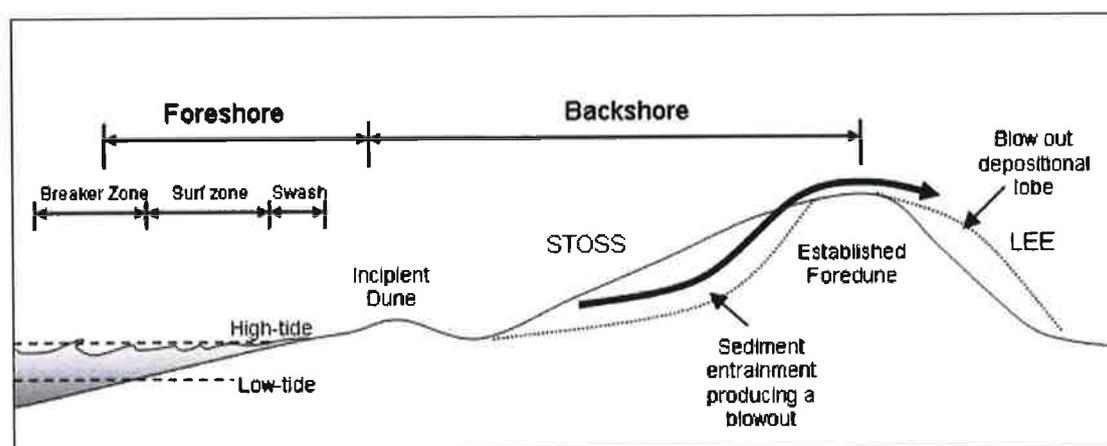


Fig. 2: The beach-dune system showing the nearshore zone back-beach environment and the formation of dunes.

Dr. Badarees KO (NCSCM)

Shri. Flaviano Jose Miranda

Shri. Devendra Gankar

If the sediment supply is adequate, a new incipient dune may form seaward of the established foredune, resulting in the established foredune being relatively isolated from the sediment supply. The isolation of the dune, coupled with coastal progradation, can result in the development of successive foredunes that may eventually form a wide foredune plain.

3.0 Field Observations: The following scenarios are observed during the field investigation.

- a) Presence of an unmetalled/mud-road, which is utilising at present, is separated from the foredune under restitution and the beach.
- b) Remnants of debris/mud above the area under restitution
- c) The area under restitution is naturally covered with scrubs and grass.
- d) The presence of incipient dune or area for sediment supply is about 20 to 25m away from the restitution area which is separated by an unmetalled / mud road.

4.0 Summary and Conclusion

- a) Naturally restitution is not possible due to the presence of the existing unmetalled/mud road very adjacent to the area under restitution because of the lack of sediment supply from beach face naturally by wind.

To recover the natural sand dune associated environment, and morphology which were present earlier, the following steps need to be taken which may be a long-term process.

- 1) Removal of existing remnants of debris and refilling with sand.
- 2) Planting of sand dune stabilisation plants such as *Spinifex sericeus*, *Saccharum spontaneum*, *Ipomoea pes-caprae*, *Physalis minima*, etc
- 3) Protecting the area from anthropogenic activity.

The above procedure only substantiates the sand dune environment. A map showing the site along with existing mud road in front of the area of restitution with field photographs is enclosed for reference as Fig. 2.



Dr. Badarees KO (NCSCM)



Shri. Flaviano Jose Miranda



Shri. Devendra Gankar

Fig. 2: Map showing the area of restitution along with existing unmetalled / mud road seaward side of the area of restitution

538

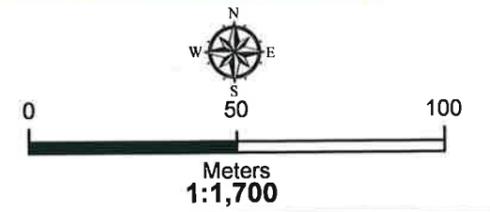
Existing Remnant Mud Road above the Damaged Sand Dune



Towards North - Grass and Scrubs above the Damaged Sand Dune



A View from Beach Side



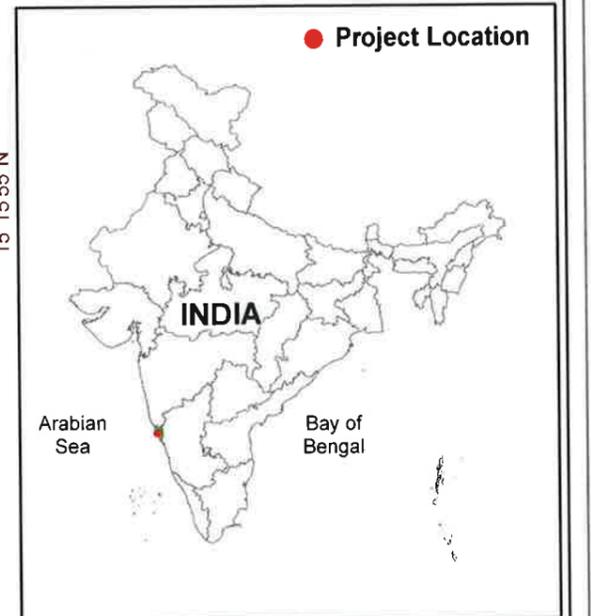
Legend

- Road
- Unmetalled Road
- Survey Plot
- Unmetalled Road Constructed above Sand Dune
- Village Boundary
- Taluk Boundary
- Project Site Boundary

Towards South- Grass and Shrubs above the Damaged Sand Dune



Existing Unmetalled/Mud Road West of the Damaged Sand Dune



STATUS OF RESTORATION OF SAND DUNES AT PLOT NO 16/4 & 16/4A AT SERNABATIM VILLAGE, SALCETE TALUKA, GOA

Verified by	Approved by
Prepared by	
Prepared for	
Goa Coastal Zone Management Authority	

References

- Davis, J. L. (1980). Geographical Variation in Coastal Development. London, UK: Longman.
- Hesp, P. A. (1999). "The beach backshore and beyond," in Handbook of Beach and Shoreface Morphodynamics, ed. A. D. Short (Brisbane, Australia: John Wiley and Son).
- Hesp, P. A. (2002) Foredunes and blowouts: Initiation, geomorphology and dynamics. *Geomorphology* 48, 245–268.
- Sloss, C.R, Shepherd M and Hesp P. A. (2012). Nature Education.

**Dr. Badarees KO (NCSCM)****Shri. Flaviano Jose Miranda****Shri. Devendra Gokar**