Full Title of the proposal:- Construction of New 2 Lane with Paved Shoulder of Hamirpur Bypass of NH-88 (New NH-103) (Design Chainage-Km.121+175 to Km.138+295, Design Length-17.120 Km) in the State of Himachal Pradesh under NH (O) on HAM Mode

File No.: FP/HP/ROAD/151932/2022

Date of Proposal: 2 Feb 2022

### DISPOSAL PLAN OF EXCESS EARTH QUANTITY

#### 1. INTRODUCTION

The project envisages construction of new 2 Lane with Paved Shoulder of Hamirpur Bypass of NH-88 (New NH-103). As the project road does not involve any construction of tunnels, the quantity of material generated from construction of project road is not of much concern. As the project road is located in a hilly cum rolling terrain, the excess earth quantity generated from the construction is required to be disposed in a planned manner so that it takes least possible space and is not hazardous to the environment. It is of prime importance that these sites will have to be rehabilitated as soon as the disposal sites are full.

The excess cutting generated, disposal sites and adequate disposal and management guidelines have been discussed in the following sections.

## 2. EXCESS EARTH QUANTITY GENERATION

In the proposed project, debris is expected to be generated as an excess earth quantity left after utilization as filling quantity in the construction of bypass road. The component wise debris generation from the project activity is given in Table-1.

Table-1: Abstract of debris generated from Hamirpur Bypass

S. No.	Component	Road work	Quantity in cum
1.	Quantity of Debris generated (Cum)	Rock (10%)	1,09,748
		Soil (90%)	9,87,729
2.	Quantity of debris due to swell factor	Rock (5%)	1,15,235
	(Cum)	Soil (5%)	1,037,115
3.	Estimated Quantity of Debris	Rock (39%)	45,122
	Proposed to be utilized (Cum)	Soil (80%)	832,963.20
4.	Balance quantity of Debris (Cum)	Rock (61%)	70,113.00
		Soil (20%)	204,151.80
5.	Effective Earth quantity to be dumped (Cum) with 15% compaction.	Rock +Soil	2,33,125

Source-DPR Study

During construction of the various components of the project road, cutting material is generated from both soil and from rock excavation. Total quantity of debris, generated from the project, shall be 10,97,477 cum which shall amount to 11,52,350 cum with swell factor. Out of the total cutting quantity generated, 8,78,085.20 cum shall be utilized on project work leaving 2,33,125 cum of excess earth quantity to be disposed after rolling at designated area earmarked for

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disposal. The debris generated is proposed to be utilized in road activities such as earthwork embankment, subgrade, backfill and pavement layers depending on suitability of the material. The designated disposal area shall also be properly protected and stabilized with retaining walls/gabion walls of suitable designed sections.

#### 3. DISPOSAL SITES

11 disposal sites with total area of 4.6355 Ha have been designated for disposal of excess earth quantity after utilization in the proposed project. All the disposal sites are located on non-forest land out which agreement has been done with private parties for plot no. 187, 295 and 296 for disposal of excess earth generated (copy of Agreement attached as **Annexure I**). The details of disposal sites along with their capacity are given in **Table-2**.

Table-2: Details of Disposal Sites

Volume of debris to be disposed (in Cum)	Capacity of Sites in Cum	Total Area (In Ha.)	Plot No.	Village	Chainage	Diposal Site No.
	16,305	0.2226	169/1	Lahar	123+500	D1
	78,766	0.7614	168/1	Lahar	123+600	D2
	27,931	0.5662	187/1	Ghanotla	128+900	D3
	41,168	1.1340	187/3	Ghanotla	128+900	D4
	608	0.1175	799/2	Khaggal	129+850	D5
233125	30,285	0.5552	813/4	Khaggal	130+100	D6
	12,748	0.4478	813/3	Khaggal	130+180	D7
	2,871	0.0883	807/1	Khaggal	130+020	D8
	34,967	0.5753	295	Khaggal	130+400	D9
	860	0.0621	296	Khaggal	130+400	D10
	608	0.1051	190/2	Baleta Kalan	130+680	D11
2,33,125	2,47,117	4.6355				

It may be seen from the Table above that the capacity of the area earmarked for disposal is 2.47 lakh cum and the volume of excess earth quantity to be disposed of after utilization is 2.33 lakh cum. This states that the capacity of the disposal sites exceeds the generated volume. All the disposal locations shall be well supported by retaining structures and suitable slope protection measures. The location of the disposal sites marked on SOI Toposheet is enclosed as **Annexure II**.

### Stabilization of disposal site

The loosely held debris can lead to the rise in SPM levels and sedimentation load. Therefore, it requires stability with appropriate methods to avoid the subsequent ecological problems. The debris disposal involves both engineering and biological measures that depend on the eco-climatic conditions.

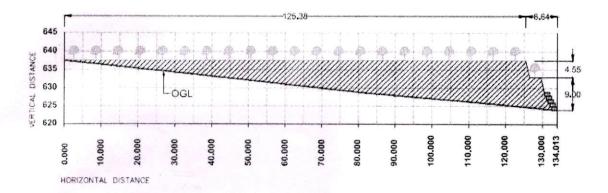
# I) Engineering Measures:

The material shall be disposed of in the sites in terraces and the slopes shall be protected with multiple gabion walls of height 5m as per the elevation profile as given in the figure below.

Project Director NHAI PIU HAMIRPUR (Rakesh Kumar, 1FS)

Deputy Conservator of Forests,

Hamirour Forest Division,



The Disposal Plan of all the sites along with elevation profile and location of gabion walls is enclosed as **Annexure III**.

### II)Biological Measures:

Vegetation cover plays a very important role in holding the dumped material over a period of time and controls the hydrological and mechanical effects on the soils and slopes. Special efforts will be required to raise vegetation cover of grasses, shrubs and trees. The local grass sodding should be done on the debris when grass seed will be germinating and the grass will add humus to the dumped material.

Soil conservation and quick growing species to be planted to stabilize the slope - Agave sislana, Berberis aristata, Bauhinia vahilii, Jasminum humile, Rubus ellipticus, Prinsepia utilis, Justicia adhatoda, Ipomea carnea, Hypericum oblongifolium, Mimosa himalayana, Salix denticulate, woodfordia fruticosa, Alnus nepalensis etc.

### Guidelines on disposal Management

- 1. Fencing shall be done to prevent human / animal interference
- 2. Disposal shall not obstruct the natural drainage pattern
- 3. Trees shall be retained along the contours wherever feasible so as not to disturb the natural slope.
- 4. Protection walls shall be constructed along the contours prior to dumping
- 5. Debris shall be carried in dumper trucks covered with heavy duty tarpaulin properly tied to the vehicles
- 6. Dumping may be avoided during the rainy season, to avoid slipping of debris while dumping
- 7. Top soil shall be stripped wherever feasible to a specified depth of 150 mm and stored in stockpiles of height not exceeding 2 m in height and used for landscaping.
- 8. All disposal sites shall be properly landscaped when the disposal gets completed so as to merge it in the natural surroundings.

#### 4. RESTORATION PLAN

Once the disposal sites are filled, these sites shall be rehabilitated by covering it with 15 com fertile top soil and planting local species of trees and shrubs in consultation with the forest department so that the landscape is in harmony with the surrounding environment.

Project Director NHAI PIU HAMIRPUR (Rakesh Kuma, IFS)
Deputy Conservator of Forests,
Hamirpur Forest Division,
Hamirpur (H.P.)

The afforestation with indigenous plant species of high ecological and economic value which can adapt to local habitat will be undertaken in consultation with the forest department depending upon the canopy cover required. Major tree and shrub species which would be planted are listed in table below.

Botanical Name	Common Name	
Azadirachta indica	Neem	
Bauhinia variegata	Kachnar	
Bauhinia purpurea	Kachnar	
Delonix regia	Gulmohar	
Quercus leucotrichophora	Banjh Oak	
Mallotus philippensis	Kumkum	
Acacia nilotica	Babul	
Terminalia arjuna	Arjun	
Cassia fistula	Amaltas	
Cedrela toona	Tun	
Pinus roxburghi	Chil	
Melia azadirachta	Dhek	
Terminalia chebula	Harad	
Dalbergia sissoo	Indian Rosewood	
Ficus rouxburghii	Demur	
Alnus nepalensis	Nepal Black Cedar	

Project Director NHAI PIU HAMIRPUR

(Rakesh Kumar, IFS)

Deputy Conservator of Forests,

Hamirpar Forest Division,

Hamirpur (H.P.)



हिमाचल प्रदेश HIMACHAL PRADESH

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हम केंसर सिंह, दिनेश कुमार सपुत्रांन श्री जगत राम व श्रीमति ताजो देवी पत्नी श्री जगत राम निवासी महाल हार, माँजा जंगल, डा० नाल्टी, तह० व जिला हमीरपुर हि० प्र० के स्थायी निवासी हैं तथा विधिवत निम्न धोपणां करते हैं कि:

वह कि हम सभी उपरोक्त पते के स्थाई निवासी हैं।

यह कि हम भूमि खाता न0 9, खतौनी न0 9, खसरा न0 187 कुल रक्वा 02-23-34 हैक्टेयर बंजर कदीम में से 01-28-29 हैक्टेयर स्थित महाल धनोटला, मौजा जंगल, कहा व जिला हमीरपुर के मुस्त्रिका मालकांन हैं। इस भूमि के साथ हमीरपुर बाई पास ट्रें-लेन सड़क निर्माण कार्य शुरू होने वाला है जिसके लिये हमीरपुर बाई पास प्राइवेट हिंगिटेड द्वारा पहाड़ी के कटान से निकाला गया मलवा अगर हमारी उपरोक्त भूमि में

स्थानः हमीरपुर दिनाक :31.12.2022

सत्यापन प्रियमित अस्ता है कि उपरोक्त करित अन्तवस्त मेरी जानकारी के अनुसार सत्य भूभाग तथ्य स्थान स्यान स्थान स्थान

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43-11 No.3873 Certified that above Affice unant declared before me on 4-123 by Sh./Smt. Kesset 1933 who is identified by Sh. Vigy Kanas who is personally known to me The contents of the above affidavit/document have been readover & explained to the deponentiexecutant. AJAY KUMAR SHARMA Sub-Division Nadaun & Hamirpur (H.P.)



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हम सुनील कुमार, मदन कुमार, विजय कुमार सपुत्रांन श्री परस राम निवासी महाल खगल, मोजा जंगल, तह० व जिला हमीरपुर हि० प्र० के स्थायी निवासी हैं तथा विधिवत निम्न घोपणां करते हैं किः

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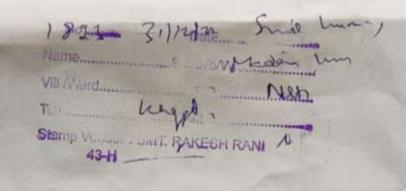
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