Alternative Alignment Option Analysis

Criteria for Fixing Alignment for Greenfield Green field highway

1. The Greenfield alignment between two terminal stations should be short and straight as far as possible, but due to engineering, social and environmental considerations some deviations may be required.
2. The project should be constructible and easy to maintain; the Greenfield project should reduce the vehicle operation cost with respect to the existing option already available *i.e.* using the NH/SHs in combination to reach from point A to point B.
3. It should be safe at all stages i.e. during design, construction and operation stages. Safety audits at each stage should confirm the same.
4. The project initial cost, maintenance cost, and operating cost should be optimum so as to be considered economical with respect to its options.
5. The Greenfield alignment should be finalised giving due consideration to siting/location of major structures including Major/Minor Bridges, Interchanges and ROBs. The space requirement of interchanges to be kept into consideration to avoid major resettlement.
6. Tunnel / Box cutting of Hills should be considered as the last option and should be provided only when it is absolutely necessary.
7. The location of spurs for connecting the important towns to be decided while fixing the alignment Options.
8. The alignment should follow the unused / barren land to the extent possible to reduce the cost of land acquisition.
9. The proposed options in the present case connects the under developed regions of the state which would lead to the development of new growth centres along the proposed highway i.e. paving the way for economic development of the region.

Obligatory points through which Greenfield alignment options should not pass are detailed below:

Habitations: Proposed alignment is fixed in such a way that traverses at a minimum distance of 150m from built up areas and avoiding important buildings and structures. However, few isolated buildings falling along the alignment cannot be avoided due to Geometric requirements.

Wildlife Sanctuaries, National Parks, Reserve Forest and other Eco Sensitive Zones: Utmost care is taken while fixing the alignment near wildlife sanctuaries and national parks. The MOEF&CC guidelines have been adhered to and the alignment has been fixed keeping it away from WLS, and Tiger Reserves. It was not possible to completely avoid the protected and reserve forest areas. However, every effort has been made to reduce the acquisition of forest area.

Water Bodies: The Greenfield alignment has been fixed taking due consideration & importance of retaining the existing water bodies as far as feasible.

Railway Crossings and Important Structures: The components which increases the project cost are the presence of the Major bridges, ROBs and other structures. In order to reduce the project cost number of structures and its length were given due consideration while finalising the Greenfield Option.

The comparative statement for proposed alignment is given in below table:

S. No	Description	Option I	Option II	Option III (Proposed)
1	**Length, km**	**212.688**	**200.666**	**204.606**
2	**Start point**	Alignment starts at Haryana/Rajasthan Border (near Firozpur Jhirka) in Alwar district.	Alignment starts at Haryana/Rajasthan Border (near Firozpur Jhirka) in Alwar district.	Alignment starts at Haryana/Rajasthan Border (near Firozpur Jhirka) in Alwar district.
3	**End point**	Alignment ends near Itawa Village in Sawai Madhopur district	Alignment ends near Itawa Village in Sawai Madhopur district	Alignment ends near Itawa Village in Sawai Madhopur district
4	**Districts**	Alwar, Bharatpur, Karauli, Dausa and Sawai Madhopur	Alwar, Bharatpur, Karauli, Dausa and Sawai Madhopur	Alwar, Bharatpur, Dausa and Sawai Madhopur
5	**Connecting Highways**	NH 11 & NH 11 B	NH 11 & NH 11 B	NH 11 & NH 11 A,
		SH45, SH14, SH35, SH44, SH25 & SH1,	SH45, SH14, SH35, SH44, SH25 & SH1,	SH45, SH14, SH44, SH25 A, SH25A & SH24
6	**Design Speed, Kmph**	120	120	120
7	**Lane Configuration**	8 Lane National Highway		
8	**Right of Way, m**	100	100	100
9	**Approx Travel Time (Hrs/Mins)**	1 hrs 46 Mins	1 hrs 40 Mins	1 hrs 42 Mins
12	**Access Control**	Access Control National Highway		
14	**Number of settlements shall be affected**	32	32	22
15	**Approx affected Forest Area (Ha)**	81.0	61.0	27.6396
16	**Eco-sensitive/Protected Area**	Ranthambore Tiger Reserve	-	-
17	**Merits**	1. Passing through the agricultural, barren and Forest land		1. Alignment is passing about 12.90 km & 10.58 km away from Ranthamabore National Park and Sawaimadhopur WLS respectively.
		2. this options having minimum distance from the Karuali district Headquarter	2. This Option is having the shortest length and hence would require the shortest travel time.	3. The forest area is least affected in this Option.

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			3. The forest area is less than Option 1.	4. Better connectivity to major towns through utilizing existing State & National Highways.
				5. This option deletes the requirement of another expressway from Delhi to Jaipur.
				6. Minimum number of settlements affected by this Option.
18	**Demerits**	1. Alignment traverses within 550 m & 2.5 km from Sawai Madhopur WLS and Ranthambore National Park respectively.	1. Alignment traverses within 5.7 km & 8.2 Km Sawai Madhopur WLS and Ranthambore National Park respectively.	1. LA cost is higher than other Options as major development exist near alignment.
		2. Alignment is traversing Adjacent to the Ranthambore National Park & Tiger Reserve for significant length.	2. The option traverses at a significant distance from Dausa/Jaipur thus not reducing the travel time to Jaipur from Delhi with respect to NH48.	
		3. The option traverses at a significant distance from Dausa/Jaipur thus not reducing the travel time to Jaipur from Delhi with respect to NH48.		

Option III is best suitable due to following reasons:-

- Least affected forest Area
- Better connectivity to major towns through existing State & National Highways.
- Having significant distance from Ranthambore National Park and Sawai Madhopur WLS as compare to other options.
- Minimum number of settlements affected.