Himachal Pradesh State Roads Transformation Program

(Funded by World Bank)

Dadhol-Ladrour (Km 0.00 to KM 13.500)

Environment and Social Impact Assessment

(Draft)

Appendices

HIMACHAL PRADESH ROAD & OTHER INFRASTRUCTURE DEVELOPMENT CORPORATION LTD.
(Government of Himachal Pradesh Undertaking)
(An ISO 9001:2008 QMS & ISO 14001:2004 EMS conforming company)

December 2019

LIST OF APPENDICES

Appendix 1 – List of the individuals/organizations that prepared/ contributed to ESIA.

1. Messrs. Deccan Consulting Engineers Private Limited (Independent Environment and Social Assessment Consultants)
2. Messrs. SATRA Infrastructure Management Services Pvt. Ltd (Detailed Project Report consultants)
3. Officials of Himachal Pradesh Road Infrastructure Development Consultants (HPRIDC)
    i. Mr. Jitender Dhiman, Chief Engineer-cum-Project Director, HPRIDC
    ii. Mr. Pawan Sharma, Superintending Engineer, HPRIDC
    iii. Mr. X, Environment Expert
    iv. Mr. Chaman Dilta, Social Development Officer-cum-Special LAO
4. Other officials of HPRIDC and HPPWD ï Concerned Divisions

Appendix 2 – References

1. Primary Census Abstract, Census of India, 2011
2. Amenities- District Household Census, Census of India, 2011
3. The World Bank Environment and Social Framework, 2016
4. Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement, 2013
5. Gender Statistics, HP, DoES, Shimla
6. Resettlement Action Plan for Himachal Pradesh State Roads Project ï I
7. Environment Management Plan for Himachal Pradesh State Roads Project ï I
8. Himachal Pradesh Roadside Land Control Act, 1968
9. The Himachal Pradesh Roads Infrastructure Protection Act 2002 (and Rules 2004)
10. Environment and Social Management Framework, Himachal Pradesh Horticulture Development Project
11. Project Appraisal Document (Draft) of Himachal Pradesh State Roads Transformation Program, The World Bank, 2019

Appendix 3 – Summary table of Consultations and surveys with stakeholders (affected persons other interested parties)

Date, Place, Type of Stakeholders and Number of Participants				
S.No.	**Date**	**Place**	**Type of Stakeholders**	**Number of participants (M/F)**
Community Consultations				
1	12.09.2019	Dadhol Chowk	Affected parties	21 (21/0)
2	13.09.2019	Gahar High School and Primary School Bharari	Affected parties	8 (6/2)
3	13.09.2019	Police Station	Affected parties	3 (3/0)
4	13.09.2019	Model School Bharari	Affected parties	6 (6/0)
Focus Group Discussions				
5	11.09.2019	At Padhyalag Gram Panchayat	Affected and other interested parties	17 (13/4)
6	12.09.2019	At Bharari Gram Panchayat	Affected parties	22 (16/16)
7	3.09.2019 to 12.09.2019	At habitation site	Affected parties	

Photographs and attendance sheets from consultations are available in project files

Appendix 4 – Comparison of ESF, RFCTLARR Act 2013 and GoHP Financial Commissioner Standing Order No. 28 (*Land Acquisition through Direct Negotiation*) and Measures to address gaps

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
1	Avoid involuntary resettlement wherever feasible	Social Impact assessment (SIA) should include: (i) whether the extent of land proposed for acquisition is the absolute bare minimum extent needed for the project; (ii) whether land acquisition at an alternate place has been considered and found not feasible [Ref: Section 4 sub-section 4(d) and 4(e)]	None	
2	If unavoidable, minimize involuntary resettlement by exploring project and design alternatives	None	None	Usage of principle of mitigation hierarchy to analyse alternatives to avoid/minimize/compensate or offset
3	To enhance, or at least restore, the livelihoods of all displaced persons in real terms relative to pre-project levels	None	None	Would be ensured through suitable provisions in the RAP
4	To improve the standards of living of the displaced poor and other vulnerable groups.	None	None	Would be ensured through suitable provisions in the RAP
5	Screen the project early on to identify past, present, and future involuntary resettlement impacts and risks.	While the policy does not specify any requirement for screening of the project at an early stage for resettlement impacts and risks, it requires carrying out social impact assessment before any proposal for land acquisition (section-16).	None	Screening of all sub-projects towards enabling identification of the potential resettlement impacts and associated risks will be carried out.

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
6	Determine the scope of resettlement planning through a survey and/or census of displaced persons, including a gender analysis, specifically related to resettlement impacts and risks **(ESS-1)**	Carry out census of affected people and their assets to be affected, livelihood loss and common property to be affected; R&R scheme including timeline for implementation. **(**Section: 16. (1) and (2)).	Provides for assessment of land and structures including photography of structures	The ESS-1 requirements will be followed based on which census and socio-economic has been carried out for this road
7	Carryout consultations with displaced persons, host communities and concerned NGOs. Inform all displaced persons of their entitlements and resettlement options **(ESS-10)**	• Consultation with Panchayat, Municipality, to carry out SIA. (*Section: 4. (1))* • Public hearing for Social Impact Assessment. *Section: 5.* • Discussion on and Public hearing for Draft Rehabilitation and Resettlement Scheme *Section: 16. (4). and (5).*	Provides for consultations and negotiations with land owners only. It has no provisions for non-titleholders.	All impacted persons ï land owners and users of land (non-titleholders such as squatters and encroachers) would be consulted. The ESS-10 requirements will be followed
8	Establish grievance redressal mechanism (**ESS-1 and ESS-5**)	• Establishment of Land Acquisition, Rehabilitation and Resettlement Authority for disposal of disputes relating to land acquisition, compensation, rehabilitation and resettlement. Section: 51. (1). and Section: 64. • The Requiring Body or any person aggrieved by the Award passed by an Authority under section 69 may file an appeal to the High Court within sixty days from the date of award. *Section: 74. (1). and (2).*	No provision	A project level GRM will be included in the RAP and Resettlement policy framework (RPF).
9	Where involuntary resettlement impacts and risks are highly complex and sensitive,	Social Impact Assessment is must before taking final decision on	No provision	Social Impact Assessment, consultations with relevant

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
	compensation and resettlement decisions should be preceded by a social preparation phase. (**ESS-1 and ESS-5**)	acquisition of land followed by preparation of R&R Scheme		stakeholders ï affected and interested parties will be done
10	Improve or restore the livelihoods of all displaced persons through (i) land-based resettlement strategies (ii) prompt replacement of assets with access to assets of equal or higher value, (iii) prompt compensation at full replacement cost for assets that cannot be restored, and (iv) additional revenues and services through benefit sharing schemes where possible. (**ESS-5**)	• Land for land in case of irrigation projects to the landowners losing agricultural land. Land for land in every project to landowners belong to SC and ST community up to 2.5 acres of land. Section: 31 and The Second Schedule • Provision of housing units in case of displacement. Offer for developed land. Section: 31 and The Second Schedule • Recognizes 3 methods and whichever is higher will be considered which will be multiplied by a factor given in The First Schedule. Compensation given earlier will not be considered; If rates not available floor price can be set; Steps to be taken to update the market value. (Section 26 and The First Schedule) Provision for employment, fishing rights, annuity policy etc (Section: 31 and The Second Schedule)	No provision. However, relating to computation of compensation, the order provides for compensation upto the limit as would be calculated under the HP RFCTLARRA 2013 Additionally all statutory benefits are given and it is deemed as good as an award	Structure to be compensated at replacement cost without depreciation, besides commensurate provisions to address livelihood issues. Specific provisions to address impacts on non-titleholders need to be incorporated

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
11	If there is relocation, secured tenure to relocation land, better housing at resettlement sites with comparable access to employment and production opportunities, integration of resettled persons economically and socially into their host communities, and extension of project benefits to host communities; provide transitional support and development assistance, such as land development, credit facilities, training, or employment opportunities; and (iii) civic infrastructure and community services, as required. (**ESS-5**)	• A family as a unit will receive R&R grant over and above the compensation and those who are not entitled to compensation. Section: 31 • Homeless entitled to constructed house, land for land in irrigation projects in lieu of compensation, in case of acquisition for urbanization 20% of developed land reserved for owners at a prices equal to compensationô jobs or onetime payment or annuity for 20 yearsô subsistence grant, transportation, land and house registered on joint name husband and wife, etc. Second Schedule • Provision for infrastructural amenities in resettlement areas. Section: 32 and Third Schedule	No provision	Relocation is not envisaged under the proposed sub-project as designs are avoiding full impact on structures
12	Improve the standards of living of the displaced poor and other vulnerable groups, including women, to at least national minimum standards. (**ESS-5**)	• Landless people are considered and eligible for R&R grants. Section:16. (2). • Widows, divorcees, abandoned women will be considered as separate family and entitled to R&R provisions Section: 3. (m) • Homeless entitled to constructed house and landless entitled to land in irrigation project. Second Schedule • Special provision for Scheduled	No provision	Commensurate measures would be provided for in the RAP

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
		Caste/Scheduled Tribe; Section: 41. • Additional provisions for SC&ST for land for land in irrigation projects, additional sum over and above the subsistence grant. Second Schedule		
13	If land acquisition is through negotiated settlement, ensure that those people who enter into negotiated settlements will maintain the same or better income and livelihood status. (**ESS-5**)	R&R entitlements apply in case of land acquired/purchased for PPP projects and for Private Companies. *Section: 2. (2), and 46.*	No specific provision	Provisions as applied in the RFTCLARR Act will be used and additional measures where required will be used
14	Ensure that displaced persons without titles to land or any recognizable legal rights to land are eligible for resettlement assistance and compensation for loss of non-land assets. (**ESS-5**)	• The Act recognises: Section: 3 (c) • a family which does not own any land but belong to the family of an agricultural labourer, tenant, sharecroppers, or artisans or working in affected area for three years prior to the acquisition of the land • the Scheduled Tribes and other traditional forest dweller who have lost any of their forest rights • family whose primary source of livelihood for three years prior to the acquisition of the land is dependent on forests or water bodies and includes gatherers of forest produce, hunters, fisher folk and boatmen • a family residing or earning livelihoods on any land in the urban areas for preceding three years or	No specific provision	Under this project, provision would be made to that in the case of land acquisition, the date of publication of preliminary notification for acquisition under Section 4.1 of the LAA will be treated as the cut-off date for title holders, and for non-titleholders such as squatters the start date of the project census survey.

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
		more prior to the acquisition of the land		
15	Prepare a resettlement plan / indigenous peoples plan elaborating on displaced personsô entitlements, the income and livelihood restoration strategy, institutional arrangements, monitoring and reporting framework, budget, and time-bound implementation schedule. (**ESS-5 and ESS-7**)	• Preparation of Rehabilitation and Resettlement Scheme including timeline for implementation. *Section: 16. (1) and (2).* • Separate development plans to be prepared. *Section 41*	No specific provision	For this corridor, RAP will be prepared. IPDP or TDP is not required.
16	Disclose a draft resettlement plan, including documentation of the consultation process in a timely manner, before project appraisal, in an accessible place and a form and language(s) understandable to displaced persons and other stakeholders. Disclose the final resettlement plan and its updates to displaced persons and other stakeholders. (**ESS-10**)	• The draft Rehabilitation and Resettlement Scheme prepared shall be made known locally by wide publicity in the affected area and discussed in the concerned Gram Sabhas or Municipalities and in website. Section: 16. (4) • The approved Rehabilitation and Resettlement Scheme to be made available in the local language to the Panchayat, Municipality or Municipal Corporation and in website. Section: 18.	No specific provision	In addition to the publishing of the approved resettlement plan, the RAP and RPF includes provision for disclosure of the various documents pertaining to RAP implementation in accordance with Stakeholder Engagement Plan (SEP)
17	Include the full costs of measures proposed in the resettlement plan and indigenous peoples plan as part of projectôs costs and benefits. For a project with significant involuntary resettlement impacts and / or indigenous peoples plan, consider implementing the involuntary resettlement	The requiring body shall bear the cost of acquisition covering compensation and R&R cost. *Section: 19. (2) and Section 95. (1)*	No specific provision	None

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
	component of the project as a stand-alone operation. (**ESS-5**)			
18	Pay compensation and provide other resettlement entitlements before physical or economic displacement. Implement the resettlement plan under close supervision throughout project implementation. (**ESS-5**)	• The Collector shall take possession of land after ensuring that full payment of compensation as well as rehabilitation and resettlement entitlements are paid within three months for the compensation and a period of six months for the monetary part of rehabilitation and resettlement entitlements. Section: 38. (1) • • The Collector shall be responsible for ensuring that the rehabilitation and resettlement process is completed in all its aspects before displacing the affected families. Section: 38. (2)	No specific provision	None

S.No	Environment and Social Framework 2016	Provisions in RFCTLARR Act, 2013	Acquisition of Land by Private Negotiation and Upkeep of Land Record/General Guidelines and Instruction (Standing Order No28) (PBW(B)F (5) 40 / 2017-PWD /GoHP, January 2018	Measures to bridge the Gap between Policy/Acts and ESF, 2016 of World Bank
19	Monitor and assess resettlement outcomes, their impacts on the standards of living of displaced persons, and whether the objectives of the resettlement plan have been achieved by taking into account the baseline conditions and the results of resettlement monitoring. Disclose monitoring reports. (**ESS-5**)	• The Rehabilitation and Resettlement Committee, to monitor and review the progress of implementation of the Rehabilitation and Resettlement scheme and to carry out post-implementation social audits in consultation with the Gram Sabha in rural areas and municipality in urban areas. *Section: 45. (1)* • Set up National and State level Monitoring Committee to review and monitor progress. *Section 48-50*		The ESS-5 requirements will be followed.

Appendix 5 – List of applicable Labour laws

The following laws shall be applicable to:

- **Workmen's Compensation Act 1923**, the Act provides for compensation in case of injury by accident arising out of and during the course of employment;
- **Payment of Gratuity Act, 1972**, gratuity is payable to an employee under the Act on satisfaction of certain conditions on separation if an employee has completed 5 years;
- **Employees Provident Fund and Miscellaneous Provision Act, 1952**, the Act provides for monthly contributions by the employer plus workers;
- **Maternity Benefit Act, 1951**, the Act provides for leave and some other benefits to women employees in case of confinement or miscarriage, etc.;
- **Minimum Wages Act, 1948**, the employer is supposed to pay not less than the Minimum Wages fixed by appropriate Government;
- **Payment of Wages Act, 1936,** it lays down as to by what date the wages are to be paid, when it will' be paid and what deductions can be made from the wages of the workers);
- **Equal Remuneration Act, 1979**, the Act provides for payment of equal wages for work of equal nature to Male and Female workers and not for making discrimination against Female employees);
- **Payment of Bonus Act, 1965**, the Act provides for payments of annual bonus subject to a minimum of 83.3% of wages and maximum of 20% of wages;
- **Child Labour (Prohibition and Regulation) Act, 1986**, the Act prohibits employment of children below 14 years of age in certain occupations and processes and provides for regulation of employment of children in all other occupations and processes. Employment of child labour is prohibited in Building and Construction Industry;
- **Inter-State Migrant Workmen's (Regulation of Employment and Conditions of Service) Act, 1979**, the inter-state migrant workers, in an establishment to which this Act becomes applicable, are required to be provided certain facilities such as housing, medical aid, traveling expenses from home to the establishment and back, etc.;

Appendix 6 - Details Of Settlements, Cross Drainage Structures, Junctions along the Project Road

Settlements of the project road:-

There are 15 settlements along the project road. List of settlements were given in below table.

Table: Details of Settlements along the project road

S.No	Name	TRU	No. HH	TOT_P	TOT_M	TOT_F	P_SC	P_ST
1	Kothi (285)	Rural	82	357	178	179	17	0
2	Ghandalwin (281)	Rural	259	1082	517	565	171	2
3	Tikri (323)	Rural	24	92	46	46	0	0
4	Mihara (291)	Rural	127	532	278	254	54	0
5	Badsara (292)	Rural	33	164	79	85	10	0
6	Panjaila (258)	Rural	3	17	9	8	17	0
7	Lethawin (296)	Rural	60	295	151	144	48	0
8	Gatwar (295)	Rural	50	214	101	113	77	0
9	Ladhyani (294)	Rural	192	915	474	441	231	1
10	Bhater (298)	Rural	67	289	127	162	62	0
11	Dadhol Kalan (265)	Rural	215	956	450	506	243	0
12	Padyalag (267)	Rural	137	631	323	308	196	0
13	Lehri Sarail (272)	Rural	569	2639	1271	1368	654	0
14	Bari Kalan (269)	Rural	53	277	135	142	32	0
15	Bari Khurd (268)	Rural	17	92	46	46	0	0
Total			**1888**	**8552**	**4185**	**4367**	**1812**	**3**
%			**4.53**	**100**	**48.94**	**51.06**	**21.19**	**0.04**

TRU- Total Rural/Urban, No. HH-Households, TOT_P-Total Population, TOT_M-Total Male, TOT_F-Total Female, P_SC- Population Schedule Caste, P_ST- Population Schedule Tribe.

CROSS DRAINAGE STRCUCTURES ALONG THE PROJECT ROAD

The list of existing and proposed cross drainage structures are listed in below table**.**

Table: Details of Cross Drainage Structures

Existing Structure Details					Proposed Structure Details			
S. No.	Existing Chainage (Km)	Span	Structure Type		Design Chainage (Km)	Span	Type	Improvement Proposal
1	0/360	1 x 1.3m	Slab Culvert		0+357.570	1 x 2m	Box Culvert	Reconstruction to Box
2	0/455	1 x 1.8m	Slab Culvert		0+459.743	1 x 2m	Box Culvert	Reconstruction to Box
3	0/600	1 x 1.2m	Slab Culvert		0+599.605	1 x 2m	Box Culvert	Reconstruction to Box
4	0/760	1 x	Pipe Culvert		0+761.471	1 x 1.0 Ø	Pipe Culvert	Reconstruction to

Existing Structure Details					Proposed Structure Details			
S. No.	**Existing Chainage (Km)**	**Span**	**Structure Type**		**Design Chainage (Km)**	**Span**	**Type**	**Improvement Proposal**
		0.9Dia						Pipe
5	0/855	1 x 0.9Dia	Pipe Culvert		0+857.599	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
6	0/890	2 x 3.4m	Minor Bridge		0+884.185	1 x 10m	Minor Bridge	reconstruction
7	0/940	1 x 22.6m	Minor Bridge		0+910.474	1 x 22.6m	Minor Bridge	retained
8	1/125	1 x 1.8m	Slab Culvert		1+125.307	1 x 2m	Box Culvert	Reconstruction to Box
9	1/295	1 x 0.9Dia	Pipe Culvert		1+295.111	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
10	1/910	1 x 0.9Dia	Pipe Culvert		1+909.418	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
11	new	-	-		2+061.508	1 x 2m	Box Culvert	New Construction
12	new	-	-		2+481.412	1 x 2m	Box Culvert	New Construction
13	new	-	-		2+943	1 x 2m	Box Culvert	New Construction
14	3/140	1 x 0.9Dia	Pipe Culvert		3+129.703	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
15	3/350	1 x 0.9Dia	Pipe Culvert		3+344.636	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
16	3/520	1 x 0.9Dia	Pipe Culvert		3+504.735	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
17	3/620	1 x 1Dia	Pipe Culvert		3+606.724	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
18	3/748	1 x 0.9Dia	Pipe Culvert		3+733.498	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
19	0/000	1 x 0.9Dia	Pipe Culvert		3+746.27	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
20	3/855	1 x 0.9Dia	Pipe Culvert		3+842.714	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
21	3/920	1 x 0.9Dia	Pipe Culvert		3+905.625	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
22	4/190	1 x 0.9Dia	Pipe Culvert		4+093.114	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
23	4/260	1 x 0.9Dia	Pipe Culvert		4+250.641	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
24	4/370	1 x 0.9Dia	Pipe Culvert		4+316.253	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
25	4/650	1 x 0.9Dia	Pipe Culvert		4+635.647	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
26	4/900	1 x 0.9Dia	Pipe Culvert		4+895.764	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
27	new	-	-		4+993	1 x 2m	Box Culvert	New Construction
28	5/150	1 x 0.9Dia	Pipe Culvert		5+130.255	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
29	5/550	1 x 1Dia	Pipe Culvert		5+508.124	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
30	5/780	1 x 0.9Dia	Pipe Culvert		5+797.236	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
31	7/250	1 x 0.9Dia	Pipe Culvert		7+214.991	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe

Existing Structure Details					Proposed Structure Details			
S. No.	**Existing Chainage (Km)**	**Span**	**Structure Type**		**Design Chainage (Km)**	**Span**	**Type**	**Improvement Proposal**
32	7/400	1 x 0.9Dia	Pipe Culvert		7+381.208	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
33	7/650	1 x 0.9Dia	Pipe Culvert		7+630.911	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
34	new	-	-		8+482	1 x 2m	Box Culvert	New Construction
35	8/800	1 x 0.9Dia	Pipe Culvert		8+782.461	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
36	9/090	1 x 0.9Dia	Pipe Culvert		9+044.684	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
37	new	-	-		9+480	1 x 2m	Box Culvert	New Construction
38	9/900	1 x 0.9Dia	Pipe Culvert		9+844.539	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
39	new	-	-		10+174.685	1 x 2m	Box Culvert	New Construction
40	10/700	NV	-		10+644.349	1 x 2m	Box Culvert	Reconstruction to Box
41	11/250	1 x 0.9Dia	Pipe Culvert		11+182.682	1 x 1.0 Ø	Pipe Culvert	Reconstruction to Pipe
42	new	-	-		12+114	1 x 2m	Box Culvert	New Construction
43	new	-	-		12+396.376	1 x 2m	Box Culvert	New Construction
44	new	-	-		12+507.543	1 x 2m	Box Culvert	New Construction

Appendix 7 – Plan & Profile of Project Road

Appendix 8 – Strip Plan of Project Road Showing Existing Features

Appendix 9 – Transect Walk Survey Formats

QUESTIONNAIRE FOR ENVIRONMENTAL APPRAISAL

(FOR ROAD/HIGHWAY PROJECTS)

Note 1:	Please enter x in appropriate box where answer is Yes/No

I. General Information

Name of the project :- OSR-9, Dadhol to Ladraur Road

Length (in KM) :- 0+000 to 13+455 13KM

Geographical information

1. Latitude From N31°29'51.64" To N31°34'55.81"
2. Longitude From E76°39'46.63" To E76°38'33.34"
3. Elevation above Mean Sea Level (metres)

   Min. 737 Max. 979
4. Nature of Terrain: ! Hilly & Rolling terrain.
5. Nature of Soil (Clayey, Sandy, silty, loam etc) Sandy Loamy

II. Current land use of the proposed project site Area

Land Use	Chainage
Agricultural	0+200 – 1+150, 1+450 – 2+000, 2+550 – 3+600, 3+900 – 6+030 8+000 – 9+000, 10+000 – 10+600,
Forest	NIL
Notified Industrial Area/Estate	NO.
Grazing	
Mangroves	–
National Park/Sanctuary	

III. Reason for selecting the proposed Route/Alignment:

Site Preparation

A. Is the proposed route/alignment located in low-lying area?

Yes [ ] No [✓]

B. Level before filling (above MSL in m)

C. Level after filling (above MSL in m)

D. Does the site preparation require cutting of trees?

Yes [✓] No [ ]

If yes, please furnish the following details:

1. How many trees are proposed to be cut? [ ]
2. Species of the above trees
3. Are there any protected/endangered species?

Yes [ ] No. [ ]

If yes, provide details

IV. Does the project have any adverse effect on biodiversity?

If so, details of flora and fauna so affected: Fauna cutting

Does the proposed alignment/route involve migratory path of animals?

Yes [ ] No [ ]

If yes, please provide the following:

A. Name of fauna

B. Habitat – Padyalay, Bhuter, Lethwin, Ladyani, Chaleoamy, Bharasi, Ghat, Mihare, Kothi, Ladrauw

C. Period of the year in which activity take place

V. Whether any of the following exist within 10 km of the project site. If so, Please indicate aerial distance and the name of the site.

S.No	Item	Name	Aerial Distance (in km)
1	**National Park**	–	–
2	**Wildlife Sanctuary**	–	–

Environment Related Data for HP Roads

1) Reserve Forest / Wild Life Sanctuary Sign Boards/ Boundary Pillars (Latitude and Longitude and Photos)

Nil

2) Identification of Tree (only names)

Pipal, Baragad,

3) Land Slide or Flood or Water Logged Areas (photos)

0+470, 4+800, 4+985, 5+005.

4) Road connecting to Major tourist spots/Markets/Clusters

Una - Barsar - Bhatu - Jahu - Kulhan road,

5) Black Spot area

6) River Crossing and nearest Water Bodies

0/840 - Bai Nallah
0/885 - Road ahead
4/480 - water pond.

Appendix 10 - Ecological Investigations along the Project Road Corridor

BIOLOGICALENVIRONMENT

Present biodiversitystudy oftheproject/road corridor (**Dadhol-Ladrour)**wascarriedoutto generate baseline information on biodiversity; tounderstandtheecologicalstatus of biological elements; to predict the probable impacts due to the proposed up gradation/widening activities on bio resources; and to suggest possible remedial and mitigation measures in anticipation of these impacts. The prime aim of the study was ensuring ecological sustainability in the project area. Present primary study was carried out in the month of September 2019.

Forest Ecosystem

The state Himachal Pradesh encompasses tropical to temperate forests, alpine meadows and snow, high biodiversity and endemism, oaks-centered biodiversity, predominance of evergreen forests with a one year life span. The state has a wide ecological range because of relatively larger variation in altitude, latitude and rainfall and its seasonality.

Based on the interpretation of satellite date pertaining to Oct-Dec. 2015, the forest cover in the state is 15,100 Km which is 27.12% of the stateôs geographical area. In terms of forest canopy density classes, the state has 3,110 Km^2 under very dense forest, 6,705 Km^2 under moderately dense forest and 5,285 Km^2 under open forest present in the state (ISFR, 2017).

Forest type mapping using satellite data has been undertaken by Forest Survey of India with reference to Champion & Sethôs classification and as per this assessment, the state has 38 forest types which belong to 8 forest type groups, viz. Tropical Moist Deciduous, Tropical Dry Deciduous, Subtropical Pine, Himalayan Moist Temperate, Himalayan Dry Temperate, Sub Alpine Forests, Moist Alpine Scrub and Dry Alpine Scrub (ISFR, 2011).

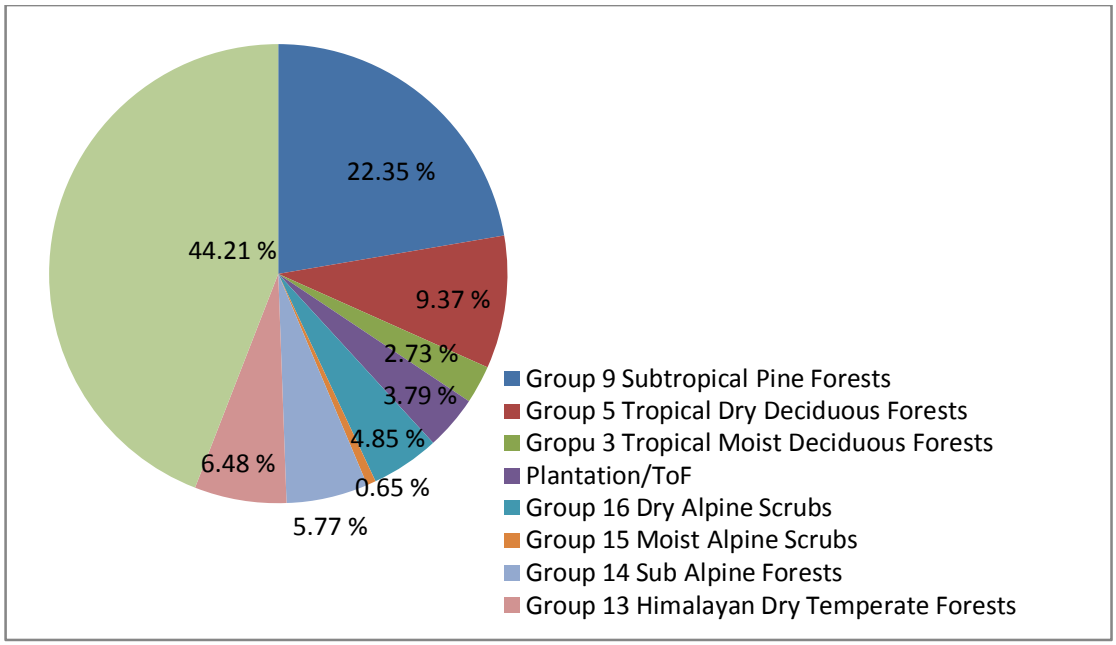


Fig 1. Forest Type Groups in the state of Himachal (Source: ISFR, 2011)

The Dadhol-Ladhror road corridor falls in the Bilaspur District of the Himachal Pradesh. District Bilaspurcomprised with a forest coverof 32.13%(375 Km^2) is oneofthe dense foresteddistricts having richfloral and faunal diversity. As far as the forest classification on the basis of canopy density classes, there is a total of 23 Km^2 under very dense forest, 161 Km^2 under moderately dense forest and 191 Km^2 under open forest present in the district.

There is no forest area falls within the present road corridor and Chhanjiar forest is the only prominent Forest recorded 2 km away from road corridor near Dadhol. Chhanjiar forest is a sub-tropical pine forest that comes under the Bharari Range of Forest Division Bilaspur. The natural vegetation along road corridor is limited to scrub crop of Khair-Sissoo along with bamboo clums at some places. The whole road corridor has a thin line of natural vegetation both sides. Beside natural vegetation, prominent agro-forestry practices are also present in the project zone.

Agro-forestry Ecosystem

Agro-forestry ecosystems are the only biodiverse areas along the project corridor that are illustrated by various seasonal agriculture and horticulture crops. Many agroforestry tree species like *Grewia optiva*, *Celtis australis*, and many *Ficus spps*. are present in cropland areas. There is a very good agriculture belt all along the project area. Wheat and mustard are the main crops whereas Maize and Spices are being cultivated in the area as cash crops.

Aquatic Ecosystem

There is no prominent aquatic ecosystem present in the study area. Govind Sagar Dam is the nearest water body in the region which is about 8-10 km away from present project corridor.

Floral Diversity

The proposed widening zone of the project comprised with a luxuriant growth of invasive species like *Ageratum conyzoides*, *Eupatorium adenophorum*, *Parthenium hysterophorus* and *Lantana camara* along with some scattered tree and shrub species. The vegetation sampling has been done adjacent to proposed widening zone of the project to enumerate species composition and understand stand structure.

Methodology for Vegetation Study

Although there is no notified forest area present in the road corridor, but a strip of natural vegetation is present both sides of road. A random sampling approach has been followed to capture the natural vegetation in the study area.

Table 1. Details of Vegetation Sampling Locations

Sl. No.	Sampling Location	Lat-Long
1.	Near Ghandalvi Village	31.57N, 76.63E
2.	Near Ladhiyani Village	31.51N, 76.74E

The size of sampling unit (quadrat) has been determined by using the species-area-curve method. Quadrats of 10m x 10m were laid out to examine the tree layer in the direct impact zone as well as buffer zone. Within these sample plots, two 3m x 2m plots were laid out randomly for sampling shrub layer. To collect information on ground layer and other herbaceous species, five quadrats of 1m x 1m size were laid out within the tree quadrats. Species-wise counting of all individuals has been carried

out in each quadrat along with their CBH (Circumference at Breast Height) or DRC (Diameter at Root Collar).

Data analysis: The structural aspect of vegetation such as frequency, density, abundance and dominance (basal area) were determined following Mishra (1968). Importance Value Index (IVI) was computed for all the species by adding the relative values of frequency, density and dominance following Curtis & McIntosh (1950). Species distribution was calculated by Abundance to Frequency ratio following Curtis and Cottom (1956). Species diversity was computed using Shannon-Weaver Index (Shannon and Wiener 1949). HNȝ Ȇ (ni/N) × ln (ni/N) Where, HNȝ Shannonôs index of species diversity ni = Total number of individuals of one species N = Total number of individuals of all the species in one stand.

Results

Taxonomic Diversity & Species Composition

A total of 60 species of Angiosperm and one species of Pteridophyta has been recorded in primary sampling carried out for community structure in the study area. Presence of plant species is presented in **Table 2&3.**

Table 2. Taxonomic diversity recorded from the study area

Angiosperm	60
Pteridophytes	01

Table 3. List of plant species recorded in primary vegetation sampling

Sl. No.	Species	Taxonomic Group	Status (Invasive)	Medicinal/NTFP	Threatened (CAMP, 2010)
1	*Acacia catechu*	Angiosperm		Yes	
2	*Adhatoda vasica*	Angiosperm		Yes	
3	*Agave americana*	Angiosperm		Yes	
4	*Ageratum conyzoides*	Angiosperm	Yes		
5	*Albizia chinensis*	Angiosperm			
6	*Amaranthus viridis*	Angiosperm			
7	*Arundinella bengalensis*	Angiosperm			

Sl. No.	Species	Taxonomic Group	Status (Invasive)	Medicinal/NTFP	Threatened (CAMP, 2010)
8	*Asparagus adscendens*	Angiosperm		Yes	
9	*Barleria cristata*	Angiosperm		Yes	
10	*Bidens biternata*	Angiosperm			
11	*Boehmeria platyphylla*	Angiosperm			
12	*Bombax ceiba*	Angiosperm		Yes	
13	*Carissa opaca*	Angiosperm			
14	*Cassia fistula*	Angiosperm		Yes	
15	*Cassia tora*	Angiosperm			
16	*Cissampelos pareira*	Angiosperm			
17	*Clematis gouriana*	Angiosperm			
18	*Colebrookea oppositifolia*	Angiosperm			
19	*Commelina benghalensis*	Angiosperm			
20	*Cynodon dactylon*	Angiosperm			
21	*Dalbergia sissoo*	Angiosperm			
22	*Debregeasia longifolia*	Angiosperm			
23	*Dendrocalamus strictus*	Angiosperm		Yes	
24	*Desmodium elegans*	Angiosperm			
25	*Dioscorea bulbifera*	Angiosperm			
26	*Emblica officinalis*	Angiosperm		Yes	
27	*Eupatorium adenophorum*	Angiosperm	Yes		

Sl. No.	Species	Taxonomic Group	Status (Invasive)	Medicinal/NTFP	Threatened (CAMP, 2010)
28	*Euphorbia hirta*	Angiosperm			
29	*Ficus bengalensis*	Angiosperm			
30	*Ficus roxburghii*	Angiosperm			
31	*Fragaria nubicola*	Angiosperm			
32	*Gerardiana diversifolia*	Angiosperm			
33	*Grawia optiva*	Angiosperm			
34	*Ipomea carnea*	Angiosperm			
35	*Lantana Camara*	Angiosperm	Yes		
36	*Morus alba*	Angiosperm			
37	*Murraya koenigii*	Angiosperm		Yes	
38	*Oroxylum indicum*	Angiosperm			Yes
39	*Oxalis corniculata*	Angiosperm			
40	*Parthenium hysterophorus*	Angiosperm	Yes		
41	*Phyllanthus niruri*	Angiosperm			
42	*Pilea scripta*	Angiosperm			
43	*Pilea umbrosa*	Angiosperm			
44	*Saccharum spontaneum*	Angiosperm			
45	*Sida cordata*	Angiosperm			
46	*Smilax aspera*	Angiosperm			
47	*Solanum nigrum*	Angiosperm		Yes	

Sl. No.	Species	Taxonomic Group	Status (Invasive)	Medicinal/NTFP	Threatened (CAMP, 2010)
48	*Stellaria media*	Angiosperm			
49	*Syzygium cumini*	Angiosperm			
50	*Thalictrum foliolosum*	Angiosperm			
51	*Thysanolaena maxima*	Angiosperm			
52	*Tinospora cordifolia*	Angiosperm		Yes	
53	*Toona ciliata*	Angiosperm			
54	*Tridax procumbens*	Angiosperm			
55	*Urtica dioca*	Angiosperm			
56	*Vernonia cinerea*	Angiosperm			
57	*Vitex negundo*	Angiosperm			
58	*Woodfordia fruticosa*	Angiosperm			
59	*Xanthium indicum*	Angiosperm			
60	*Ziziphus sp*	Angiosperm			
61	*Adiantum Caudatum*	Pteridophyta			

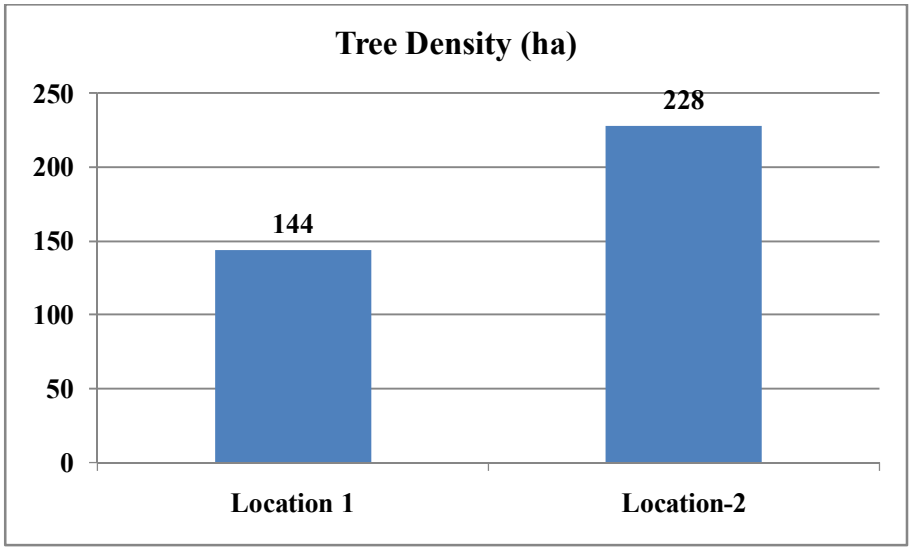
Dominant Plant species & Stand Density

Acacia catechu, *Dalbergia sissoo, Morus alba*, and *Grawia optiva* found regularly distributed in tree layer throughout project corridor. Dominant shrub species recorded from study area were *Murraya koenigii*, *Adhatoda vasica, Lantana camara* and *Carissa opaca*. A predominance of herb species like *Ageratum conyzoides, Parthanium hysterophoros, Bidens biternata* and *Tridax procumbens* was recorded in the study areaalong with various grass species. List of dominant vegetation at different sampling locations is given below:

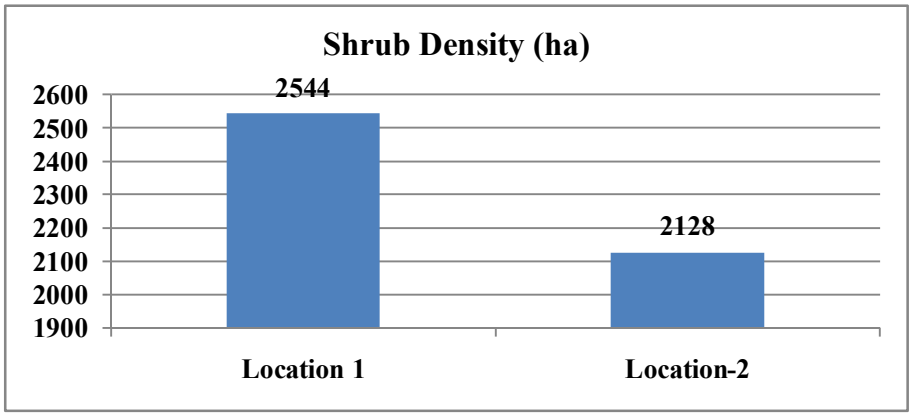
Table 4. List of dominant plant species at different sampling locations

	Tree	Shrub	Herb
Location-I	*Acacia catechu, Dalbergia sissoo, Morus alba*	*Carissa opaca, Murraya koenigii, Adhatoda vasica*	*Ageratum conyzoides, Parthanium hysterophoros, Bidens biternata*
Location-2	*Dalbergia sissoo, Morus alba, Grawia optiva*	*Adhatoda vasica, Murraya koenigii, Lantana camara*	*Ageratum conyzoides, Tridax procumbens, Parthanium hysterophoros*

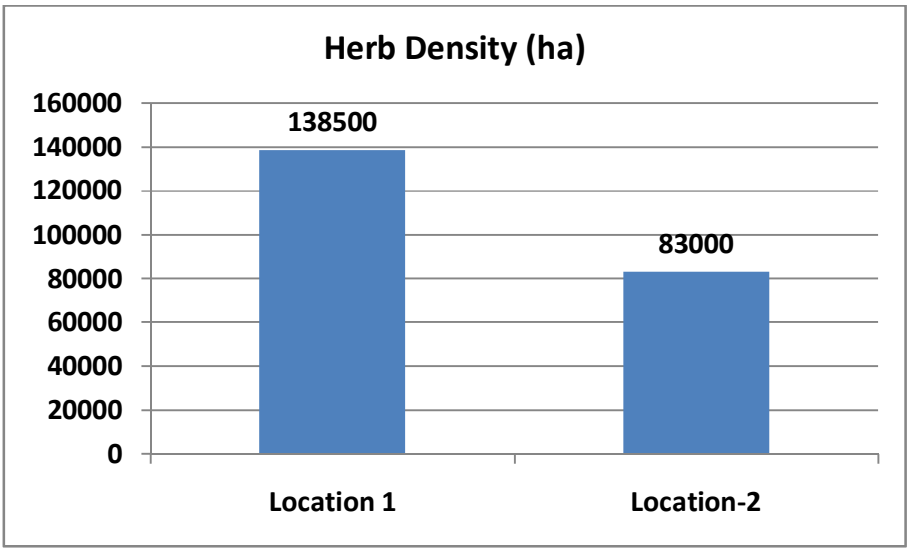
As far as the tree density values of sampling locations are concerned, it was found higher (228 trees/ha) at location-II whereas herb (138500 herbs/ha) and shrub (2544 shrubs/ha) densities were higher at sampling location-I **(Fig 2.)**.



(A) Stand density in tree layer (ha^{-1})



(B) Stand density in shrub layer (ha^{-1})



(C) Stand density in herb layer (ha^{-1})

Fig 2. Density values of tree, shrub and herb layers at different sampling locations

Species Diversity (H')

Shannon diversity index (Hô) for tree layer was found higher (2.08) at sampling location-II than sampling location-I (1.85). Hô values in shrub layer vary from 2.16 (sampling location-II) to 2.18 (sampling location-I). In herb layer, Hô was recorded higher (2.59) as compare to sampling location-I (2.52) **(Fig 3.).**

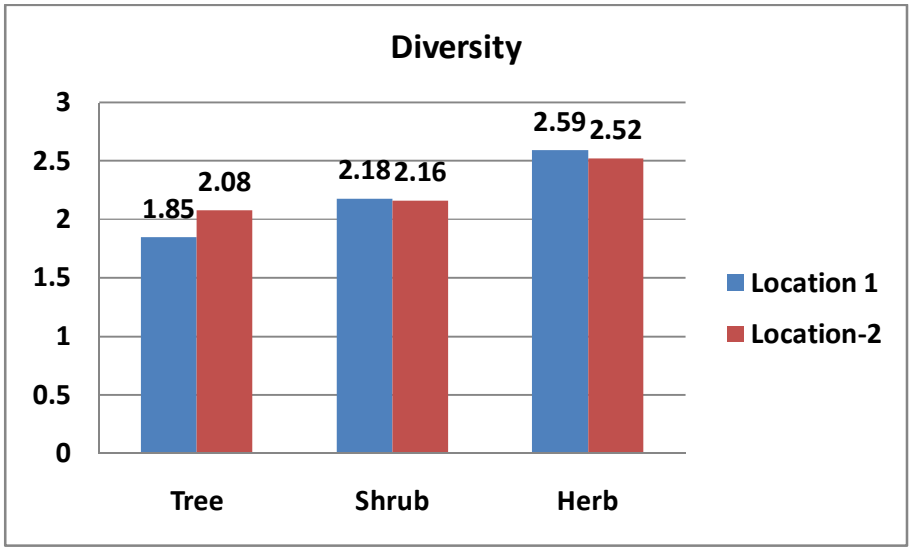


Fig 3. Shannon Diversity Index (H') at various sampling locations

Existence of National Park, Sanctuary, Biosphere Reserve

No National Park, Wildlife Sanctuary, Biosphere Reserve and any other notified sensitive area is present in the study zone of this road corridor. No wildlife corridor and animal crossing sites has been detected within the project corridor. A troupe of monkeys (about 100-130 in numbers) has been recorded Near Ladhiyani village during primary study and it is presumed that the area is sensitive to road kill.

Endemic & RET Species

All the recorded plant species from the present study were assessed for their conservation status by cross checking with red data book of Indian plants (Nayar and sastry, 1987-1990) and none of the plant taxa was found under RET category. *Oroxylum indicum* was the only species recorded from the study area comes under threatened category **(CAMP, 2010)**.

Faunal Diversity

Mammals

In order to study the mammals of the study area, 2-3 km long transects and trails were walked. Direct sighting and calls as well as indirect evidences such as scats, pugmarks, scraps, horns and other trophies were recorded during the survey walk. Secondary data as well as information elicited from the local people were also noted for the presence and absence of wild animals in the study area. A total of 23 mammalian species has been recorded/reported from study area.

Table 5. Mammalian fauna recorded from the study area during primary study

Sl. No.	Name	Scientific Name
1	Rhesus Macaque	Macaca mulatta
2	Langur	*Semnopithecus hector*
3	Red Muntjac	*Muntiacus muntjak*
4	Sambar	*Rusa unicolor*
5	Wild Pig	*Sus scrofa*
6	Jungle Cat	*Felis chaus*
7	Palm Civet	*Paradoxurus hemaphroditus*
8	Indian Civet	*Viverricula indica*
9	Grey Mongoose	*Herpestes edwardsi*

Sl. No.	Name	Scientific Name
10	Indian Mongoose	*Herpestes auropunctatus*
11	Stripped Hyaena	*Hyaena hyaena*
12	Golden Jackal	*Canis aureus*
13	Indian Hare	*Lepus nigricollis*
14	Grey Shrew	*Crocidura attenuata*
15	House Shrew	*Suncus murinus*
16	Porcupine	*Hystrix indica*
17	Palm Squirrel	*Funambulus pennantii*
18	Indian Gerbil	*Tatera indica*
19	Long tailed tree mouse	*Vandeleuria oleracea*
20	House Mouse	*Mus musculus*
21	Indian Flying fox	*Pteropus giganteus*
22	Dormer's Bat	*Scotozous dormeri*

RET Mammals

No species has been reported in the project area which is under Schedule-I category of Indian Wildlife Protection Act-1972. During primary survey, no such endangered species encountered which comes under the Rare and endangered category of IUCN.

Avifauna

Avifauna was also sampled by using the same trails used for mammals. A prismatic field binocular (Nikon ACULON A211 10x50) was used for the bird watching during survey walk. 06 to 09 AM hrs has been used for bird survey during this study. Most of the birds have been identified in the field by using the field guide. A total of 70 Bird species has been recorded during this study (Table 6.).

Table6 -Avifauna sighted/recorded during the present study

Sl. No.	Name	Scientific Name
1	Black Francolin	*Fracolinus Francolinus*
2	Red Junglefowl	*Gallus Gallus*
3	Kalij Pheasant	*Lophura leucomelanos*
4	Cheer Pheasant	*Catreus Wallichii*
5	Pallid Harrier	*Circus cyaneus*
6	Eurasian Sparrowhawk	*Accipiter nisus*
7	Steppe Eagle	*Aquila nipalensis*
8	Water Rail	*Rallus aquaticus*
9	Common Pigeon	*Columba livia*
10	Oriental Turtle Dove	*Streptopelia orientalis*
11	Eurasian Collared Dove	*Streptopelia decacto*
12	Spotted Dove	*Stigmatopelia chinensis*
13	Rose-ringed Parakeet	*Psittacula krameri*
14	Plum- headed Parakeet	*Psittacula cyanocephala*
15	Common Hawk Cuckoo	*Hierococcyx sparveriodies*
16	Indian Cuckoo	*Cuculus micropterus*
17	Eurasian Cuckoo	*Cuculus canorus*
18	Himalayan Cuckoo	*Cuculus saturatus*
19	Asian Koel	*Eudynamys scolopaceus*
20	Common Hoopoe	*Upupa epops*
21	Indian Roller	*Coracias benghalensis*

Sl. No.	Name	Scientific Name
22	White-throated Kingfisher	*Halcyon smrnensis*
23	Common Kingfisher	*Alcedo atthis*
24	Green-Bee-eater	*Merops orientalis*
25	Great Brbet	*Megalaima virens*
26	Blue-throated Barbet	*Megalaima asiatica*
27	Speckled Piculet	*Picumnus innominatus*
28	Himalayan Woodpecker	*Dendrocopos himalayensis*
29	Common Lora	*Agithina tiphia*
30	Long-tailed Minivet	*Pericrocotus ethologus*
31	Black Drongo	*Dicrurus macrocercus*
32	Ashy Drongo	*Dicrurus leucophaeus*
33	Yellow-bellied Fantail	*Chelidorhynx hypoxantha*
34	Eurasian Jay	*Garrulus glandarius*
35	Black-headed Jay	*Garrulus lanceolatus*
36	Yellow-bellied Blue Magpie	*Urocissa flavirostris*
37	Red-billed Blue Magpie	*Urocissa erythrorhyncha*
38	Grey Treepie	*Dendrocitta formosae*
39	Large-billed Crow	*Corvus macrorhynchos*
40	Eastern Jungle Crow	*Corvus (macrorhynchos) Levaillantii*
41	House Crow	*Corvus splendens*
42	Great Tit	*Parus major*

Sl. No.	Name	Scientific Name
43	Coal Tit	*Periparus ater*
44	Himalayan Bulbul	*Pycnonotus leucogenys*
45	Red-vented Bulbul	*Pycnonotus cafer*
46	Jungle Prinia	*Prinia sylvatica*
47	Common Tailorbird	*Orthotomus sutorius*
48	Brown-flanked Bush Warbler	*Cettia fortipes*
49	Grey-sided Bush Warbler	*Cettia brunnifrons*
50	Lemon-rumped Warbler	*Phylloscopus chloronotus*
51	Grey-hooded Warbler	*Phylloscopus xanthoschistos*
52	Rusty Scimitar Babbler	*Pomatorhinus horsfieldii*
53	Common Babbler	*Turdoides caudata*
54	Jungle Babbler	*Turdoides striata*
55	Oriental White-eye	*Zosterops palpebrosus*
56	Common Myna	*Acridotheres tristis*
57	Blue Whistling Thrush	*Myophonus caeruleus*
58	Black-throated Thrush	*Turdus atrogularis*
59	Oriental Magpie Robin	*Copsychus saularis*
60	White-capped Redstart	*Chaimarrornis leucocephalus*
61	Little-Forktail	*Enicurus scouleri*
62	Spotted Forktail	*Enicurus maculatus*
63	Grey Bushchat	*Saxicola ferreus*

Sl. No.	Name	Scientific Name
64	Mrs Gould's Sunbird	*Aethopyga gouldiae*
65	House Sparrow	*Passer domesticus*
66	Russet Sparrow	*Passer rutilans*
67	Grey Wagtail	*Motacilla cinerea*
68	White Wagtail	*Motacilla alba*
69	Rock Bunting	*Emberiza cia*
70	Indian Peafowl	*Pavo cristatus*

RET Birds: Among recorded/reported avifauna, Common peafowl (*Pavo Cristatus*), Cheer Pheasant (*Catreus wallichii*) and Kalij Pheasant (*Lophura leocomelanos*) comes under Schedule-I (part III) category under Wildlife Protection Act-1972.

Herpatofauna: House Lizard (*Hemidactylus brookii*) was sighted during primary study in the study area. Monitor lizard (*Varanus bengalensis*) was also reported from study area along with Rat Snake (*Ptyas mucosa*), Indian Cobra (*Naja naja*), and Common Indian Karait (*Bungarus caeruleus*). Among recorded Herpatofauna species, Monitor Lizard has placed in Schadule-I list of Wildlife Protection Act-1972.

Fish and Fisheries: There is no prominent water body recorded from study area hence, fishing is totally absent.

Appendix 11 - Photographs Of Sensitive Locations of the Project Road

	
START POINT	**A RAIN SHELTER**
	
ROAD CONDITION	**A SCHOOL AT BHARARI**
	
A TEMPLE	**End Point**

Appendix 12 - Environmental Monitoring Test Result

Star Analytical Services

2ND FLOOR, 18-21/1, VENGALAYAPALEM,
GUNTUR, Guntur Dist., Andhra Pradesh - 5220 05.
Cell : +91 7095734733, +91 7893349325
E-mail : info@staranalyticalservices.co.in

Star Analytical Services

TC- 8620

Report No: Report No: SAS/SIMSPL/AAQ/19 - 05

Name and Address of the Client:	M/s. SATRA Infrastructure Management Services Pvt. Ltd #1-8-359-363, 5th floor, Centre Point Building US Consulate Lane, Sardar Patel Rd, Indian Airlines Colony, Patigadda, Begumpet, Secunderabad, Telangana 500003
Date of Report	: 03.10.2019
Sample Collected By	: Star Analytical Services
Sample Condition	: Sample received in polythene covers and Sample Bottles
Sampling Procedure	: CPCB Guidelines (NAAQMS/Volume – I/2013-14)
Sample Description/Code	: Ambient Air Quality Monitoring
Sub Contract Test	: NA

Star Analytical Services
2ND FLOOR, 18-21/1, VENGALAYAPALEM,
GUNTUR, Guntur Dist., Andhra Pradesh - 5220 05.
Cell : +91 7095734733, +91 7893349325
E-mail : info@staranalyticalservices.co.in

Star Analytical Services

TC- 8620

Report No: SAS/SIMSPL/AAQ/19 - 05

TEST RESULT

Location: OSR 9_AAQ1_Dadhol

Samples are analysed "as is where is basis"

		Limits as per NAAQS	100µg/m³	60µg/m³	80µg/m³	80µg/m³	4mg/m³
Date of Monitoring	Registration Number	Week	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO
19.09.2019	SEPL/AAQ/ SIMSPL /09/19-13	1	57.8	19.5	6.9	13.5	0.21
20.09.2019	SEPL/AAQ/ SIMSPL /09/19-13/1	1	61.5	21.1	13.5	12.8	0.28
23.09.2019	SEPL/AAQ/ SIMSPL /09/19-20	2	58.3	20.3	7.2	13.6	0.33
24.09.2019	SEPL/AAQ/ SIMSPL /09/19-20/2	2	59.1	18.6	7.5	12.4	0.25
27.09.2019	SEPL/AAQ/ SIMSPL /09/19-44	3	58.9	21.6	6.4	11.5	0.29
28.09.2019	SEPL/AAQ/ SIMSPL /09/19-44/3	3	60.2	19.2	7.8	12.2	0.23

Opinion and interpretation: Nil

NA: Not Applicable

- Test reports shell not be reproduced expect in full, without written approval of the laboratory.

Calibration:

Date of Calibration: 26.02.2019($PM_{2.5}$) & 26.02.2019(PM_{10}) Due Date: 27.02.2020($PM_{2.5}$) & 27.02.2020 (PM_{10})

-- End of the report –

Checked by
Sekhar.P
Sr. Chemist

Authorized Signatory
T.Krishna Chaitanya
Manager-Laboratory

STAR ANALYTICAL SERVICES GUNTUR A.P.

Star Analytical Services

TC- 8620

Star Analytical Services
2ND FLOOR, 18-21/1, VENGALAYAPALEM,
GUNTUR, Guntur Dist., Andhra Pradesh - 5220 05.
Cell : +91 7095734733, +91 7893349325
E-mail : info@staranalyticalservices.co.in

Report No: Report No: SAS/SIMSPL/AAQ/19 - 06

Name and Address of the Client:

M/s. SATRA Infrastructure Management Services Pvt. Ltd
#1-8-359-363, 5th floor, Centre Point Building US Consulate Lane, Sardar Patel Rd, Indian Airlines Colony, Patigadda, Begumpet, Secunderabad, Telangana 500003

Date of Report	: 03.10.2019
Sample Collected By	: Star Analytical Services
Sample Condition	: Sample received in polythene covers and Sample Bottles
Sampling Procedure	: CPCB Guidelines (NAAQMS/Volume – I/2013-14)
Sample Description/Code	: Ambient Air Quality Monitoring
Sub Contract Test	: NA

Star Analytical Services
2ND FLOOR, 18-21/1, VENGALAYAPALEM,
GUNTUR, Guntur Dist., Andhra Pradesh - 5220 05.
Cell : +91 7095734733, +91 7893349325
E-mail : info@staranalyticalservices.co.in

TC- 8620

Report No: SAS/SIMSPL/AAQ/19 - 06

TEST RESULT

Location: OSR 9_AAQ2_Ladhror

Samples are analysed "as is where is basis"

		Limits as per NAAQS	100µg/m³	60µg/m³	80µg/m³	80µg/m³	4mg/m³
Date of Monitoring	Registration Number	Week	PM_{10}	$PM_{2.5}$	SO_2	NO_x	CO
17.09.2019	SEPL/AAQ/ SIMSPL /09/19-14	1	58.6	14.5	7.5	14.1	0.19
18.09.2019	SEPL/AAQ/ SIMSPL /09/19-14/1	1	57.2	15.2	7.1	13.6	0.22
21.09.2019	SEPL/AAQ/ SIMSPL /09/19-21	2	60.2	15.8	14.1	19.9	0.24
22.09.2019	SEPL/AAQ/ SIMSPL /09/19-21/2	2	58.9	14.9	6.9	14.5	0.26
25.09.2019	SEPL/AAQ/ SIMSPL /09/19-45	3	56.6	15.5	7.8	13.2	0.23
26.09.2019	SEPL/AAQ/ SIMSPL /09/19-45/3	3	55.4	14.6	6.3	13.9	0.18
29.09.2019	SEPL/AAQ/ SIMSPL /09/19-68	4	56.3	15.1	6.8	13.4	0.21
30.09.2019	SEPL/AAQ/ SIMSPL /09/19-68/4	4	57.1	15.9	7.3	12.3	0.25

Opinion and interpretation: Nil NA: Not Applicable

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Calibration:

Date of Calibration: 26.02.2019($PM_{2.5}$) & 26.02.2019(PM_{10}) Due Date: 27.02.2020($PM_{2.5}$) & 27.02.2020 (PM_{10})

-- End of the report –

Checked by
Sekhar.P
Sr. Chemist

Authorized Signatory
T.Krishna Chaitanya
Manager-Laboratory

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Date: 03.10.2019

TEST REPORT

Name of the Customer : **M/s. SATRA Infrastructure Management Services Pvt. Ltd**
Address #1-8-359-363, 5th floor, Centre Point Building US Consulate Lane, Sardar Patel Rd, Indian Airlines Colony, Patigadda, Begumpet, Secunderabad, Telangana 500003.

Report Number : SAS/Noise/19-051

Sample Particulars : Noise Monitoring

Name of the Road : **MDR No.9**

Date of Monitoring : 21.09.2019 to 22.09.2019

S.No	Name of the place	Area/Zone	Day Time In Leq	Night Time In Leq	CPCB NORMS (Day time)	CPCB NORMS (Night time)
1.	Dadhol	Commercial	60.5	51.2	65dB (A)	55dB (A)
2.	Ladrur	Residential	48.5	38.9	55dB (A)	45dB (A)

Checked by
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Sr. Chemist

Authorized Signatory
T.Krishna Chaitanya
Manager-Laboratory

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Date: 30.09.2019

M/s. SATRA Infrastructure Management Services Pvt. Ltd
#1-8-359-363, 5th floor, Centre Point Building US Consulate Lane,
Sardar Patel Rd, Indian Airlines Colony, Patigadda,
Begumpet, Secunderabad, Telangana 500003.

Test Report No : **SAS/W-WW/19/10 – 224**
Road Name : **ORS9**
Sample particulars : GW1_Mihirams (10+500km) Near
Sample quantity : 2 Liters
Collected by / date : SAS / 20.09.2019
Analysis Commenced on : 23.09.2019
Analysis Completed on : 30.09.2019

S.No	Parameter	Unit	Method	Result	IS 10,500 Limits	
					Acceptable	Acceptable
1	pH	--	APHA 23rd Edition; 4500 H^+ B	7.65	6.5-8.5	No Relaxation
2	Turbidity	NTU	APHA 23rd Edition; 2130 B	< 1.0	1.0	5.0
3	Conductivity	µMho/ Cm	APHA 23rd Edition; 2510 B	869.1	--	--
4	Total Dissolved Solids	mg/L	APHA 23rd Edition ; 2540 C	562.0	500.0	2000.0
5	Color	CU	APHA 23rd Edition ; 2120 B	< 1.0	5.0	15.0
6	Odor	--	--	Agreeable	Agreeable	Agreeable
7	P-Alkalinity as $CaCO_3$	mg/L	APHA 23rd Edition ; 2320 B	< 10.0	--	--
8	Alkalinity as $CaCO_3$	mg/L	APHA 23rd Edition ; 2320 B	380.0	200.0	600.0
9	Total Hardness as $CaCO_3$	mg/L	APHA 23rd Edition ; 2340 C	425.0	200.0	600.0
10	Calcium as Ca	mg/L	APHA 23rd Edition ; 3500 Ca B	40.08	75.0	200.0
11	Magnesium as Mg	mg/L	APHA 23rd Edition ; 3500 Mg B	79.07	30.0	100.0
12	Sodium as Na	mg/L	APHA 23rd Edition ; 3500 Na B	3.47	--	--
13	Potassium as K	mg/L	APHA 23rd Edition ; 3500 K B	1.24	--	--
14	Chlorides as Cl^-	mg/L	APHA 23rd Edition ; 4500 Cl^- B	24.99	250.0	1000.0
15	Sulphates as SO_4^{-2}	mg/L	APHA 23rd Edition ; 4500 SO_4^{-2} E	16.46	200.0	400.0

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Report No : SEPL/W-WW/19/10 – 224

S.No	Parameter	Unit	Method	Results	IS 10,500 Limits	
					Acceptable	Acceptable
16	Nitrate Nitrogen as N	mg/L	APHA 23rd Edition; 4500 NO_3^- B	2.16	45.0	No Relaxation
17	Fluorides as F^-	mg/L	APHA 23rd Edition ; 4500 F^- D	1.06	1.0	1.5
18	Iron as Fe	mg/L	APHA 23rd Edition ; 3500 Fe B	< 0.1	0.3	No Relaxation
19	Manganese as Mn	mg/L	APHA 23rd Edition ; 3500 Mn B	< 0.01	0.1	0.3
20	Phenolic Compounds as Phenols	mg/L	APHA 23rd Edition; 5530 D	< 0.001	0.001	0.002
21	Hexavalent Chromium as Cr+6	mg/L	APHA 23rd Edition, 2012; 3500 Cr B	< 0.01	0.05	No Relaxation
22	Residual Chlorine as Cl	mg/L	APHA 23rd Edition ; 4500 Cl B	< 0.01	0.2	1.0
23	Total Cyanide	mg/L	APHA 23rd Edition ; 4500 CN^- C, E	< 0.01	0.05	No Relaxation
24	Copper as Cu	mg/L	APHA 23rd Edition ; 3111 B	< 0.01	0.05	1.50
25	Cadmium Cd	mg/L	APHA 23rd Edition ; 3111 B	< 0.001	0.003	No Relaxation
26	Zinc as Zn	mg/L	APHA 23rd Edition ; 3111 B	< 0.5	5.0	15.0
27	Lead as Pb	mg/L	APHA 23rd Edition ; 3111 B	< 0.001	0.01	No Relaxation
28	Mineral Oil	mg/L	APHA 23rd Edition ; 5520 B	< 0.001	0.5	No Relaxation
29	Mercury	mg/L	Instrument Manual Method	< 0.001	0.001	No Relaxation
30	Silver as Ag	mg/L	Instrument Manual Method	< 0.5	0.1	No Relaxation
31	Selenium as Se	mg/L	APHA 23rd Edition ; 3111 D	< 0.05	0.01	No Relaxation
32	Total Coli forms	MPN/100ml	IS:1622	2.0	Shall not be detectable in any 100 ml Sample	
33	Fecal Coli forms	MPN/100ml	IS:1622	Absent		

Opinion and interpretation: Nil NA: Not Applicable

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Date: 30.09.2019

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#1-8-359-363, 5th floor, Centre Point Building US Consulate Lane,
Sardar Patel Rd, Indian Airlines Colony, Patigadda,
Begumpet, Secunderabad, Telangana 500003.

Test Report No : **SAS/W-WW/19/10 – 225**
Road Name : **ORS9**
Sample particulars : SW1_Mojoti
Sample quantity : 2 Liters
Collected by / date : SAS / 20.09.2019
Analysis Commenced on : 23.09.2019
Analysis Completed on : 30.09.2019

S.No	Parameter	Unit	Method	Result
1	pH	--	APHA 23rd Edition; 4500 H^+ B	8.21
2	Turbidity	NTU	APHA 23rd Edition; 2130 B	< 1.0
3	Conductivity	µMho/ Cm	APHA 23rd Edition; 2510 B	211.8
4	Total Dissolved Solids	mg/L	APHA 23rd Edition ; 2540 C	136.0
5	Color	CU	APHA 23rd Edition ; 2120 B	< 1.0
6	Odor	--	--	Agreeable
7	P-Alkalinity as $CaCO_3$	mg/L	APHA 23rd Edition ; 2320 B	< 10.0
8	Alkalinity as $CaCO_3$	mg/L	APHA 23rd Edition ; 2320 B	78.6
9	Total Hardness as $CaCO_3$	mg/L	APHA 23rd Edition ; 2340 C	109.5
10	Calcium as Ca	mg/L	APHA 23rd Edition ; 3500 Ca B	22.3
11	Magnesium as Mg	mg/L	APHA 23rd Edition ; 3500 Mg B	13.52
12	Sodium as Na	mg/L	APHA 23rd Edition ; 3500 Na B	3.96
13	Potassium as K	mg/L	APHA 23rd Edition ; 3500 K B	< 1.0
14	Chlorides as Cl^-	mg/L	APHA 23rd Edition ; 4500 Cl^- B	8.99
15	Sulphates as SO_4^{-2}	mg/L	APHA 23rd Edition ; 4500 SO_4^{-2} E	28.63

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Report No : SEPL/W-WW/19/10 – 225

S.No	Parameter	Unit	Method	Results
16	Nitrate Nitrogen as N	mg/L	APHA 23rd Edition; 4500 NO_3^- B	< 1.0
17	Fluorides as F^-	mg/L	APHA 23rd Edition ; 4500 F^- D	< 0.1
18	Iron as Fe	mg/L	APHA 23rd Edition ; 3500 Fe B	< 0.1
19	Manganese as Mn	mg/L	APHA 23rd Edition ; 3500 Mn B	< 0.01
20	Phenolic Compounds as Phenols	mg/L	APHA 23rd Edition; 5530 D	< 0.001
21	Copper as Cu	mg/L	APHA 23rd Edition ; 3111 B	< 0.01
22	Cadmium Cd	mg/L	APHA 23rd Edition ; 3111 B	< 0.001
23	Zinc as Zn	mg/L	APHA 23rd Edition ; 3111 B	< 0.5
24	Lead as Pb	mg/L	APHA 23rd Edition ; 3111 B	< 0.001
25	Mineral Oil	mg/L	APHA 23rd Edition ; 5520 B	< 0.001
26	Mercury	mg/L	Instrument Manual Method	< 0.001
27	Silver as Ag	mg/L	Instrument Manual Method	< 0.5
28	Selenium as Se	mg/L	APHA 23rd Edition ; 3111 D	< 0.05
29	Dissolved Oxygen	mg/L	APHA 23rd Edition 4500-O C	8.0
30	Chemical Oxygen Demand	mg/L	APHA 23rd Edition 5220 B	5.3
31	Biochemical Oxygen Demand(3day's at 27°C)	mg/L	IS : 3025(Part-44) :2009	1.0
32	Total Coli forms	MPN/100ml	IS:1622	38
33	Fecal Coli forms	MPN/100ml	IS:1622	14

Opinion and interpretation: Nil NA: Not Applicable

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Date: 30.09.2019

Name of the Client : **M/s. SATRA Infrastructure Management Services Pvt. Ltd**
Address #1-8-359-363, 5th floor, Centre Point Building US Consulate Lane, Sardar Patel Rd, Indian Airlines Colony, Patigadda, Begumpet, Secunderabad, Telangana 500003.

Report Number : SAS/Soil/19- 10
Sampler Particulars : Soil
Name of the Location : **OSR 9_ Near Mojoti**
Collected by/date : SAS /20.09.2019
Analysis Commenced on : 23.09.2019
Analysis Completed on : 30.09.2019

S.No	Parameters	Units	S1
1	P^H (1:2 Soil Water Extract)	--	7.68
2	Electrical Conductivity (micro mhos) (1:2 soil Water Extract)	µmho/cm	152.3
3	Bulk Density	g/cc	1.23
4	Phospates as P	Kg/Ha	6.42
5	Potassium as K	Kg/Ha	128.4
6	Nitrogen as N	Kg/Ha	196.2
7	Total Organic Carbon	%	0.86
8	Copper as Cu (mg/ Kg)	mg/kg	2.03
9	Zink as Zn (mg/ Kg)	mg/kg	0.97
10	Nickel as Ni (mg/ Kg)	mg/kg	0.25
11	Chromium as Cr (mg/ Kg)	mg/kg	2.49
13	Lead as Pb	mg/kg	4.80
14	Cadmium as Cd	mg/kg	< 0.50
15	CEC	meq/100gr	1.36
16	SAR	meq/100gr	0.58
17	Type of Soil	-	Sandy Loam
	a) Sand	%	64.5
	b)Silt	%	15.9
	c)Clay	%	19.6

Opinion and interpretation: Nil NA: Not Applicable

1. Reports pertained only to the submitted sample.
2. Test reports shell not be reproduced except in full, without written approval of the laboratory.

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Appendix 13 - GoHP's Strategy To Rehabilitate Areas Infested With Invasive Alien Plant Species (Exotic Weeds) In Himachal Pradesh

Strategy to Rehabilitate Areas Infested with Invasive Alien Plant Species (Exotic Weeds) in Himachal Pradesh: A Concept Note

Introduction

Large scale invasion of the Himachalôs landscape by alien plant species over the past 20 odd years has become a cause of serious concern from the ecological, biodiversity, socio-economic and health point of view. Even as the list of alien plant species having become invasive in the State is fairly long, it is the following four exotic weed species that need priority attention:

a. ***Lantana camara*** L. (Lantana, Fulnu-buti, Panch-phulli, Ujrhu): This Tropical American species belongs to family Verbenaceae and has been declared as Weed of National Significance by more than 60 countries across the globe. It has come to occupy almost all the forest and non-forest areas in the sub-tropical belt in the State badly affecting the native floral diversity and availability of grass.

b. ***Parthenium hysterophorus*** L. (Carrot Weed, Congress Grass, Gajar ghas, Chatak Chandni): A member of family Asteraceae and a native of Tropical America, this herb is an aggressive colonizer of degraded areas with poor ground cover and exposed soil such as agricultural fallows, wastelands, roadsides, soil dumps, overgrazed pastures and degraded forests. The species, in addition to its adverse ecological impacts, has become a serious health hazard, causing allergic reactions in human beings.

c. ***Ageratum conyzoides*** L. (Goat Weed, Neel-phulnu): This noxious herb, a member of family Asteraceae, is a native of Tropical America. It has come to occupy agricultural fields, wastelands, plantations, pastures and all forest types, posing a serious threat to the indigenous vegetation in the State.

d. ***Eupatorium adenophorum*** Sp. (Crofton Weed): A member of family Asteraceae, this shrub is a native of Mexico. It forms dense thickets in fallow and wastelands, degraded forests and forest fringes out-spacing the indigenous species. The plant also causes allergic reactions and is a potential health hazard.

The above invasive alien plant species, with major incidence in the subtropical and lower temperate areas in the State, have come to affect the quality of forests and the pasture lands. What is more worrying is that their incidence seems to be increasing every year at a quite fast ósSpeed of Spreadô. No wonder that the problem of alien weeds has been recognized as the priority management subject during this International Year of Forests, 2011. Stateôs Grazing Advisory Committee has also been raising concerns about the spread of these weeds and their affect on the pasture lands and grass availability. The issue has also become a subject of regular discussion in the State Assembly.

Extent of Spread

A forest-wise reconnaissance, carried out during March 2011 across the State, has brought out that *Lantana* alone has invaded 1.5 lakh hectares of forest lands. Similarly, the other three main exotic weeds (*Parthenium, Ageratum, Eupatorium*) have been recorded to occur over 0.50 lakh hectares of forests, especially pastures.

In addition, these exotic weeds have also come to occupy most of the roadsides and the waste lands. The road length, passing through the sub-tropical/ lower temperate zone in the State being approximately 20,000 kms with an average of 2.5 m berm on either side of these roads, the area under the exotic weeds

along roadsides works out to an estimated 10,000 hectares. More than 80% of the exotic weed infestation along road sides is on account of *Parthenium*, *Ageratum* and *Eupatorium*.

Data about extent of spread of exotic noxious weeds on wastelands/ fallow lands is not available. However, assuming that the exotic weeds occupy most of the lands classified as barren/ unculturable; culturable wastes and fallow in the sub-tropical/ lower temperate zones (apprx. 1500 km^2), the area under the exotic weeds on such lands works out to an estimated 1.5 lakh hectares. About 80% of this infestation is with *Parthenium*, *Ageratum* and *Eupatorium*.

An idea about the enormity of the problem at hand can be had from the consolidated figures presented in the table below:

Description of land	**Estimated Infestation of Invasive Alien Species (Area in ha.)**		**Total (Area in ha.)**
	Lantana	**Others (*Parthenium, Ageratum, Eupatorium*)**	
Forest land	1,50,000	50,000	2,00,000
Road sides	2,000	8,000	10,000
Lands classified as barren; cultivable wastes & fallow	25,000	1,25,000	1,50,000
Total (Area in ha.):	**1,77,000**	**1,83,000**	**3,60,000**

Analysis of the data presented in Table above reveals that whereas ó*Lantana*ô is the major noxious species of forest habitats under the administrative control of HP Forest Department, it is *Parthenium*, *Ageratum* and *Eupatorium* that form the major exotic weed species along road sides and on lands classified as barren, culturable wastes and fallow, major chunk of which is privately owned. Whereas the incidence of *Parthenium* is largely restricted to degraded and newly opened drier sites along roads and forest fringes, the other three invasive alien species tend to occupy all possible vacant places even under tree canopy. Even as *Eupatorium* and *Ageratum* show a clear preference for moister locales and show gregarious occurrence, at many places these share the niche and grow in an intimate mix with *Lantana*. It is, therefore, imperative that the management strategy should focus on comprehensive rehabilitation of areas infested with exotic weeds and not merely limit itself to any specific exotic weed species.

Another issue that has emerged from the recent survey is the ó**Speed of Spread**ô of invasive alien species, with more than 40% of the infestation reported as having taken place over the past decade only. There being little control over the various extraneous factors contributing to the spread of exotic weeds, viz. cutting of lands for roads and projects, muck dumping, uncontrolled grazing, innate biological traits of weeds, etc. the infestation is still continuing at an alarming rate. The fast changing life style, that include abandoning of marginal farm lands and voluntary keeping the surrounds clear of weeds, has only added to the pace of spread of these exotic weeds.

Past Efforts at Management of Invasive Alien Species in the State

By H P Forest Department: Some efforts at management of these weeds, especially in the forests sector in the State and revolving around mechanical/ cultural and chemical methods, have been made. Limited efforts at use of *Lantana* for making low cost furniture, coal brickets and compost have also been made in the past.

However, these management efforts, revolving mainly around mechanical removal of the exotic weeds, have been too few and too far spread to create any significant impact. An idea about the scale of

intervention can be had from the fact that over the past three years, only about 1,700 hectare of forest area has been tackled under the weed management program.

Moreover, these efforts were largely taken up as one time interventions at weed removal and were not focused on rehabilitation of the treated area. Most of the past efforts have not yielded desired results due to lack of focus on long-term follow up system.

Chemical methods (involving mainly application of glyphosate) at control of *Lantana/ Parthenium* were abandoned after initial trials due to concerns about their adverse environmental implications. Associating *Lantana* removal to use has also not found favour with the local communities, the outputs/ returns from using cut *Lantana* for furniture, bricketting or composting being not considered commensurate with the effort required for its use.

By Other Organisations: The Himachal Pradesh Agriculture University has been working to develop successful models of managing exotic weeds. It has also been, around Palampur, spearheading *Parthenium* eradication campaigns in association with educational institutions and civil society organisations. However, these campaigns have been too limited to create large scale impact.

Major learning from the past efforts at eradication of invasive alien plant species is that such efforts need to be integrated with rehabilitation of treated areas and should be of long-term duration for effective results.

Strategy for Management of Invasive Alien Species on Forest Lands

A two-day workshop was organized by the Himachal Pradesh Forest Department at Sundernagar on 22-23 April 2011 with a view to come out with the following broad outputs ï

1) documentation of species-wise/ forest-wise spread of major exotic weed species

2) documentation and review of the past efforts at weed management

3) emergence of a comprehensive strategy to rehabilitate the areas infested with the major weed species

The workshop was attended by the subject matter experts from within and outside Himachal Pradesh, forest managers, researchers, academicians, representatives of line departments and representatives of Civil Society Organisations. The workshop was inaugurated by Mr. Vinay Tandon, Pr. Chief Conservator of Forests, Himcahal Pradesh. Prof. R. K. Kohli, Chairman Botany Department, Punjab University and IUFRO Chair on Invasive Alien Species delivered the Key Note address. The highlight of the technical sessions was forest Circle-wise presentations by the Conservators of Forests, giving detailed status of exotic weeds on forest lands in their respective circles. The invited subject matter experts included Prof. N N Angiras (KV, Palampur), Prof. M K Seth (HPU, Shimla), Dr. S S Samant (G B Pant Institute, Mohal) and Dr. Kuldip Dogra (Research Fellow), who shared their experience related to the status and management strategies of exotic weeds. Mr. Santosh Kumar, Conservator of Forests, Chandigarh presented a case study about successful *Lantana* management interventions in Sukhna Wildlife Sanctuary. Dr. Anjan Kalia (representing CSO, Palampur) shared his perspective regarding the need to undertake eradication of *Parthenium* through ópeopleôs movementô.

The two day deliberations on the issue resulted in the emergence of a draft strategy for management of exotic weeds in the State, highlights of which are presented below:

Core Principles of the Strategy are set out as below

- Contain Further Spread:

  To set up biennial monitoring protocols to keep watch over the spread of exotic weeds and take immediate remedial measures to remove recent infestations, if any.

- Complete Rehabilitation of Infested Areas:

  It will involve shift from the present methods of 'one time removal of weeds' to 'complete rehabilitation' of the treated areas. Under this approach all the four above mentioned noxious exotic weeds will be tackled simultaneously. For this a comprehensive system of long-term follow up action with appropriate budgetary support will be evolved.

- Reliance on only Mechanical/ Manual Methods:

  In view of their environmental/ ecological concerns, the rehabilitation measures will NOT employ any Chemicals/ Biological methods of exotic weed control.

- Natural Resilience of Native Flora to be the basis of Rehabilitation Action:

  The natural regeneration of indigenous plant species on treated sites will be encouraged and facilitated to establish towards better environmental and ecological services, including fodder, fuel, water recharge, etc.

- No Exotic Plant Species to be used to Rehabilitate Treated Sites.

  No potentially invasive exotic species – (viz. Leucaena leucocephala, Prosopis juliflora, Teak, Darek, Silver Oak, Jatropha curcus, Tecoma stans, etc.) – will be used for plantations in the areas under weed management, because of their deleterious effect on the native flora.

- Rehabilitation to start from Low Intensity Infestation Areas and to progress towards areas with Heavy Infestation:

  Rehabilitation activities will start from the fringes of infestation zone with lower intensity infestation and will progress towards the heavily infestation areas. This approach will (i) allow tackling larger areas with the given financial resources and result in creating quick visible impact, and (ii) help in containing further spread of exotic weeds.

- Priority Rehabilitation of Heavily Infested Critical Habitats:

  *Rehabilitation of heavily infested areas as starting point will be taken up only in limited number of carefully selected **critical habitats** like grazing grounds near habitations. Such sites will then act as nucleus from where rehabilitation activity will radiate to adjoining areas of high infestation.*

- Multi-Stakeholder Participation:

  Since all landscape elements in the State are already infested with noxious exotic weeds, the departments/ agencies dealing with different land use elements would need to join hands to effectively tackle this menace.

- Working under Campaign Mode:

  The problem being enormous, it would need building larger societal consensus and engaging civil society organizations and local people/ social groups to effectively tackle this problem. It is possible under a campaign mode for which viable implementation mechanism would be evolved.

Methods for Strategy Implementation

- Forest Beat will be the Unit for Rehabilitating Exotic Weed Infested Areas:

  It will create comprehensive visible impact and show quick results of rehabilitation action.

- *Forest beats with lowest infestation will be selected first.*
- *Within the selected beat, rehabilitation action will start from the areas with least infestation.*
- *Heavily infested critical habitat in the selected beat, if any needed to be tackled on priority basis, will be selected/ approved by the concerned DFO.*
- *Financial resources available for the purpose under various schemes will be converged to rehabilitate all areas under the selected beat in the shortest possible time.*

- All Noxious Exotic Weed Species will be Tackled Simultaneously:

All the noxious exotic weeds will be tackled simultaneously on the selected area to ensure complete rehabilitation of the infested areas.

- Method of Removing Exotic Weeds will be as under:

  The invasive plant species will be removed by employing only mechanical/ manual methods, as given below:

- *Lantana will be cut by using Cut Root Stock (CRS) method i.e. cutting the bushes below the soil to prevent coppicing* (Annexure-II).
- *Other exotic weeds will be uprooted/ cut along the ground.*

- The following will be standardized for effective implementation of exotic weed management initiative:

- *Cutting tools/ techniques*
- *Calendar of rehabilitation activities*
- *Cost models*

- A three year intensive maintenance of the treated areas and periodic follow up (every 3 years?) thereafter will form integral part of the rehabilitation program till the areas gets fully rehabilitated.
- Local people, through existing community groups, will be actively engaged to participate in rehabilitation of exotic weed infested areas.

Funding Options

The State Forest Department will explore funding possibilities for this initiative under State CAMPA/ NPV funds; Centrally Sponsored Schemes (ócontrol & Eradication of Forest Invasive Speciesô under Intensification of Forest Management Program); Regular Departmental Plantation Schemes; and MNREGA.

State CAMPA/ NPV: An initial allocation for rehabilitation of 1000 hectares per year under State CAMPA/ NPV funds has already been made.

CAT Plans: Rehabilitation of areas infested with invasive alien plant species also forms integral part of some of the CAT Plans (e.g. UHL Stage-III). There is a need to work out the total areas to be tackled for the purpose under various CAT Plans in the State to know the total extent of areas being tackled under this budget head.

MNREGA: This scheme offers a great potential for management of exotic weed infested areas. However, there are certain issues that need to be sorted out for achieving effective results. The major issues being (a) inclusion of exotic weed removal as integral part of the Panchayatôs annual development agenda, (b) making available able bodied registered beneficiaries at right time of the year to handle this strenuous work, often away from the habitations (c) incorporation of nursery raising as one of the approved activities under the scheme, (d) provision for at least three year maintenance of the treated areas.

Management of Invasive Alien Species on Non-Forest Lands

As already brought out, a large chunk of non-forest land mass in the State is also facing increasing invasion of alien plant species. The situation is especially severe along road sides and waste lands/ fallow lands where heavy infestation by noxious exotic weeds has not only resulted in reduction in the traditional grazing grounds but has also become a cause of serious health hazard.

The State Rural Development Department, Agriculture Department, Horticulture Department, Public Works Department and the Municipal bodies will initiate appropriate measures for management of noxious weeds on non-forest areas based on the broad strategy principles as brought out above.

It is expected that the above strategy will effectively guide the program to manage invasive alien plant species in the State in a time bound manner.

Forest Circle-wise incidence of exotic weeds on forest lands, as recorded during January-March 2011, is given in below table.

Circle-Wise Incidence of Exotic Weed Infestation in Forest Areas
(based on field data collected by field offices during January-March 2011)

Circle	Forest Area under the Invasion of				
	Lantana	***Ageratum***	***Parthenium***	***Eupatorium***	**Total**
Nahan	21,456.99	4,302.51	4,260.73	595.87	30,616.10
Bilaspur	55,941.55	0	0	0	55,941.55
Mandi	7,900.00	2,360.00			10,260.00
Hamirpur	12,680.00	0	0	0	12,680.00
Dharamshala	47,403.00	12,810.00			60,213.00
Shimla	4,060.89	0	1,100.00	0	5,160.89
Rampur	0	0	0	0	0
Chamba	4,631.77	132.91	68.5	85.4	4,918.58
Kullu	575.7	0	284.3	137.25	997.25
WL (S)	475.06	683.98	611.44	190.5	1,960.98
WL (N)	1,160.00	54	0	1,239.00	2,453.00
WL (GHNP)	0	0	0	0	0
Total	**1,56,284.96**	**20,343.40**	**6,324.97**	**2,248.02**	**1,85,201.35**

Note:

1. As the data was collected during winter months when species like *Eupatorium*&*Parthenium* are still in dormancy, their incidence seems to be under-reported.

2. More than one species of exotic weeds seem to occur either in an intimate mixture or in distinct gregarious patches in the same forest.

3. Thus, any strategy for their management needs to be focus on rehabilitation of areas by simultaneously removing all exotic weed species and should not be species specific.

Compiled by:

CCF (Fl. Div., NTFP & Res. Mgmt.)

Sundernagar

Method for Removal of *Lantana*

Removal of adult clumps using 'Cut Root Stock' (CRS) method: This method involves cutting the main tap root of Lantana plant beneath the ócoppicing zoneô (transition zone between stem base and rootstock). This method of removal involves engagement of 2ï 3 individuals to work in a group for the removal of Lantana if the clumps are too large to be handled by one individual after the rootstock is cut. The steps involved in the cut rootstock method are:

(i) The person, who engages in removal of *Lantana*, is positioned in a way that he stands near centre of the *Lantana* clump with his back facing the clump and holding the handle of digger (kudal).

(ii) Using the specially designed digger, the person cuts the main rootstock of *Lantana* 3ï 5 cm below the soil surface by hitting the rootstock 3 or 4 times; while hitting the rootstock the blade of the digger gets lodged into the main tap root, and at this point it is useful to move the handle of the digger in the forward direction away from the body of the person so as to severe the connection of the clump with the main tap root. In case the clumps of *Lantana* form impenetrable thickets, it is advantageous to cut the rootstocks of 3ï 4 contiguous clumps to make the removal operation convenient. It may be noted that the branches of *Lantana* clumps should not be slashed/cut to gain access to the centre of the clump for its removal by cut rootstock method. The branches of *Lantana* thicket formed by more than one clump should be lifted and tipped over from one end by using a wooden or bamboo pole of about 1.5ï 2.5 m long and diameter 5ï 6 cm which is inserted just below the branches from one side and rolled over easily by two workers holding the pole at either end and pressing it so as to reach the centre of the clump.

Such manual handling of impenetrable thicket makes it possible to reach the centre of clump easily, as otherwise its umbrella type canopy makes it difficult to reach the main stem. Such physical manoeuvre also minimizes or prevents regeneration from rooted cut branches when they fall on the ground.

(i) Lift the clump/(s) and place the clump/(s) upside down. If the clump is not placed upside down, the prostrate rooted branches and the aerial old branches having aerial roots at nodes may develop into adult plants when they come in contact with the soil. Therefore, the upsideï down orientation of cut clumps is critical in the prevention of regeneration of *Lantana* from cut clumps. It may be noted that *Lantana* does not produce root suckers.

(ii) After drying the clumps, the clumps may be used as fuel or burnt at the same site or all the dried clumps may be collected at one place and then burnt. The best time for removal of *Lantana* is just before rainy season, i.e. when the plants are not in flowering and fruiting.

Appendix 14 - Data_census & economic

Socio Economic Impact Assessment for Proposed Project																					
Socio economic Details of the Revenue Villages																					
S.No	Name	TRU	No_HH	TOT_P	TOT_M	TOT_F	P_06	M_06	F_06	P_SC	M_SC	F_SC	P_ST	M_ST	F_ST	P_LIT	M_LIT	F_LIT	P_ILL	M_ILL	F_ILL
1	Kothi (285)	Rural	82	357	178	179	28	15	13	17	8	9	0	0	0	303	151	152	54	27	27
2	Ghandalwin (281)	Rural	259	1082	517	565	114	51	63	171	78	93	2	1	1	863	442	421	219	75	144
3	Tikri (323)	Rural	24	92	46	46	5	3	2	0	0	0	0	0	0	77	41	36	15	5	10
4	Mihara (291)	Rural	127	532	278	254	46	27	19	54	29	25	0	0	0	427	234	193	105	44	61
5	Badsara (292)	Rural	33	164	79	85	21	12	9	10	5	5	0	0	0	128	65	63	36	14	22
6	Panjaila (258)	Rural	3	17	9	8	1	1	0	17	9	8	0	0	0	13	7	6	4	2	2
7	Lethawin (296)	Rural	60	295	151	144	34	22	12	48	25	23	0	0	0	228	121	107	67	30	37
8	Gatwar (295)	Rural	50	214	101	113	30	16	14	77	36	41	0	0	0	166	78	88	48	23	25
9	Ladhyani (294)	Rural	192	915	474	441	81	43	38	231	117	114	1	1	0	737	404	333	178	70	108
10	Bhater (298)	Rural	67	289	127	162	33	13	20	62	25	37	0	0	0	245	107	138	44	20	24
11	Dadhol Kalan (265)	Rural	215	956	450	506	105	47	58	243	115	128	0	0	0	734	376	358	222	74	148
12	Padyalag (267)	Rural	137	631	323	308	58	31	27	196	95	101	0	0	0	518	278	240	113	45	68
13	Lehri Sarail (272)	Rural	569	2639	1271	1368	298	148	150	654	323	331	0	0	0	2026	1040	986	613	231	382
14	Bari Kalan (269)	Rural	53	277	135	142	36	23	13	32	12	20	0	0	0	211	108	103	66	27	39
15	Bari Khurd (268)	Rural	17	92	46	46	11	5	6	0	0	0	0	0	0	73	37	36	19	9	10
	Total		1888	8552	4185	4367	901	457	444	1812	877	935	3	2	1	6749	3489	3260	1803	696	1107
	%		4.53	100.00	48.94	51.06	10.54	5.34	5.19	21.19	10.25	10.93	0.04	0.02	0.01	78.92	40.80	38.12	21.08	8.14	12.94

Socio Economic Impact Assessment for Proposed Project																		
Details of the Work Participation in the Study Area																		
S.No	**Name**	**TRU**	**No_HH**	**TOT_P**	**TOT_M**	**TOT_F**	**TOT_WORK_P**	**TOT_WORK_M**	**TOT_WORK_F**	**MAINWORK_P**	**MAINWORK_M**	**MAINWORK_F**	**MARGWORK_P**	**MARGWORK_M**	**MARGWORK_F**	**NON_WORK_P**	**NON_WORK_M**	**NON_WORK_F**
	Bharari Taluka Bilaspur Distrcit of Himachal Pradesh																	
1	Kothi (285)	Rural	82	357	178	179	148	83	65	148	83	65	0	0	0	209	95	114
2	Ghandalwin (281)	Rural	259	1082	517	565	553	272	281	257	235	22	296	37	259	529	245	284
3	Tikri (323)	Rural	24	92	46	46	45	17	28	23	14	9	22	3	19	47	29	18
4	Mihara (291)	Rural	127	532	278	254	269	132	137	76	59	17	193	73	120	263	146	117
5	Badsara (292)	Rural	33	164	79	85	91	40	51	91	40	51	0	0	0	73	39	34
6	Panjaila (258)	Rural	3	17	9	8	14	7	7	6	5	1	8	2	6	3	2	1
7	Lethawin (296)	Rural	60	295	151	144	171	83	88	121	68	53	50	15	35	124	68	56
8	Gatwar (295)	Rural	50	214	101	113	113	49	64	99	47	52	14	2	12	101	52	49
9	Ladhyani (294)	Rural	192	915	474	441	554	293	261	336	225	111	218	68	150	361	181	180
10	Bhater (298)	Rural	67	289	127	162	168	70	98	13	13	0	155	57	98	121	57	64
11	Dadhol Kalan (265)	Rural	215	956	450	506	534	255	279	168	127	41	366	128	238	422	195	227
12	Padyalag (267)	Rural	137	631	323	308	285	177	108	264	158	106	21	19	2	346	146	200
13	Lehri Sarail (272)	Rural	569	2639	1271	1368	1323	687	636	922	528	394	401	159	242	1316	584	732
14	Bari Kalan (269)	Rural	53	277	135	142	89	66	23	49	39	10	40	27	13	188	69	119

Socio Economic Impact Assessment for Proposed Project																		
Details of the Work Participation in the Study Area																		
S.No	**Name**	**TRU**	**No_HH**	**TOT_P**	**TOT_M**	**TOT_F**	**TOT_WORK_P**	**TOT_WORK_M**	**TOT_WORK_F**	**MAINWORK_P**	**MAINWORK_M**	**MAINWORK_F**	**MARGWORK_P**	**MARGWORK_M**	**MARGWORK_F**	**NON_WORK_P**	**NON_WORK_M**	**NON_WORK_F**
15	Bari Khurd (268)	Rural	17	92	46	46	27	22	5	24	20	4	3	2	1	65	24	41
	Total		**1888**	**8552**	**4185**	**4367**	4384	2253	2131	2597	1661	936	1787	592	1195	4168	1932	2236
	%		**4.53**	**100**	**48.94**	**51.06**	51.26	26.34	24.92	30.37	19.42	10.94	20.90	6.92	13.97	48.74	22.59	26.15

Appendix 15 - Village Wise – Amenities

Annexure 3.2 Social Amenities in the Study Area															
Sub District Name	Village Name	CD Block Name	Total Geographical Area (in Hectares)	Total Households	Govt Pre - Primary School (Nursery/LKG/UKG) (Numbers)	Private Pre - Primary School (Nursery/LKG/UKG) (Numbers)	Govt Primary School (Numbers)	Govt Middle School (Numbers)	Govt Secondary School (Numbers)	Govt Senior Secondary School (Numbers)	Nearest Village/Town Name	Community Health Centre (Numbers)	Primary Health Centre (Numbers)	Primary Heallth Sub Centre (Numbers)	Maternity And Child Welfare Centre (Numbers)
Bharari	Kothi (285)	Ghumarwin	58.79	82	0	0	0	0	0	0	MAHARAN	0	0	0	0
Bharari	Ghandalwin (281)	Ghumarwin	214	259	0	1	1	1	0	0	MARHANA	1	0	1	0
Bharari	Tikri (323)	Ghumarwin	23.91	24	0	0	0	0	0	0	MARHANA	0	0	0	0
Bharari	Badsara (292)	Ghumarwin	53.02	33	0	0	0	0	0	0	BHARQATRI	0	0	0	0
Bharari	Lehri Sarail (272)	Ghumarwin	543	569	1	0	1	1	1	1		1	0	1	1
Bharari	Bari Kalan (269)	Ghumarwin	43.38	53	0	0	0	0	0	0	DAGHOL	0	0	0	0
Bharari	Bari Khurd (268)	Ghumarwin	12.06	17	0	0	0	0	0	0	DAGHOL	0	0	0	0
Bharari	Panjaila (258)	Ghumarwin	17.32	3	0	1	1	1	0	0	DAGHOL	0	0	0	0
Bharari	Lethawin (296)	Ghumarwin	39	60	0	0	0	0	0	0	BHARARI	0	0	0	1
Bharari	Gatwar (295)	Ghumarwin	37	50	0	0	0	0	0	0	BHARARI	0	0	0	0
Bharari	Ladhyani (294)	Ghumarwin	175.31	192	0	0	0	0	0	0	BHARARI	0	0	0	0
Bharari	Bhater (298)	Ghumarwin	41	67	0	1	0	1	0	0	BHARARI	0	0	0	0
Bharari	Dadhol Kalan (265)	Ghumarwin	173	215	0	0	0	0	0	0	DAGHOL KHURD	0	0	0	0
Bharari	Padyalag (267)	Ghumarwin	98.83	137	0	0	1	0	0	0	DAGHOL	0	0	1	0

Social Amenities in the Study Area and Net Sown Area																
Sub District Name	Village Name	CD Block Name	Hand Pump (Status A(1)/NA(2))	Hand Pump Functioning All round the year (Status A(1)/NA(2))	Hand Pump Functioning in Summer months (April - September) (Status A(1)/NA(2))	Forest Area (in Hectares)	Area under Non -Agricultural Uses (in Hectares)	Barren & Un -cultivable Land Area (in Hectares)	Permanent Pastures and Other Grazing Land Area (in H[illegible])	Land Under Miscellaneous Tree Crops etc. Area (in Hectares)	Culturable Waste Land Area (in Hectares)	Fallows Land other than Current Fallows Area (in Hectares)	Current Fallows Area (in Hectares)	Net Area Sown (in Hectares)	Total Unirrigated Land Area (in Hectares)	Area Irrigated by Source (in Hectares)
Bharari	Kothi (285)	Ghumarwin	1	1	1	0	0	5.28	0.94	9.89	7.18	0	0	35.5	35.5	0
Bharari	Ghandalwin (281)	Ghumarwin	1	1	1	0	0	24.64	20.65	2.27	39.86	0	0	126.58	126.58	0
Bharari	Tikri (323)	Ghumarwin	2			0	1.14	0	0.1	3.56	1.72	0.65	0	16.74	16.74	0
Bharari	Badsara (292)	Ghumarwin	1	1	1	0	3.96	3.04	18.96	0	10.04	0	0	17.02	17.02	0
Bharari	Lehri Sarail (272)	Ghumarwin	1	1	1	0	7.53	96.3	27.7	96	48.47	18	0	249	245.19	3.81
Bharari	Bari Kalan (269)	Ghumarwin	1	1	1	0	0	10.3	0.02	0	3.18	0	0	29.88	29.88	0
Bharari	Bari Khurd (268)	Ghumarwin	1	1	1	0	0	2.86	0.08	0	0.26	0	0	8.86	8.86	0
Bharari	Panjaila (258)	Ghumarwin	1	1	1	0	0	1.8	6.36	0	8.12	0	0	1.04	1.04	0
Bharari	Lethawin (296)	Ghumarwin	1	1	1	0	7	0	4	0	6	0	3	19	17	2
Bharari	Gatwar (295)	Ghumarwin	1	1	1	0	3	0	5	0	6	0	2	21	21	0
Bharari	Ladhyani (294)	Ghumarwin	1	1	1	0	5.33	31.87	21.11	0	27.74	0	4.26	85	84.02	0.98
Bharari	Bhater (298)	Ghumarwin	1	1	1	0	7	0	4	0	2	0	0	28	28	0
Bharari	Dadhol Kalan (265)	Ghumarwin	1	1	1	4.94	0	32.07	17.77	2.45	27.95	0	0	87.82	87.82	0
Bharari	Padyalag (267)	Ghumarwin	1	1	1	0	0	25.09	7.09	0.92	16.93	0	0	48.8	48.8	0

Appendix 16 – Census Questionnaires

Himachal Pradesh State Roads Transformation Project (HPSRTP)
World Bank Project Phase II.
Questionnaire for Social Impact Assessment Survey

Structure No.: **Date:**

Name of the Enumerator: **Field Supervisor:**

1.0 GENERALIDENTIFICATION:

1.1 Location : Rural/Semi-urban/Urban

1.2 Chainage: Side : Left / Right

1.3 Name of the Hamlet/Schedule Area :

1.4 Name of Revenue Village/Town :

1.5 Panchayat /Municipality / city :

1.6 Name of the Police Station :

1.7 Taluk : District :

1.8 **Type of Impact:** 1. Title Holder Land.2.Title Holder Land+Structure.3 Non-Title Holder Encroacher.4 Non Title Holder ï Structure/ Squatters- Residential.5 Non-Title Holderð Structure/Squatter-Commercial.6. Non Title Holder ï Tenants.-Residential. 7. Non Title Holder ï Tenants.-Residential. 8.Kiosks

1.9 **Magnitude/Extent of Impact:**

Type	Extent/Magnitude			
Land	<10%	10-30%	30-50 %	➢ 50 %
Land +Structure				

2.0 HOUSEHOLD IDENTIFICATION: Tenant ☐ Owner ☐

2.1 Name of the head of the Household:

2.2 Fatherôs/Husbandôs Name:

2.3 Name of the Respondent:

2.4 Relationship of the respondent with the head of thehousehold:

2.5 Ration Card No: Aadhar No:

2.6 Number of years living in this place:

2.7 Social Status:

Religion: Hindu/ Muslim / Christian/ Jain/ Sikh/ Others (Specify)

Caste: ST/ SC/ OBC/ OC

2.8 Type of Family :

1. Joint 2. Nuclear 3. Extended

3.0 HOUSEHOLD IDENTIFICATION:

S.No	Name of the Family Members*	Relationship with HH Head	Age	Sex	Gender Orientation	Marital Status	Education	Main Occupation	Skill possessed	PwD Persons

***Start with HH**

RELATIONSHIP WITH HEAD OF HH:

1. Head of the family 2.Wife 3.Father 4. Mother 5. Son
6. Daughter 7. Brother 8.Sister 9. Son in law 10. Daughter in law 11.Sister in law
12.Grandchild 13. Others

SEX: 1. Male 2. Female 3.Other Gender (Lesbian , Gay, Bisexual and Transgender)

Gender Orientation: 1. Lesbian , 2.Gay, 3.Bisexual and 4. Transgender

EDUCATION:

1. Illiterate 2. New-literate 3. Primary 4. Middle 5. High School 6. Intermediate 7.Graduate
8. Post Graduate 9. Professional 10. Others (specify)

OCCUPATION :

1. Service 2. Trade 3. Farming 4. Allied Agriculture 5. Agricultural Laborer 6. Non Agricultural Laborer

7.HH Industry 8.Professionals (Engineer, Doctor, Ayurvedetc) 9.Petty business (mainly kiosks) 10. Unemployed

11. Student 12. Retired 13.House wife 14. Others (Specify)

MARITAL STATUS: 1. Married 2. Unmarried 3.Divorced 4. Separate 5. Widow 6.Widower 7. Deserted

DISABILITY ASPECTS: 1. Blind 2. Chronical Disease 3.Crippled 4.Orphan 5. Others (Specify)

4.0 HOUSEHOLD INCOME FROM VARIOUS SOURCES DURING THE LAST YEAR:

S.No	Sources	Annual Income(Rs)
1	Agriculture	
2	Service (Govt/Pvt)	
3	Dairy	
4	Goat/Sheep rearing	
5	Poultry	
6	HH Industry	
7	Farm Wages	
8	Nonfarm wages	
9	Remittances Rentals/interestsé etc.)	
10	Others (Specify)	
	TOTAL	

5.0 NATURE OF LOSS DUE TO THE PROJECT (only tick the relevant items):

5.1 IMPACT CATEGORY – Building ☐ Land ☐

5.2 USE OF STRUCTURE/PROPERTY

Residential	Commercial	R&C	Official	Work Shade	Cattle Shed	Farm House	Others

5.2.1 What is usage of the structure?

S.No	Type of Loss	Effected
1	Structure for residence	
2	House Plot	
3	Structure under commercial use	
4	Agriculture Land	
5	Land and structure	
6	Livelihood	
7	Residence cum commercial	
8	Compound wall	
9	Government Building	
10	Cattle shed	
11	Kiosks	
12	Well/Tubewell	
13	Hand Pump	
14	Toilet	
15	Others (Specify)	

5.3 LOSS OF STRUCTURE –

Identification and measurement (Please take photograph of structure from side view to understand losses)

Location of the Structure from center line Distance from C/L _____

Type	Dimensions of Structure	Affected Portion	Affected Built up Area (Sqm) with

					ROW		
	Length	Breath	Length	Breath	Single / Double Story		
					Roof	Wall	Floor
Pucca							
Semi Pucca							
Katcha							

Note: For each of the storey get the details as indicated in the above

5.4 Other Losses

S.No	Loss	Dimensions		
		Length	Width	Circumference/depth
1	Boundary wall			
	Wire fencing			
3	Sunshade			
4	Threshing Floor			
5	Well			
	Others			

5.5 Ownership of Structure :

Legally Owned	01
Owned but in Government Land (Patta)	02
Rented	03
Encroached	04
Squatter	05
Others	06

5.6 Loss of Land:

5.6.1 Ownership of Land

Owned	Govt	Leased	Trust	Temple	Church	Mosque
Bus stop	Pond	Community Hall	Arch	Hand Pump	Public Tap	Tank

Statue	Govt School	Others (specify)

5.6.2 Please give details of loss of the land

Type of Land	**Owned**	**Leased in**	**Leased Out**	**Encroached**	**Total**	**Area cultivated**	**Extent of Loss (%)**
Irrigated							
Un irrigated							
Orchard							
Others							
Total							
Extent of Loss							

6.0 Options for Resettlement and Rehabilitation (Please ask only to PAF other than Kiosks)

6.1 Resettlement :- if structure is lost

6.1.1 As a result of the loss you need to be relocated, how do you like to be shifted?

1) Self-Relocated.
2) Project to make arrange for relocation.

6.1.2 If 2 in 6.1 above where do you want to be relocated?

Within the village/Town	1
Outside the village/ Town	2
Within the district	3
Outside the district	4

6.1.3 What should be distance from the present location:-

Within 5 km	1
Within 5-10 km	2

More than 10 km	3

6.1.4 What type of support expected from the project in your relocation?

Compensation of the structure	1
Assistance in shifting house hold materials	2
Assistance for alternative house side	3
Assistance in construction of house	4
Permission to salvage of building materials	5
Support in trans position in salvage material	6
Other support (Specify)	7

6.1.5 If self-relocated, what arrangement you will make?

Extend existing structure	1
Construct (home in vacant plot)	2
Move out of the area	3
Stay at relatives/ friends place	4
Any other (Specify)	5

6.2 Rehabilitation :- Ask those PAPs whose livelihood would be affected

6.2.1 What type of support do you expect from the project in restoration of your livelihood lost?

Compensation at replacement value	1
Assistance in shifting	2
Assistance in Transition	3
Alternative site for shop	4
Grant for restarting the operation	5

Assistance in accessing loans	6
Employment during project construction	7
Employment during maintenance	8
Training to improve the skill level	9
Others	10

6.2.2 If more than 25 % agricultural land is lost, ask the support required in restoring their income level

Land for land	1
Adequate compensation for replacing land	2
Grants to take-up alternate self-employment activity	3
Employment during Project construction	4
Employment during maintenance	5
Training to upgrade the skill level	6
Others (specify)	7

6.3 R&R Support for Tenant

6.3.1 If structure is getting affected what support you expect

Shifting Allowance	1
Cash grant for sustenance	2
Self- Relocation Others (specify)	3
Others (Specify)	4

6.4 R & R support to shareholders

6.4.1 What type of support you expect from the project for loss of share cropping or leasing in land.

1	Crash grant for the unexpired lease period
2	Support in improving farm production
3	Others (specify)

6.5 Income Restoration Options

1	Land for land	5	Employment during construction
2	Allied Agri. Activities	6	Training for self employment
3	Petty shops	7	Household Industry
4	Cash Grant	8	Others (specify)

Q. No: Date:

Name of the Investigator:

Field Supervisor:

Name of the Signature/Fingerprint of respondent:

Appendix 17 – Socio-Economic Questionnaires

Himachal Pradesh State Roads Transformation Project (HPSRTP)
World Bank Project Phase II.
Questionnaire for Baseline Socio-Economic Survey

Structure No.: **Date:**

7.0 GENERALIDENTIFICATION:

7.1 Location : Rural/Semi-urban/Urban

7.2 Chainage: Side : Left / Right

7.3 Name of the Hamlet :

7.4 Name of Revenue Village/Town :

7.5 Panchayat /Municipality / city :

7.6 Name of the Police Station :

7.7 Taluk : District :

7.8 Ration Card No: Aadhar No:

7.9 Main Occupation of the family

1. Cultivation 2. Service 3. Business

4. Wage earning 5.Other (Please Specify)

7.10 Type of Family :

2. Joint 2. Nuclear 3. Individual

7.11 Social Status:

Religion : Hindu/ Muslim/ Christian/ Jain/ Sikh/ Others (Specify)

Caste :ST/ SC/ OBC/ OC

7.12 Type of Loss Due to the Project

Residential	Commercial	Residential and Commercial	Others (Specify)

7.13 **Type of Impact:** 1. Title Holder Land.2.Title Holder Land+Structure.3 Non-Title Holder Encroacher.4 Non Title Holder ï Structure/ Squatters- Residential.5 Non-Title Holderð Structure/Squatter-Commercial.6. Non Title Holder ï Tenants.-Residential. 7. Non Title Holder ï Tenants.-Residential. 8.Kiosks

7.14 **Magnitude/Extent of Impact:**

Type	Extent/Magnitude			
Land	<10%	10-30%	30-50 %	➢ 50 %
Land +Structure				

7.15 Services available within house:

Do you have a separate kitchen	Yes - 1 / No - 2
Do you have a toilet	Yes - 1 / No - 2

Do you have a bathroom	Yes - 1 / No ï 2
Do you have electricity connection	Yes - 1 / No ï 2
Access to drinking water	Public tap ï 1 Hand pump ï 2 Own bore - 3 Open well ï 4 Common ï 5 Pond/Lake ï 6 Other(specify) - 7
Fuel for cooking	LPG Gas ï 1 Gobar Gas ï 2 Kerosene ï 3 Firewood ï 4 Other(specify) - 5
How long have you been staying in this house	

7.16 Do you have the following:

TV	Yes - 1 / No - 2
Fridge	Yes - 1 / No - 2
Washing Machine	Yes - 1 / No - 2
Cycle	Yes - 1 / No - 2
Motor cycles	Yes - 1 / No - 2
Car	Yes - 1 / No - 2
Telephone	Yes - 1 / No - 2
Mobile phone	Yes - 1 / No - 2
Cattles	Yes - 1 / No ï 2 If Yes, Number_____
Buffalo	Yes - 1 / No ï 2 If Yes, Number_____
Goat / Sheep	Yes - 1 / No ï 2

	If Yes, Number_____

8.0 HOUSEHOLD IDENTIFICATION:

S.No	Name of the Family Members*	Relationship with HH Head	Age	Sex	Gender Orientation	Marital Status	Education	Main Occupation	Skill possessed	Disabled Persons

***Start with HH**

RELATIONSHIP WITH HEAD OF HH:

1Head of the family 2.Wife 3.Father 4.Mother 5.Son 6.Daughter7. Brother 8.Sister

9.Son in law 10. Daughter in law 11.Sister in law 12.Grandchild 13. Others

SEX: 1. Male 2. Female 3. Others Other Gender(Lesbian , Gay, Bisexual and Transgender)

Gender Orientation:1. Lesbian , 2.Gay, 3.Bisexual and 4. Transgender

EDUCATION:

2. Illiterate 2. New-literate 3. Primary 4. Middle 5. High School 6. Intermediate 7.Graduate
8.Post Graduate 9. Professional 10. Others (specify)

OCCUPATION :

2. Service 2. Trade 3. Farming 4. Allied Agriculture 5. Agricultural Laborer 6. Non Agricultural Laborer

7.HH Industry 8.Professionals (Engineer, Doctor, Ayurvedetc) 9.Petty business (mainly kiosks) 10. Unemployed

11. Student 12. Retired 13.House wife 14. Others (Specify)

MARITAL STATUS: 1. Married 2. Unmarried 3.Divorced 4. Separate 5. Widow 6.Widower 7. Deserted

DISABILITY ASPECTS: 1. Blind 2. Chronical Disease 3.Crippled 4.Orphan 5. Others (Specify)

9.0 ASSETS OWNED

Agriculture Properties	Unit	Prevailing Market Value
Irrigated / Wet Land	Acre	
Un Irrigated / Dry Land	Acre	
Orchard/Horticulture Land	Acre	
Others	Acre	
Others Properties		
House Plot	Sq. mts	
House	Sq. mts	
Farm House	Sq. mts	
Trees	Sq. mts	
Others immovable assets like well	Sq. mts	

10.0 HOUSEHOLD INCOME FROM VARIOUS SOURCES DURING THE LAST YEAR:

S.No	**Sources**	**Annual Income (Rs)**
1	Agriculture	

2	Service (Govt/Pvt)	
3	Dairy	
4	Goat/Sheep rearing	
5	Poultry	
6	HH Industry	
7	Farm Wages	
8	Nonfarm wages	
9	Remittances Rentals/interestsé etc.)	
10	Others (Specify)	
	TOTAL	

11.0 FINANCIAL STATUS

11.1 Deposits

Type of deposit	**Institution where deposited**	**Amount deposited (Rs)**
Long Term		
Short Term		
Others (Specify LIC etc)		

11.2 Indebtedness

Purpose of Borrowing	Amount	Source of Borrowing	Amount Returned (in Rs)	Balance (in Rs)
House Hold expenditure				
Agriculture				
House construction				
Commercial				
Animal husbandry				
Others				
Total				

12.0 Coverage Under Government Schemes

12.1 If you have availed any of the Government schemes, give details

Type of Scheme	Availed Yes/No	If Yes, indicate benefits received	Present status of the asset received
Name of the scheme			
Others benefits			

**

1. Continuing and getting returns 2. Continuing & not getting returns
3. Stopped operation

12.2 If the operation of the scheme is reported to have been stopped ask reasons ☹please give some options like death of animal, asset stolen, scheme not feasible in the area, animal sold due to disease, assets taken away as part of recovery of loan, etc.)

13.0 EXPENDITURE PATTERN
(Kindly indicate expenditure on different items during last one year)

Item	Expenditure (Rs)
Food	
Clothing	
Health	

Item	Expenditure (Rs)
Education	
Transport	
Marriage/Festivals	
Rent Farm Activities	
Others (Specify)	

14.0 NATURE OF LOSS DUE TO PROJECT:

i. Structure ii. Land iii. Land & Structure iv. Livelihood

14.1 Loss of Structure:

Location of the Structure from centerline Distance from C/L _____

Type	Dimensions of Structure		Affected Portion		Affected Built up Area (Sqm) with ROW		
	Length	Breath	Length	Breath	Single / Double Story		
					Roof	Wall	Floor
Pucca							
Semi Pucca							
Katcha							

14.2 Loss of Land:

For the land to be lost indicate the ownership and extent of area (in acres):

Owned	Govt	Leased	Trust	Temple	Church	Mosque
Bus stop	Pond	Community Hall	Arch	Hand Pump	Public Tap	Tank
Statue	Govt School		Others (specify)			

a) Area owned and operated

Type of land	Owned	Leased in	Leased out	Encroached	Total	Area cultivated	Extent of Loss
Irrigated							
Un irrigated							
Orchard							
Others							
Total							
Extent of Loss							

b)Productivity

		Area (Ha)		
		Irrigated	**Un irrigated**	**Orchard**
Kharif				
Rabi				
Others				

Value of Land

Type of Land	**Prevailing Rate of Land (Rs / acre)**
Residential Land	
Commercial land	
Irrigated	
Un Irrigated	

Orchard	
Others	

15.0 HEALTH STATUS

15.1 Was any member of your family affected by any illness in last one year?

15.2 If ôYesô please indicate the details

S. No	Type of Disease	Treatment taken
1		
2		
3		

* Allopathic ï 1 Homeopathic ï 2 Ayurvedic ï 3 Unani ï 4

Other traditional methods ï 5 No treatment ï 6

15.3 Have you heard of HIV/AIDS Yes / No

15.4 If Yes, do you know how it spreads and prevention methods Yes / No

15.5 If Yes, what was the source of information

1. Print media 2. Radio 3. TV
4. Govt. Campaign 5. NGO 6. Other (Specify)

16.0 MIGRATION

16.1 Do you or any of your family members migrate for work? Yes / No

16.2 If ôYesô how many members and for how many days / months in a year

No. of members_____ No. of Days_____

16.3 Where do you migrate?

1. Within district 2. Outside district 3. Outside the state 4. Other Country

16.4 What kind of jobs is undertaken?

1. Agricultural Labour 2. Non Agricultural Labour
3. Trade & Business 4. Others (Specify)

16.5 How much do you earn? Rs/month:_____

16.6 Trend of Migration

1. Once in a year 2. Twice in a year 3. Every alternative year
4. Once in a quarter 5. Every month 6. No regular interval

16.7 What time of the year do you migrate?

1. Summer 2. Winter 3. Rainy season 4. No particular season

17.0 WOMEN STATUS

17.1 Kindly give the time spent by women members in the following activities

S.No	Economic / Non-economic Activities	Avg No. of hours spent per day
1	Cultivation	
2	Allie Activities	
3	Sale of forest products	
4	Trade & business	
5	Agricultural labour	
6	Non Agricultural labour	
7	HH Industries	
8	Services	
9	Household Work including cooking	
10	Taking care of infants/children	
11	Fetching water and collecting fuel wood	
12	Relaxation & Entertainment	
13	Others (Specify)	

** Dairy, Poultry, Piggery, Sheep rearing, Goatry etc.

17.2 If, engaged in economic activities total income Rs_____year/month_____

17.3 Does your women member have any say in the decision making of household matters?

Yes / No

17.4 If óYesô indicate their role in the following:

S. No	Issues	Yes	No
1	Financial Matters		

2	Education Matters		
3	Health care of child		
4	Purchase of assets		
5	Day to day activities		
6	On social function and marriages		
7	Others		

17.5 Income Restoration Options

1	Land for land	5	Employment during construction
2	Allied Agri. Activities	6	Training for self employment
3	Petty shops	7	Household Industry
4	Cash Grant	8	Others (specify)

18.0 PERCEPTION ABOUT THE PROJECT

18.1 Are you aware that the state road passing through your area in under development?

Yes / No

18.2 If No, explain them about the project. If yes and after explanation, ask the following

18.3 What benefits do you fore see from the project?

a) Improved mobility
b) Grater accessibility to education / health services
c) Greater opportunities for economic activities
d) Improved employment opportunities
e) Higher wages
f) Greater access to markets
g) Realization of higher prices for the produce
h) Increase in the value of the land and structures
i) Any others (specify)

18.4 Do you also expect any adverse or negative impacts of the project?

Yes / No (if No, draw the attention to the potential losses expected and if he response is still No, end the interview)

18.5 If Yes, what are these?

a) Loss of land and other assets
b) Vulnerability to accidents

c) Loss of common civic infrastructure

d) Loss of access to common properties

e) Increased water logging

f) Increased incidence of HIV/AIDS and other diseases

g) Women, children and ages are at risk

h) Dusting and pollution during construction

i) Increased noise pollution

j) Any other (specify)

18.6 How do you think women will affect or benefit differently from the project?

Q.No: Date:

Name of the Investigator:

Field Supervisor:

Name of the Signature/Fingerprint of respondent:

Appendix 18 - Attendance Sheet of Stakeholder Consultations

(11)

Himachal Pradesh State Roads Transformation Project (HPSRTP)

Attendance Sheet for Public Consultations/FGDs

Name of the Road Dadhol - Ladrour Road

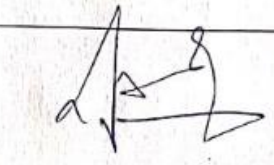
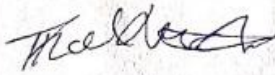
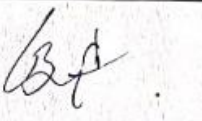
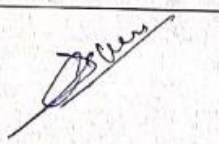
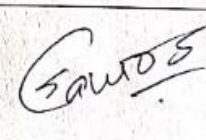
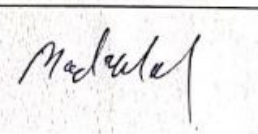
Package No _____

Chainage In Kms _____

Name of the Place Mahabir Chowk, Padyalag (Dadhaul)

District Bilaspur Taluka Bharari

Sl. No.	Name	Address & Occupation	Signature/Thumb Impression	Phone Number
1	Md. Kamal	Mason Seo		82199 24353
2	Sri Kanchhal Barur	Business. Padyalag		82199 - 51644
3	Rafi Mohomad	Saloon Dadhol		82788 08002
4	Abishek	Vill Dadhol	Abishek	7018494 671
5	Amar Sing	Padyalag		88940 39347

Sl. No.	Name	Address	Signature/Thumb Impression	Phone Number
6	Pradeep Kumar	Dadhaul.		98161 70621
7	Thakur Das-	Dadhaul.		98172 37965
8	Balbir Singh	Lanjhata		98170 06403
9	Pawan Kumar	Padiyalag		98171 57825
10	Chaman Sharma	Ladhyani		98160 74995
11	Santosh Kumar	Padiyalag		86795- 00081
12	Madan lal	Dikhinyat		98170 31505

Sl. No.	Name	Address	Signature/Thumb Impression	Phone Number
13	केसर सिंह	गाँव पड़यालग	केसर सिंह 98	98173 09327
14	प्रेम लाल	गाँव पड़यालग	प्रेम लाल	
15	अशोक कुमार	गाँव बोह	अशोक कुमार	623098 9495
16	रत्न लाल	गाँव पड़यालग	रत्न लाल	98162 84766
17	Dinesh Ram	V.P.O Dadhal	Dinesh	98161 45072
18	Bakshiram	Dadhail.		-
19	Surender	Padialag	Surender.	98171 41008

Sl. No.	Name	Address	Signature/Thumb Impression	Phone Number
20	Suresh Sharma	Radiyday	[signature]	98824, 08395
21	Naveen Kumar	Bha	[signature]	70187 26400

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Himachal Pradesh State Roads Transformation Project (HPSRTP)

Attendance Sheet for Public Consultations/FGDs

Name of the Road Dadhol - Ladrour Road

Package No _____

Chainage In Kms _____

Name of the Place Govt. High School, Gahar, Bilaspur

District Bilaspur Taluka Bharari

Headmaster
Govt. High School Gahar
Distt. Bilaspur (H.P.)

Sl. No.	Name	Address and Occupation	Signature/Thumb Impression	Phone Number
1	Sri Ramesh Ch. Sankhyan	Principal	Headmaster Govt. High School Gahar Distt. Bilaspur (H.P.)	94181 82055
2	Mrs. Anisha Bhardwaj	T.G.T. Medical Sc.	Anisha	98165 57024
3	Mr. Arun Kumar	O.T. (Shastri)	Arun	82197 96866
4	Mr. Deepak Kumar	TGT. Sc.	Deepak	94182-15872

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Himachal Pradesh State Roads Transformation Project (HPSRTP)

Attendance Sheet for Public Consultations/FGDs

Name of the Road Dadhol - Ladrour Road

Package No _____

Chainage in Kms _____

Name of the Place Govt primary Center School, Bharari

District Bilaspur Taluka Bharari

C.H.T.
G.P.C.S. Bharari

Sl. No.	Name	Address and Occupation	Signature/Thumb Impression	Phone Number
1	Smt Kamlesh Kumari	CHT Central Head Teacher		9805 203562
2.	Naveen kumar	JBT		94188471
3.	Ramesh Kumar	JBT		94184938
4	Rajiv Kumar	Parents		8894880949

(14)

Himachal Pradesh State Roads Transformation Project (HPSRTP)

Attendance Sheet for Public Consultations/FGDs

Name of the Road Dadhol - Ladrour Road

Package No

Chainage In Kms

Name of the Place Govt Sr. Secondary School, Bharari

District Bilaspur Taluka Bharari

Sl. No.	Name	Address and Occupation	Signature/Thumb Impression	Phone Number
1.	Sh. Kuldeep Singh Dogra	Principale.	Principal M.A. G.S.S.S. Bharari, Distt. Bilaspur (H.P.)	94187-70281
2	Sh. Jaspjeet Singh	Lecturer		94180-02329
3.	Sh. Desh Raj Sharma	Lecturer		9418014149
4.	Hem Raj	Lecturer		7018656127
5	Rajender Kumar	Lecturer		7018732749
6	Sri Hemraj Thakur	Pradhan GP. Bharari		98162-66370

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Himachal Pradesh State Roads Transformation Project (HPSRTP)

Attendance Sheet for Public Consultations/FGDs

Name of the Road Dadhol - Ladrour Road

Package No

Chainage In Kms

Name of the Place Police Station Bharari

District Bilaspur Taluka Bharari

Sl. No.	Name	Address and Occupation	Signature/Thumb Impression	Phone Number
1	Sri Surendra Kumar	Bharari P.S. Head Cons		94185 33913
2.	Mukesh	Constable		86791 14414
3	Kapil	Constable		98167 00636

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Himachal Pradesh State Roads Transformation Project (HPSRTP)

Attendance Sheet for Public Consultations/FGDs

Name of the Road Dadhol - Sadgour Road

Package No _____

Chainage In Kms _____

Name of the Place Anganwadi Centre, Gatwar

District Bilaspur Taluka Bharari

Sl. No.	Name	Address & Occupation	Signature/Thumb Impression	Phone Number
1	Maya Devi	Anganwadi Worker	Maya Devi	98173-48874
2	Gayatri Devi	Anganwadi Helper	गायत्री देवी	78320 75530

(1)

Stakeholder's Consultation/Focused Group Discussions Participation List

Type of consultation	Stakeholder's/Village heads/Women's/NGOs (RAP)		Date :	12/9/2019.
Name of the road :	BHADHOL - LADROUR			
MDR/OSR No:	09			
Venue :	PANCHAYATH			
Village :	BARARI			
District :	BILASPUR.			

SlNo.	Name	Age	Phone/Mobile no.	Signature/LTI
1.	(Pradhan)			
1	[illegible] Raj PARDHAN GP BHARARI	52	9816266370	[signature]
2	Rameshwar, (BHARARI)		98171=68464	[signature]
3.	Rajender Kumar (Bharari)	49Y.	9418473708	[signature]
4.	Anil Thakur	35	912996000/	[signature]
5.	Sita Ram Chalolru	65	—	[signature]
6.	Amrik Singh Chandru	45	—	Amrik Singh
7.	Ashok Kumar Bharari	52.	7018749565	[signature]
8	Duni Chand Bharari	58	9816056326	[signature]
9	Gaurav Sehgal Bharari	29	9816975774	[signature]
10	Pritam Singh	59	9815187458	[signature]
11	Gian Chand/Hoshiar S. Amin Chand	55 50, 45	9805715699 8765954499	[signature]
12	Budh Singh		9877017366	Budh
13	[illegible]			[signature]
14	[illegible]		9418478752	[signature]
15	Madanlal Bharari		98161-73025	Madan
16	Deep Raj Bharari		98170-77630	Deep Raj
17	Baldev Singh		9882015370	

Stakeholder's Consultation/Focused Group Discussions Participation List

Type of consultation	Stakeholder's/Village heads/Women's/NGOs (PAPs)	Date :	11/09/2019
Name of the road :	MRSD - 09 DHADHOL to LADROUR.		
MDR/OSR No:	09.		
Venue :	PANCHAYAT - PADHYALAG		
Village :	PADHYALAG		
District :	BILASPUR.		

SlNo.	Name	Age	Phone/Mobile no.	Signature/LTI
1.	Sunita Sharma (Pradhan)	42	9882146478	Sunita
2.	Virendra Singh Thakur P. Secretary	47	9817054530	
3.	राम प्यारी (PAPs)	55	7807060489	
4	KARMI DEVI "	60	—	
5	Madhu Bala "	40	8627926679	
6	Falan Devi "	52	7015330674	Falan Devi
7	Krishni Devi "	60	—	
8.	Meera Rani "	60	9817057325	मीरा रानी
9.	CATHYAL DEVI "	60	8894958446	सती देवी
10.	NIKKI DEVI "	72	—	निक्की देवी
11	Ishwar kumar "	44	9817157845	
12	Madan Lal "	55	9882369784	
13.	Hem Raj Kaitan "	80	9736287826	
14	Balbir Singh	63	98164-0196	
15	चमनलाल	39	9816662606	चमनलाल

(2)

Stakeholder's Consultation/Focused Group Discussions Participation List

Type of consultation	Stakeholder's/Village heads/Women's/NGOs PAPS	Date :	11/9/2019
Name of the road :	DHADHOL - LADROUR		
MDR/OSR No:	09		
Venue :	PANCHAYATH (PADHYALAG)		
Village :	PADHYALAG		
District :	BILASPUR		

SlNo.	Name	Age	Phone/Mobile no.	Signature/LTI
15	Jogindra (PAPs)	54	9805824211	[signature]
16.	Sukhdev "	56	9817541008	Sukhdev
17	Jagir Singh Mehta (Ex pradhan)	53	9816029231	Jagir
18	Lekh Ram Thakur (PAP)	59	9418256101	[signature]
19	Sohanlal (PAPs)	42	9816204071	[signature]
20	Deena nath "	70	9817330535	[signature]
21	S.R. RAMGOPAL (SATRA)	40	9866154921	[signature]
22	Nand Lal Sharma.	31	9816751555.	[signature]
			प्रधान [signature] ग्राम पंचायत, पड़्याला विकास खण्ड घुमारवीं, जिला बिलासपुर (हि० प्र०)	

Appendix 19 - Photographs of Stakeholder Consultations

Appendix 20 - Checklist for Community Consultations

Himachal Pradesh State Roads Transformation Project (HPSRTP)
Checklist for Community Level Consultations

1.1 What would be the impact on Private or CPR structures that are to be removed?

1.2 What would be the impact on land utilization (agriculture, commercial use etc.)?

1.3 What would be the impacts on occupation and incomes due to the project?

1.4 What would be the project impact on the village community in general?

1.5 Perception of people regarding- Access to amenities- would it be changed after the project?

Amenity	**Distance**		**Reduction on time**		**Quantity/Amount**	
	Present	**After the Project**	**Present**	**After the Project**	**Present**	**After the Project**
Market						
School						
College						
Religious Place						
Post office/Bank						
Railway/Bus stand						
Going to outside District for Relatives/friends						
Value of Land/Property						
Any other(Specify)						

1.6 What would be the direct and indirect Positive and negative impacts of the project?

1.7. What would be the improvement of the market connectivity?

1.8. What would be the improvement for the connectivity for religious place/tourism etc?

1.9 Community perceptions about safety of women and adolescent girls:

a. Do women in the community regularly venture out?

b. What are the typical reasons that require women to step out of the house?

c. Are women engaged in income-generating activities?

d. If yes, what is the nature of those activities?

e. What are the typical timings when women are spotted outdoors in the neighborhood? (morning/afternoon/late afternoon/evening)

f. Is the neighborhood well-lit? Are there adequate street lights?

g. Are there any areas known for eve-teasing/harassment?

h. Are community centers/any other kind of public spaces used by women on a regular basis?

i. Is it an established community (families staying in the same house for generations) or is there considerable presence of migrants (first generation/second generation)? *(Please provide socio-cultural specifications – dominant caste, other castes, language spoken, prevalent gender norms, etc.)*

1.10. Migration of Men, women and Children for Work

a. Do men migrate out for work and women and children remain in the community?

b. Do local women work in construction activities?

c. Do children work in construction activities?

d. Is there any in migration of men in the project area?

e. What are the vulnerabilities and Risks such women and children face?

1.11 SHGs: Strength and functionality

- Do SHG members meet regularly?
- What are the broad community issues they have taken up, if any? (Example: alcoholism, teacher attendance, etc.)
- Have SHG members come across any cases of physical abuse, harassment at the community level? If yes, what was the communityôs reaction? Did the SHG group play a role in helping the victim and/or dealing with the culprit?

1.12 Toilets

Has the village/town been declared as open defecation free (ODF)?

Are toilets being used regularly by both women and men?

Is water available for toilet usage?

Do women continue to defecate in the open?

1.13 Mobility: Physical and virtual

What is the principal mode of transport used by women in the area?

Is it common for women to travel alone in buses/tempos?

Do women ride cycles?

Is it common to find adolescent girls and boys using scooter/motorbikes?

Do women own their individual mobile phones?

Do adolescent girls and boys own smart phones?

Do they regularly access social media platforms like Facebook, WhatsApp, etc.?
College and secondary school

How far is the secondary school located from the habitation?

What is the enrollment number of girls v/s boys in class 8^{th}-10^{th} (average figure)

How far is the nearest degree college located?
What is the enrollment number of girlôs v/s boys in a degree course? (average figure)

How do students travel to the schools? If they walk, is that road well-lit?

What is the mode of transport typically used to reach the college?

Do school-going girls, enrolled in class 8-12^{th}, find the commute safe?

Do girls, enrolled in the degree course, find the journey safe?

1.14 Health facilities

Is the sub-centre/PHC easily accessible?

Do women patients go to a sub-centre or PHC alone or are they generally accompanied by someone?

Do women patients find it to be a safe and secure environment?

Have ANMs and ASHA workers come across any cases of physical abuse, harassment that led to substantial injuries at the community level?
Participation of women in public meetings

Do women participate actively in WUAs/aamsabhasand other such public meetings?

When community level disputes (give an example here) are resolved, how are women consulted?

Do women hold positions such as treasurer, sarpanch, etc.?

1.15 Land and ownership of assets

Do women have say in sale/purchase of land?

Do ownership of land and assets/lack of make women vulnerable to forms of violence?

Can land acquisition and compensation make women vulnerable to harassment/violence?

Appendix 21 - Gender Based Focused Group Discussion Checklist

Himachal Pradesh State Roads Transformation Project (HPSRTP)
Checklist for Community Level Consultations for GBV

1 Community perceptions about safety of women and adolescent girls:

a. Do women in the community regularly venture out?

b. What are the typical reasons that require women to step out of the house?

c. Are women engaged in income-generating activities?

d. If yes, what is the nature of those activities?

e. What are the typical timings when women are spotted outdoors in the neighborhood? (morning/afternoon/late afternoon/evening)

f. Is the neighborhood well-lit? Are there adequate street lights?

g. Are there any areas known for eve-teasing/harassment?

h. Are community centers/any other kind of public spaces used by women on a regular basis?

i. Is it an established community (families staying in the same house for generations) or is there considerable presence of migrants (first generation/second generation)? *(Please provide socio-cultural specifications – dominant caste, other castes, language spoken, prevalent gender norms, etc.)*

2. Migration of Men, women and Children for Work

a. Do men migrate out for work and women and children remain in the community?

b. Do local women work in construction activities?

c. Do children work in construction activities?

d. Is there any in migration of men in the project area?

e. What are the vulnerabilities and Risks such women and children face?

3 SHGs: Strength and functionality

- Do SHG members meet regularly?
- What are the broad community issues they have taken up, if any? (Example: alcoholism, teacher attendance, etc.)
- Have SHG members come across any cases of physical abuse, harassment at the community level? If yes, what was the communityôs reaction?

- Did the SHG group play a role in helping the victim and/or dealing with the culprit?

4 Toilets

Has the village/town been declared as open defecation free (ODF)?

Are toilets being used regularly by both women and men?

Is water available for toilet usage?

Do women continue to defecate in the open?

5 Mobility: Physical and virtual

What is the principal mode of transport used by women in the area?

Is it common for women to travel alone in buses/tempos?

Do women ride cycles?

Is it common to find adolescent girls and boys using scooter/motorbikes?

Do women own their individual mobile phones?

Do adolescent girls and boys own smart phones?

Do they regularly access social media platforms like Facebook, WhatsApp, etc.?
College and secondary school

How far is the secondary school located from the habitation?

What is the enrollment number of girls v/s boys in class 8^{th}-10^{th} (average figure)

How far is the nearest degree college located?
What is the enrollment number of girlôs v/s boys in a degree course? (average figure)

How do students travel to the schools? If they walk, is that road well-lit?

What is the mode of transport typically used to reach the college?

Do school-going girls, enrolled in class 8-12^{th}, find the commute safe?

Do girls, enrolled in the degree course, find the journey safe?

6 Health facilities

Is the sub-centre/PHC easily accessible?

Do women patients go to a sub-centre or PHC alone or are they generally accompanied by someone?

Do women patients find it to be a safe and secure environment?

Have ANMs and ASHA workers come across any cases of physical abuse, harassment that led to substantial injuries at the community level?
Participation of women in public meetings

Do women participate actively in WUAs/aamsabhas and other such public meetings?

When community level disputes (give an example here) are resolved, how are women consulted?

Do women hold positions such as treasurer, sarpanch, etc.?

7 Land and ownership of assets

Do women have say in sale/purchase of land?

Do ownership of land and assets/lack of make women vulnerable to forms of violence?

Can land acquisition and compensation make women vulnerable to harassment/violence?

Appendix 22 - Material Quantities, Cut and Fill Areas and Volumes

OSR-9 Estimated Rock and Earth Work Materials (Cut and Fill)

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
0	0	6.403	0.000	6.093	0.000	0.000	0.000	0.000	0.000
10	10	6.249	0.000	4.695	0.000	63.260	0.000	53.940	0.000
20	10	5.471	0.000	5.280	0.000	58.600	0.000	49.875	0.000
30	10	5.159	0.000	5.717	0.000	53.150	0.000	54.985	0.000
40	10	5.916	0.000	6.029	0.000	55.375	0.000	58.730	0.000
50	10	5.928	0.000	5.925	0.000	59.220	0.000	59.770	0.000
60	10	6.040	0.000	5.922	0.000	59.840	0.000	59.235	0.000
70	10	6.265	0.000	6.542	0.000	61.525	0.000	62.320	0.000
80	10	5.933	0.000	7.923	0.000	60.990	0.000	72.325	0.000
90	10	5.577	0.000	6.989	0.000	57.550	0.000	74.560	0.000
100	10	5.791	0.000	6.523	0.000	56.840	0.000	67.560	0.000
110	10	5.476	0.000	6.360	0.000	56.335	0.000	64.415	0.000
120	10	5.883	0.000	6.271	0.000	56.795	0.000	63.155	0.000
130	10	5.206	0.000	6.771	0.000	55.445	0.000	65.210	0.000
140	10	5.433	0.000	5.358	0.000	53.195	0.000	60.645	0.000
150	10	5.180	0.000	5.614	0.000	53.065	0.000	54.860	0.000
160	10	5.473	0.000	6.524	0.000	53.265	0.000	60.690	0.000
170	10	5.773	0.000	6.585	0.000	56.230	0.000	65.545	0.000
180	10	5.833	0.000	5.703	0.000	58.030	0.000	61.440	0.000
190	10	5.850	0.000	4.901	0.000	58.415	0.000	53.020	0.000
200	10	5.347	0.000	5.355	0.000	55.985	0.000	51.280	0.000
210	10	5.378	0.000	5.861	0.000	53.625	0.000	56.080	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
220	10	6.002	0.000	5.196	0.000	56.900	0.000	55.285	0.000
230	10	7.057	0.000	6.157	0.000	65.295	0.000	56.765	0.000
240	10	6.512	0.000	6.467	0.000	67.845	0.000	63.120	0.000
250	10	4.526	0.000	4.567	0.000	55.190	0.000	55.170	0.000
260	10	4.617	0.000	4.647	0.000	45.715	0.000	46.070	0.000
270	10	5.860	0.000	5.574	0.000	52.385	0.000	51.105	0.000
280	10	4.258	0.000	5.019	0.000	50.590	0.000	52.965	0.000
290	10	4.950	0.000	6.001	0.000	46.040	0.000	55.100	0.000
300	10	4.188	0.000	6.106	0.000	45.690	0.000	60.535	0.000
310	10	4.140	0.000	4.631	0.000	41.640	0.000	53.685	0.000
320	10	4.269	0.000	5.540	0.000	42.045	0.000	50.855	0.000
330	10	5.048	0.000	5.033	0.000	46.585	0.000	52.865	0.000
340	10	6.150	0.000	6.899	0.000	55.990	0.000	59.660	0.000
350	10	6.721	0.000	6.914	0.000	64.355	0.000	69.065	0.000
360	10	5.005	0.000	5.997	0.000	58.630	0.000	64.555	0.000
370	10	3.307	0.000	2.589	0.000	41.560	0.000	42.930	0.000
380	10	2.854	0.000	4.318	0.000	30.805	0.000	34.535	0.000
390	10	2.727	0.000	5.118	0.000	27.905	0.000	47.180	0.000
400	10	3.597	0.000	6.648	0.000	31.620	0.000	58.830	0.000
410	10	3.060	0.000	6.748	0.000	33.285	0.000	66.980	0.000
420	10	2.346	0.000	7.718	0.000	27.030	0.000	72.330	0.000
430	10	3.204	0.000	5.466	0.000	27.750	0.000	65.920	0.000
440	10	4.002	0.000	9.156	0.000	36.030	0.000	73.110	0.000
450	10	5.312	0.000	11.091	0.000	46.570	0.000	101.235	0.000
460	10	5.710	0.000	10.610	0.000	55.110	0.000	108.505	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
470	10	3.892	0.000	10.561	0.000	48.010	0.000	105.855	0.000
480	10	2.509	0.000	8.375	0.000	32.005	0.000	94.680	0.000
490	10	1.681	0.976	4.103	0.000	20.950	4.880	62.390	0.000
500	10	2.666	0.089	2.684	0.137	21.735	5.325	33.935	0.685
510	10	4.424	0.000	3.209	0.000	35.450	0.445	29.465	0.685
520	10	5.122	0.000	2.912	0.084	47.730	0.000	30.605	0.420
530	10	6.228	0.000	4.085	0.000	56.750	0.000	34.985	0.420
540	10	8.184	0.000	5.178	0.000	72.060	0.000	46.315	0.000
550	10	10.958	0.000	5.313	0.000	95.710	0.000	52.455	0.000
560	10	10.772	0.000	5.309	0.000	108.650	0.000	53.110	0.000
570	10	8.741	0.000	4.921	0.000	97.565	0.000	51.150	0.000
580	10	7.906	0.000	4.671	0.000	83.235	0.000	47.960	0.000
590	10	6.434	0.000	4.799	0.000	71.700	0.000	47.350	0.000
600	10	5.039	0.000	5.581	0.000	57.365	0.000	51.900	0.000
610	10	4.680	0.000	6.975	0.000	48.595	0.000	62.780	0.000
620	10	5.331	0.000	8.776	0.000	50.055	0.000	78.755	0.000
630	10	4.676	0.000	1.593	0.124	50.035	0.000	51.845	0.620
640	10	2.798	3.064	0.000	9.939	37.370	15.320	7.965	50.315
650	10	3.981	0.000	3.434	0.000	33.895	15.320	17.170	49.695
660	10	4.197	0.000	4.566	0.000	40.890	0.000	40.000	0.000
670	10	4.038	0.000	3.788	0.000	41.175	0.000	41.770	0.000
680	10	4.485	0.000	0.993	0.782	42.615	0.000	23.905	3.910
690	10	5.060	0.000	1.933	0.000	47.725	0.000	14.630	3.910
700	10	4.963	0.000	5.493	0.000	50.115	0.000	37.130	0.000
710	10	5.090	0.000	7.111	0.000	50.265	0.000	63.020	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
720	10	5.065	0.000	6.286	0.000	50.775	0.000	66.985	0.000
730	10	5.243	0.000	3.174	0.000	51.540	0.000	47.300	0.000
740	10	9.098	0.000	3.841	0.000	71.705	0.000	35.075	0.000
750	10	2.889	2.706	1.701	4.293	59.935	13.530	27.710	21.465
760	10	7.750	0.000	5.089	0.000	53.195	13.530	33.950	21.465
770	10	10.634	0.000	5.720	0.000	91.920	0.000	54.045	0.000
780	10	11.669	0.000	5.820	0.000	111.515	0.000	57.700	0.000
790	10	9.012	0.000	5.367	0.000	103.405	0.000	55.935	0.000
800	10	5.336	0.000	3.979	0.000	71.740	0.000	46.730	0.000
810	10	5.112	0.000	3.815	0.000	52.240	0.000	38.970	0.000
820	10	5.543	0.000	4.206	0.000	53.275	0.000	40.105	0.000
830	10	7.197	0.000	3.740	0.000	63.700	0.000	39.730	0.000
840	10	3.033	0.000	0.545	0.889	51.150	0.000	21.425	4.445
850	10	1.131	0.000	0.201	2.215	20.820	0.000	3.730	15.520
860	10	0.433	3.873	1.707	2.974	7.820	19.365	9.540	25.945
870	10	3.994	0.000	1.978	0.227	22.135	19.365	18.425	16.005
880	10	3.505	0.000	4.297	0.000	37.495	0.000	31.375	1.135
890	10	3.946	0.000	5.673	0.000	37.255	0.000	49.850	0.000
900	10	2.716	5.436	3.107	44.379	33.310	27.180	43.900	221.895
910	10	3.592	1.900	3.974	15.163	31.540	36.680	35.405	297.710
920	10	3.037	2.653	4.860	8.984	33.145	22.765	44.170	120.735
930	10	4.240	0.000	4.742	8.478	36.385	13.265	48.010	87.310
940	10	4.920	0.000	7.521	0.000	45.800	0.000	61.315	42.390
950	10	3.849	0.000	5.853	0.000	43.845	0.000	66.870	0.000
960	10	3.658	0.000	5.593	0.000	37.535	0.000	57.230	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
970	10	4.536	0.000	5.013	0.000	40.970	0.000	53.030	0.000
980	10	6.092	0.000	4.378	0.000	53.140	0.000	46.955	0.000
990	10	5.718	0.000	3.604	0.000	59.050	0.000	39.910	0.000
1000	10	5.090	0.000	3.050	0.000	54.040	0.000	33.270	0.000
1010	10	4.377	0.000	1.919	0.272	47.335	0.000	24.845	1.360
1020	10	4.515	0.000	1.820	0.425	44.460	0.000	18.695	3.485
1030	10	5.736	0.000	2.125	0.422	51.255	0.000	19.725	4.235
1040	10	6.603	0.000	3.277	0.000	61.695	0.000	27.010	2.110
1050	10	7.022	0.000	3.439	0.000	68.125	0.000	33.580	0.000
1060	10	7.132	0.000	3.721	0.000	70.770	0.000	35.800	0.000
1070	10	6.784	0.000	3.732	0.000	69.580	0.000	37.265	0.000
1080	10	5.610	0.000	4.446	0.000	61.970	0.000	40.890	0.000
1090	10	5.362	0.000	4.262	0.000	54.860	0.000	43.540	0.000
1100	10	6.581	0.000	3.725	0.000	59.715	0.000	39.935	0.000
1110	10	7.895	0.000	3.862	0.000	72.380	0.000	37.935	0.000
1120	10	7.002	0.000	3.519	0.000	74.485	0.000	36.905	0.000
1130	10	6.482	0.000	4.103	0.000	67.420	0.000	38.110	0.000
1140	10	7.219	0.000	4.590	0.000	68.505	0.000	43.465	0.000
1150	10	5.928	0.000	6.263	0.000	65.735	0.000	54.265	0.000
1160	10	3.634	0.000	5.678	0.000	47.810	0.000	59.705	0.000
1170	10	6.754	0.000	5.527	0.000	51.940	0.000	56.025	0.000
1180	10	6.732	0.000	5.843	0.000	67.430	0.000	56.850	0.000
1190	10	9.331	0.000	5.508	0.000	80.315	0.000	56.755	0.000
1200	10	14.055	0.000	4.661	0.000	116.930	0.000	50.845	0.000
1210	10	13.257	0.000	4.260	0.000	136.560	0.000	44.605	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
1220	10	5.922	0.000	4.841	0.000	95.895	0.000	45.505	0.000
1230	10	6.280	0.000	4.678	0.000	61.010	0.000	47.595	0.000
1240	10	6.689	0.000	5.541	0.000	64.845	0.000	51.095	0.000
1250	10	6.428	0.000	5.274	0.000	65.585	0.000	54.075	0.000
1260	10	5.726	0.000	3.773	0.000	60.770	0.000	45.235	0.000
1270	10	5.384	0.012	1.399	2.103	55.550	0.060	25.860	10.515
1280	10	4.772	0.000	4.837	0.000	50.780	0.060	31.180	10.515
1290	10	5.760	0.000	5.990	0.000	52.660	0.000	54.135	0.000
1300	10	5.395	0.000	6.093	0.000	55.775	0.000	60.415	0.000
1310	10	5.280	0.000	5.731	0.000	53.375	0.000	59.120	0.000
1320	10	5.444	0.000	5.749	0.000	53.620	0.000	57.400	0.000
1330	10	5.804	0.000	5.350	0.000	56.240	0.000	55.495	0.000
1340	10	5.618	0.000	5.064	0.000	57.110	0.000	52.070	0.000
1350	10	5.255	0.000	4.948	0.000	54.365	0.000	50.060	0.000
1360	10	6.721	0.000	5.889	0.000	59.880	0.000	54.185	0.000
1370	10	5.533	0.000	6.347	0.000	61.270	0.000	61.180	0.000
1380	10	5.364	0.000	5.943	0.000	54.485	0.000	61.450	0.000
1390	10	5.250	0.000	5.640	0.000	53.070	0.000	57.915	0.000
1400	10	5.285	0.000	5.206	0.000	52.675	0.000	54.230	0.000
1410	10	5.984	0.000	5.349	0.000	56.345	0.000	52.775	0.000
1420	10	5.961	0.000	5.301	0.000	59.725	0.000	53.250	0.000
1430	10	5.518	0.000	5.206	0.000	57.395	0.000	52.535	0.000
1440	10	5.919	0.000	5.928	0.000	57.185	0.000	55.670	0.000
1450	10	5.671	0.000	5.692	0.000	57.950	0.000	58.100	0.000
1460	10	5.115	0.000	4.965	0.000	53.930	0.000	53.285	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
1470	10	5.236	0.000	5.301	0.000	51.755	0.000	51.330	0.000
1480	10	5.149	0.000	5.290	0.000	51.925	0.000	52.955	0.000
1490	10	4.860	0.000	4.789	0.000	50.045	0.000	50.395	0.000
1500	10	5.314	0.000	5.108	0.000	50.870	0.000	49.485	0.000
1510	10	5.406	0.000	5.637	0.000	53.600	0.000	53.725	0.000
1520	10	5.811	0.000	5.481	0.000	56.085	0.000	55.590	0.000
1530	10	6.416	0.000	5.431	0.000	61.135	0.000	54.560	0.000
1540	10	6.057	0.000	5.332	0.000	62.365	0.000	53.815	0.000
1550	10	4.757	0.000	4.907	0.000	54.070	0.000	51.195	0.000
1560	10	6.158	0.000	5.942	0.000	54.575	0.000	54.245	0.000
1570	10	6.586	0.000	5.641	0.000	63.720	0.000	57.915	0.000
1580	10	5.448	0.000	5.509	0.000	60.170	0.000	55.750	0.000
1590	10	6.165	0.000	7.357	0.000	58.065	0.000	64.330	0.000
1600	10	5.359	0.000	6.503	0.000	57.620	0.000	69.300	0.000
1610	10	4.318	0.000	4.496	0.000	48.385	0.000	54.995	0.000
1620	10	4.740	0.000	4.995	0.000	45.290	0.000	47.455	0.000
1630	10	5.482	0.000	4.918	0.000	51.110	0.000	49.565	0.000
1640	10	6.118	0.000	5.453	0.000	58.000	0.000	51.855	0.000
1650	10	7.715	0.000	7.742	0.000	69.165	0.000	65.975	0.000
1660	10	5.369	0.000	8.581	0.000	65.420	0.000	81.615	0.000
1670	10	5.898	0.000	5.220	0.000	56.335	0.000	69.005	0.000
1680	10	6.104	0.000	6.325	0.000	60.010	0.000	57.725	0.000
1690	10	5.717	0.000	6.690	0.000	59.105	0.000	65.075	0.000
1700	10	5.452	0.000	6.054	0.000	55.845	0.000	63.720	0.000
1710	10	4.676	0.000	6.894	0.000	50.640	0.000	64.740	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
1720	10	4.248	0.000	6.926	0.000	44.620	0.000	69.100	0.000
1730	10	5.823	0.000	6.256	0.000	50.355	0.000	65.910	0.000
1740	10	4.863	0.000	7.137	0.000	53.430	0.000	66.965	0.000
1750	10	4.464	0.000	6.826	0.000	46.635	0.000	69.815	0.000
1760	10	4.380	0.000	4.513	0.000	44.220	0.000	56.695	0.000
1770	10	4.455	0.000	5.552	0.000	44.175	0.000	50.325	0.000
1780	10	4.191	0.000	5.457	0.000	43.230	0.000	55.045	0.000
1790	10	4.390	0.000	5.007	0.000	42.905	0.000	52.320	0.000
1800	10	5.329	0.000	6.645	0.000	48.595	0.000	58.260	0.000
1810	10	5.831	0.000	6.855	0.000	55.800	0.000	67.500	0.000
1820	10	5.726	0.000	6.989	0.000	57.785	0.000	69.220	0.000
1830	10	6.254	0.000	7.080	0.000	59.900	0.000	70.345	0.000
1840	10	5.940	0.000	6.569	0.000	60.970	0.000	68.245	0.000
1850	10	4.706	0.000	5.721	0.000	53.230	0.000	61.450	0.000
1860	10	4.065	0.000	6.696	0.000	43.855	0.000	62.085	0.000
1870	10	2.984	0.000	5.410	0.000	35.245	0.000	60.530	0.000
1880	10	2.549	0.000	5.527	0.000	27.665	0.000	54.685	0.000
1890	10	2.505	0.000	4.542	0.000	25.270	0.000	50.345	0.000
1900	10	3.124	0.000	4.806	0.000	28.145	0.000	46.740	0.000
1910	10	3.822	0.000	4.994	0.000	34.730	0.000	49.000	0.000
1920	10	2.903	0.000	4.489	0.000	33.625	0.000	47.415	0.000
1930	10	1.195	0.000	2.350	0.039	20.490	0.000	34.195	0.195
1940	10	0.000	1.546	1.175	0.610	5.975	7.730	17.625	3.245
1950	10	0.067	2.056	1.338	1.135	0.335	18.010	12.565	8.725
1960	10	0.438	0.850	1.460	0.392	2.525	14.530	13.990	7.635

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
1970	10	2.330	0.000	2.904	0.000	13.840	4.250	21.820	1.960
1980	10	4.096	0.000	2.241	0.000	32.130	0.000	25.725	0.000
1990	10	4.454	0.000	0.826	0.001	42.750	0.000	15.335	0.005
2000	10	4.496	0.000	2.330	0.023	44.750	0.000	15.780	0.120
2010	10	5.662	0.000	3.368	0.000	50.790	0.000	28.490	0.115
2020	10	8.804	0.000	4.216	0.000	72.330	0.000	37.920	0.000
2030	10	10.085	0.000	4.853	0.000	94.445	0.000	45.345	0.000
2040	10	8.632	0.000	5.298	0.000	93.585	0.000	50.755	0.000
2050	10	7.327	0.000	4.946	0.000	79.795	0.000	51.220	0.000
2060	10	6.052	0.000	3.516	0.214	66.895	0.000	42.310	1.070
2070	10	4.494	0.000	3.714	0.000	52.730	0.000	36.150	1.070
2080	10	3.774	0.000	0.912	0.839	41.340	0.000	23.130	4.195
2090	10	3.215	0.000	0.557	2.667	34.945	0.000	7.345	17.530
2100	10	3.839	0.000	1.751	0.000	35.270	0.000	11.540	13.335
2110	10	4.231	0.000	3.618	0.000	40.350	0.000	26.845	0.000
2120	10	5.128	0.000	3.228	0.000	46.795	0.000	34.230	0.000
2130	10	5.704	0.000	3.358	0.000	54.160	0.000	32.930	0.000
2140	10	5.482	0.000	3.367	0.000	55.930	0.000	33.625	0.000
2150	10	5.172	0.000	3.443	0.000	53.270	0.000	34.050	0.000
2160	10	4.977	0.000	3.256	0.000	50.745	0.000	33.495	0.000
2170	10	5.116	0.000	3.649	0.000	50.465	0.000	34.525	0.000
2180	10	4.921	0.000	4.744	0.000	50.185	0.000	41.965	0.000
2190	10	4.777	0.000	3.673	0.000	48.490	0.000	42.085	0.000
2200	10	4.774	0.000	3.563	0.000	47.755	0.000	36.180	0.000
2210	10	5.817	0.000	3.544	0.000	52.955	0.000	35.535	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
2220	10	5.582	0.000	3.295	0.000	56.995	0.000	34.195	0.000
2230	10	6.431	0.000	3.157	0.000	60.065	0.000	32.260	0.000
2240	10	5.461	0.000	2.990	0.000	59.460	0.000	30.735	0.000
2250	10	5.357	0.000	2.499	0.000	54.090	0.000	27.445	0.000
2260	10	5.888	0.000	2.837	0.000	56.225	0.000	26.680	0.000
2270	10	5.541	0.000	2.902	0.000	57.145	0.000	28.695	0.000
2280	10	4.499	0.000	2.018	0.000	50.200	0.000	24.600	0.000
2290	10	4.988	0.000	2.088	0.117	47.435	0.000	20.530	0.585
2300	10	5.698	0.000	2.497	0.223	53.430	0.000	22.925	1.700
2310	10	7.230	0.000	3.223	0.000	64.640	0.000	28.600	1.115
2320	10	13.363	0.000	4.843	0.000	102.965	0.000	40.330	0.000
2330	10	29.042	0.000	5.874	0.000	212.025	0.000	53.585	0.000
2340	10	23.385	0.000	3.723	0.000	262.135	0.000	47.985	0.000
2350	10	17.766	0.000	2.487	0.034	205.755	0.000	31.050	0.170
2360	10	15.377	0.000	2.215	0.000	165.715	0.000	23.510	0.170
2370	10	11.915	0.000	2.885	0.000	136.460	0.000	25.500	0.000
2380	10	9.897	0.000	4.934	0.000	109.060	0.000	39.095	0.000
2390	10	8.102	0.000	4.794	0.000	89.995	0.000	48.640	0.000
2400	10	7.044	0.000	4.935	0.000	75.730	0.000	48.645	0.000
2410	10	4.924	0.000	3.067	0.000	59.840	0.000	40.010	0.000
2420	10	5.796	0.000	3.322	0.000	53.600	0.000	31.945	0.000
2430	10	4.075	0.000	1.506	0.000	49.355	0.000	24.140	0.000
2440	10	3.154	0.000	0.625	0.486	36.145	0.000	10.655	2.430
2450	10	3.012	0.000	1.547	0.121	30.830	0.000	10.860	3.035
2460	10	3.450	0.000	1.839	0.037	32.310	0.000	16.930	0.790

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
2470	10	5.637	0.000	4.020	0.000	45.435	0.000	29.295	0.185
2480	10	6.020	0.000	4.365	0.000	58.285	0.000	41.925	0.000
2490	10	5.718	0.000	4.183	0.000	58.690	0.000	42.740	0.000
2500	10	5.658	0.000	4.914	0.000	56.880	0.000	45.485	0.000
2510	10	4.798	0.000	4.674	0.000	52.280	0.000	47.940	0.000
2520	10	5.484	0.000	4.473	0.000	51.410	0.000	45.735	0.000
2530	10	5.792	0.000	4.552	0.000	56.380	0.000	45.125	0.000
2540	10	6.985	0.000	4.331	0.000	63.885	0.000	44.415	0.000
2550	10	5.773	0.000	4.188	0.000	63.790	0.000	42.595	0.000
2560	10	5.647	0.000	3.857	0.000	57.100	0.000	40.225	0.000
2570	10	4.893	0.000	4.365	0.000	52.700	0.000	41.110	0.000
2580	10	4.644	0.000	5.373	0.000	47.685	0.000	48.690	0.000
2590	10	5.192	0.000	5.668	0.000	49.180	0.000	55.205	0.000
2600	10	4.591	0.000	6.455	0.000	48.915	0.000	60.615	0.000
2610	10	4.943	0.000	8.592	0.000	47.670	0.000	75.235	0.000
2620	10	7.558	0.000	8.636	0.000	62.505	0.000	86.140	0.000
2630	10	8.947	0.000	9.417	0.000	82.525	0.000	90.265	0.000
2640	10	9.922	0.000	8.571	0.000	94.345	0.000	89.940	0.000
2650	10	8.481	0.000	4.460	0.000	92.015	0.000	65.155	0.000
2660	10	4.716	0.000	2.595	0.000	65.985	0.000	35.275	0.000
2670	10	3.467	0.000	0.391	0.000	40.915	0.000	14.930	0.000
2680	10	3.276	0.049	0.057	0.811	33.715	0.245	2.240	4.055
2690	10	8.279	0.000	0.233	0.535	57.775	0.245	1.450	6.730
2700	10	8.147	0.000	3.102	0.000	82.130	0.000	16.675	2.675
2710	10	9.452	0.000	4.992	0.000	87.995	0.000	40.470	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
2720	10	7.062	0.000	5.421	0.000	82.570	0.000	52.065	0.000
2730	10	5.404	0.000	4.864	0.000	62.330	0.000	51.425	0.000
2740	10	4.990	0.000	5.680	0.000	51.970	0.000	52.720	0.000
2750	10	5.049	0.000	5.564	0.000	50.195	0.000	56.220	0.000
2760	10	4.890	0.000	5.568	0.000	49.695	0.000	55.660	0.000
2770	10	4.487	0.000	5.136	0.000	46.885	0.000	53.520	0.000
2780	10	4.106	0.000	6.074	0.000	42.965	0.000	56.050	0.000
2790	10	4.264	0.000	5.152	0.000	41.850	0.000	56.130	0.000
2800	10	4.415	0.000	5.221	0.000	43.395	0.000	51.865	0.000
2810	10	4.681	0.000	9.190	0.000	45.480	0.000	72.055	0.000
2820	10	5.178	0.000	9.498	0.000	49.295	0.000	93.440	0.000
2830	10	7.472	0.000	12.521	0.000	63.250	0.000	110.095	0.000
2840	10	9.067	0.000	11.463	0.000	82.695	0.000	119.920	0.000
2850	10	8.057	0.000	9.763	0.000	85.620	0.000	106.130	0.000
2860	10	5.533	0.000	7.734	0.000	67.950	0.000	87.485	0.000
2870	10	6.885	0.000	8.295	0.000	62.090	0.000	80.145	0.000
2880	10	6.228	0.000	6.694	0.000	65.565	0.000	74.945	0.000
2890	10	5.835	0.000	4.009	0.000	60.315	0.000	53.515	0.000
2900	10	6.222	0.000	4.583	0.000	60.285	0.000	42.960	0.000
2910	10	6.038	0.000	4.645	0.000	61.300	0.000	46.140	0.000
2920	10	4.570	0.000	4.703	0.000	53.040	0.000	46.740	0.000
2930	10	3.201	0.000	5.072	0.000	38.855	0.000	48.875	0.000
2940	10	3.564	0.000	5.294	0.000	33.825	0.000	51.830	0.000
2950	10	5.637	0.000	5.164	0.000	46.005	0.000	52.290	0.000
2960	10	5.814	0.000	5.023	0.000	57.255	0.000	50.935	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
2970	10	4.783	0.000	4.717	0.000	52.985	0.000	48.700	0.000
2980	10	3.113	0.000	10.505	0.000	39.480	0.000	76.110	0.000
2990	10	2.694	0.000	12.321	0.000	29.035	0.000	114.130	0.000
3000	10	2.360	0.000	13.274	0.000	25.270	0.000	127.975	0.000
3010	10	3.329	0.000	16.564	0.000	28.445	0.000	149.190	0.000
3020	10	4.291	0.000	13.981	0.000	38.100	0.000	152.725	0.000
3030	10	6.245	0.000	11.436	0.000	52.680	0.000	127.085	0.000
3040	10	8.756	0.000	9.397	0.000	75.005	0.000	104.165	0.000
3050	10	9.764	0.000	6.393	0.000	92.600	0.000	78.950	0.000
3060	10	9.507	0.000	5.663	0.000	96.355	0.000	60.280	0.000
3070	10	7.998	0.000	4.709	0.000	87.525	0.000	51.860	0.000
3080	10	5.853	0.000	3.897	0.000	69.255	0.000	43.030	0.000
3090	10	4.654	0.000	3.582	0.000	52.535	0.000	37.395	0.000
3100	10	3.686	0.000	2.568	0.000	41.700	0.000	30.750	0.000
3110	10	3.250	0.000	1.695	0.000	34.680	0.000	21.315	0.000
3120	10	2.775	0.000	1.206	0.000	30.125	0.000	14.505	0.000
3130	10	2.829	0.000	1.829	0.000	28.020	0.000	15.175	0.000
3140	10	2.575	0.000	2.058	0.000	27.020	0.000	19.435	0.000
3150	10	2.659	0.000	2.055	0.000	26.170	0.000	20.565	0.000
3160	10	3.452	0.000	3.474	0.000	30.555	0.000	27.645	0.000
3170	10	3.045	0.000	4.570	0.000	32.485	0.000	40.220	0.000
3180	10	4.230	0.000	5.000	0.000	36.375	0.000	47.850	0.000
3190	10	5.049	0.000	6.314	0.000	46.395	0.000	56.570	0.000
3200	10	3.623	0.000	4.902	0.000	43.360	0.000	56.080	0.000
3210	10	2.862	0.002	4.438	0.000	32.425	0.010	46.700	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
3220	10	6.001	0.000	5.724	0.000	44.315	0.010	50.810	0.000
3230	10	6.680	0.000	6.113	0.000	63.405	0.000	59.185	0.000
3240	10	6.701	0.000	6.356	0.000	66.905	0.000	62.345	0.000
3250	10	6.298	0.000	6.292	0.000	64.995	0.000	63.240	0.000
3260	10	6.225	0.000	5.657	0.000	62.615	0.000	59.745	0.000
3270	10	5.546	0.000	4.678	0.000	58.855	0.000	51.675	0.000
3280	10	5.219	0.000	4.457	0.000	53.825	0.000	45.675	0.000
3290	10	6.361	0.000	4.956	0.000	57.900	0.000	47.065	0.000
3300	10	6.622	0.000	4.825	0.000	64.915	0.000	48.905	0.000
3310	10	7.947	0.000	3.724	0.000	72.845	0.000	42.745	0.000
3320	10	8.804	0.000	3.647	0.000	83.755	0.000	36.855	0.000
3330	10	6.412	0.000	3.036	0.000	76.080	0.000	33.415	0.000
3340	10	8.438	0.000	5.487	0.000	74.250	0.000	42.615	0.000
3350	10	8.123	0.000	4.951	0.000	82.805	0.000	52.190	0.000
3360	10	8.128	0.000	3.279	0.000	81.255	0.000	41.150	0.000
3370	10	2.912	0.000	0.186	0.244	55.200	0.000	17.325	1.220
3380	10	0.000	3.593	0.000	6.423	14.560	17.965	0.930	33.335
3390	10	0.000	8.687	0.000	13.718	0.000	61.400	0.000	100.705
3400	10	0.000	11.272	0.000	12.626	0.000	99.795	0.000	131.720
3410	10	0.000	10.973	0.000	21.827	0.000	111.225	0.000	172.265
3420	10	0.000	4.678	0.000	8.704	0.000	78.255	0.000	152.655
3430	10	4.017	0.000	3.220	0.000	20.085	23.390	16.100	43.520
3440	10	5.906	0.000	5.090	0.000	49.615	0.000	41.550	0.000
3450	10	5.487	0.000	5.098	0.000	56.965	0.000	50.940	0.000
3460	10	5.105	0.000	4.732	0.000	52.960	0.000	49.150	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
3470	10	3.165	0.000	3.481	0.000	41.350	0.000	41.065	0.000
3480	10	1.475	0.000	2.786	0.000	23.200	0.000	31.335	0.000
3490	10	0.883	0.000	1.945	0.000	11.790	0.000	23.655	0.000
3500	10	0.045	2.509	0.531	0.004	4.640	12.545	12.380	0.020
3510	10	0.618	0.000	2.091	0.000	3.315	12.545	13.110	0.020
3520	10	1.338	0.000	5.954	0.000	9.780	0.000	40.225	0.000
3530	10	2.554	0.000	6.897	0.000	19.460	0.000	64.255	0.000
3540	10	3.587	0.000	7.815	0.000	30.705	0.000	73.560	0.000
3550	10	5.011	0.000	10.900	0.000	42.990	0.000	93.575	0.000
3560	10	3.211	0.022	9.489	0.000	41.110	0.110	101.945	0.000
3570	10	3.017	0.112	8.362	0.000	31.140	0.670	89.255	0.000
3580	10	3.859	0.000	1.906	2.767	34.380	0.560	51.340	13.835
3590	10	2.464	0.077	5.895	0.000	31.615	0.385	39.005	13.835
3600	10	2.847	0.000	6.539	0.000	26.555	0.385	62.170	0.000
3610	10	3.395	0.000	7.363	0.000	31.210	0.000	69.510	0.000
3620	10	3.399	0.000	6.886	0.000	33.970	0.000	71.245	0.000
3630	10	3.294	0.000	6.535	0.000	33.465	0.000	67.105	0.000
3640	10	2.369	1.192	4.876	0.000	28.315	5.960	57.055	0.000
3650	10	0.840	0.527	3.583	0.000	16.045	8.595	42.295	0.000
3660	10	1.082	0.776	3.604	0.000	9.610	6.515	35.935	0.000
3670	10	3.014	0.000	3.956	0.000	20.480	3.880	37.800	0.000
3680	10	4.064	0.000	9.050	0.000	35.390	0.000	65.030	0.000
3690	10	5.457	0.000	14.731	0.000	47.605	0.000	118.905	0.000
3700	10	6.585	0.000	19.879	0.000	60.210	0.000	173.050	0.000
3710	10	6.980	0.000	15.632	0.000	67.825	0.000	177.555	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
3720	10	6.926	0.000	15.275	0.000	69.530	0.000	154.535	0.000
3730	10	5.347	0.000	14.484	0.000	61.365	0.000	148.795	0.000
3740	10	5.357	0.000	16.284	0.000	53.520	0.000	153.840	0.000
3750	10	5.334	0.000	14.733	0.000	53.455	0.000	155.085	0.000
3760	10	4.402	0.000	12.046	0.000	48.680	0.000	133.895	0.000
3770	10	2.889	1.920	10.673	0.000	36.455	9.600	113.595	0.000
3780	10	3.189	0.856	15.446	0.000	30.390	13.880	130.595	0.000
3790	10	2.869	1.143	16.271	0.000	30.290	9.995	158.585	0.000
3800	10	1.596	2.825	11.599	0.000	22.325	19.840	139.350	0.000
3810	10	1.481	1.646	12.042	0.000	15.385	22.355	118.205	0.000
3820	10	2.154	0.000	17.437	0.000	18.175	8.230	147.395	0.000
3830	10	1.621	0.054	18.692	0.000	18.875	0.270	180.645	0.000
3840	10	1.393	0.470	19.714	0.000	15.070	2.620	192.030	0.000
3850	10	4.119	0.000	17.994	0.000	27.560	2.350	188.540	0.000
3860	10	4.728	4.208	16.484	0.000	44.235	21.040	172.390	0.000
3870	10	2.334	11.442	7.076	0.000	35.310	78.250	117.800	0.000
3880	10	2.872	4.583	15.101	0.000	26.030	80.125	110.885	0.000
3890	10	4.739	0.000	19.969	0.000	38.055	22.915	175.350	0.000
3900	10	3.626	0.000	11.315	0.000	41.825	0.000	156.420	0.000
3910	10	2.114	0.037	8.888	0.000	28.700	0.185	101.015	0.000
3920	10	2.391	0.000	10.382	0.000	22.525	0.185	96.350	0.000
3930	10	0.070	5.756	3.049	0.282	12.305	28.780	67.155	1.410
3940	10	0.000	27.704	0.000	1.409	0.350	167.300	15.245	8.455
3950	10	0.000	10.031	0.558	1.054	0.000	188.675	2.790	12.315
3960	10	0.201	0.191	7.701	0.026	1.005	51.110	41.295	5.400

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
3970	10	0.481	0.488	22.356	0.000	3.410	3.395	150.285	0.130
3980	10	0.044	0.814	16.162	0.000	2.625	6.510	192.590	0.000
3990	10	0.000	0.548	9.882	0.084	0.220	6.810	130.220	0.420
4000	10	0.956	0.002	8.498	0.000	4.780	2.750	91.900	0.420
4010	10	1.147	0.000	8.425	0.000	10.515	0.010	84.615	0.000
4020	10	0.553	0.781	8.881	0.000	8.500	3.905	86.530	0.000
4030	10	0.426	0.090	11.299	0.001	4.895	4.355	100.900	0.005
4040	10	0.896	0.001	10.398	0.001	6.610	0.455	108.485	0.010
4050	10	2.025	0.000	4.935	0.000	14.605	0.005	76.665	0.005
4060	10	2.332	0.000	6.051	0.000	21.785	0.000	54.930	0.000
4070	10	3.675	0.000	6.052	0.000	30.035	0.000	60.515	0.000
4080	10	3.924	0.000	9.011	0.000	37.995	0.000	75.315	0.000
4090	10	4.074	0.000	8.408	0.000	39.990	0.000	87.095	0.000
4100	10	5.707	0.000	5.762	0.000	48.905	0.000	70.850	0.000
4110	10	5.856	0.000	5.123	0.000	57.815	0.000	54.425	0.000
4120	10	5.601	0.000	4.450	0.000	57.285	0.000	47.865	0.000
4130	10	5.368	0.000	3.473	0.000	54.845	0.000	39.615	0.000
4140	10	5.250	0.000	2.938	0.000	53.090	0.000	32.055	0.000
4150	10	14.038	0.000	5.212	0.000	96.440	0.000	40.750	0.000
4160	10	27.106	0.000	4.382	0.000	205.720	0.000	47.970	0.000
4170	10	40.259	0.000	2.536	0.000	336.825	0.000	34.590	0.000
4180	10	33.426	0.000	1.636	0.614	368.425	0.000	20.860	3.070
4190	10	23.399	0.000	0.850	0.938	284.125	0.000	12.430	7.760
4200	10	20.789	0.000	0.957	0.796	220.940	0.000	9.035	8.670
4210	10	18.696	0.000	2.190	0.000	197.425	0.000	15.735	3.980

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
4220	10	15.653	0.000	3.174	0.000	171.745	0.000	26.820	0.000
4230	10	16.503	0.000	3.220	0.000	160.780	0.000	31.970	0.000
4240	10	17.817	0.000	2.918	0.000	171.600	0.000	30.690	0.000
4250	10	10.332	0.005	2.153	0.000	140.745	0.025	25.355	0.000
4260	10	14.681	0.000	1.367	0.000	125.065	0.025	17.600	0.000
4270	10	17.119	0.000	0.843	0.001	159.000	0.000	11.050	0.005
4280	10	23.660	0.000	0.464	0.001	203.895	0.000	6.535	0.010
4290	10	27.525	0.000	1.165	0.000	255.925	0.000	8.145	0.005
4300	10	24.950	0.000	2.277	0.000	262.375	0.000	17.210	0.000
4310	10	25.306	0.000	2.411	0.000	251.280	0.000	23.440	0.000
4320	10	23.406	0.000	2.835	0.000	243.560	0.000	26.230	0.000
4330	10	22.599	0.000	3.299	0.000	230.025	0.000	30.670	0.000
4340	10	21.783	0.000	2.970	0.000	221.910	0.000	31.345	0.000
4350	10	13.842	0.000	5.063	0.000	178.125	0.000	40.165	0.000
4360	10	10.344	0.000	4.834	0.000	120.930	0.000	49.485	0.000
4370	10	10.880	0.000	4.048	0.000	106.120	0.000	44.410	0.000
4380	10	8.852	0.000	3.447	0.000	98.660	0.000	37.475	0.000
4390	10	15.162	0.000	3.940	0.000	120.070	0.000	36.935	0.000
4400	10	13.373	0.000	4.073	0.000	142.675	0.000	40.065	0.000
4410	10	6.496	0.000	5.665	0.000	99.345	0.000	48.690	0.000
4420	10	6.512	0.000	2.654	0.140	65.040	0.000	41.595	0.700
4430	10	4.653	0.000	2.180	0.000	55.825	0.000	24.170	0.700
4440	10	4.048	0.000	3.037	0.000	43.505	0.000	26.085	0.000
4450	10	2.805	0.000	3.694	0.000	34.265	0.000	33.655	0.000
4460	10	4.332	0.000	7.000	0.000	35.685	0.000	53.470	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
4470	10	4.654	0.000	11.855	0.000	44.930	0.000	94.275	0.000
4480	10	5.817	0.000	23.861	0.000	52.355	0.000	178.580	0.000
4490	10	6.084	0.000	30.964	0.000	59.505	0.000	274.125	0.000
4500	10	5.833	0.000	21.928	0.000	59.585	0.000	264.460	0.000
4510	10	4.171	0.000	15.518	0.000	50.020	0.000	187.230	0.000
4520	10	4.086	0.000	15.988	0.000	41.285	0.000	157.530	0.000
4530	10	3.692	0.000	9.333	0.000	38.890	0.000	126.605	0.000
4540	10	1.785	0.228	12.037	0.000	27.385	1.140	106.850	0.000
4550	10	1.428	0.247	14.181	0.000	16.065	2.375	131.090	0.000
4560	10	2.389	0.000	16.443	0.000	19.085	1.235	153.120	0.000
4570	10	3.426	0.000	17.145	0.000	29.075	0.000	167.940	0.000
4580	10	4.699	0.000	17.677	0.000	40.625	0.000	174.110	0.000
4590	10	4.847	0.000	13.225	0.000	47.730	0.000	154.510	0.000
4600	10	3.555	0.000	7.157	0.000	42.010	0.000	101.910	0.000
4610	10	1.579	0.415	5.680	0.000	25.670	2.075	64.185	0.000
4620	10	2.489	0.002	4.057	0.000	20.340	2.085	48.685	0.000
4630	10	1.393	0.505	3.365	0.000	19.410	2.535	37.110	0.000
4640	10	0.971	0.795	4.693	0.000	11.820	6.500	40.290	0.000
4650	10	2.164	0.601	5.389	0.000	15.675	6.980	50.410	0.000
4660	10	3.263	0.014	6.161	0.000	27.135	3.075	57.750	0.000
4670	10	4.140	0.000	7.884	0.000	37.015	0.070	70.225	0.000
4680	10	4.283	0.000	8.372	0.000	42.115	0.000	81.280	0.000
4690	10	4.502	0.000	6.386	0.000	43.925	0.000	73.790	0.000
4700	10	4.004	0.000	6.034	0.000	42.530	0.000	62.100	0.000
4710	10	2.515	0.000	6.212	0.000	32.595	0.000	61.230	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
4720	10	3.805	0.000	6.344	0.000	31.600	0.000	62.780	0.000
4730	10	4.288	0.000	10.724	0.000	40.465	0.000	85.340	0.000
4740	10	4.439	0.000	20.247	0.000	43.635	0.000	154.855	0.000
4750	10	4.635	0.000	19.842	0.000	45.370	0.000	200.445	0.000
4760	10	4.868	0.000	21.058	0.000	47.515	0.000	204.500	0.000
4770	10	5.822	0.000	18.852	0.000	53.450	0.000	199.550	0.000
4780	10	5.511	0.000	15.521	0.000	56.665	0.000	171.865	0.000
4790	10	4.804	0.000	16.074	0.000	51.575	0.000	157.975	0.000
4800	10	4.877	0.000	14.474	0.000	48.405	0.000	152.740	0.000
4810	10	3.165	0.000	11.116	0.000	40.210	0.000	127.950	0.000
4820	10	1.108	0.000	10.910	0.000	21.365	0.000	110.130	0.000
4830	10	0.128	0.363	9.908	0.228	6.180	1.815	104.090	1.140
4840	10	0.544	0.195	10.519	0.057	3.360	2.790	102.135	1.425
4850	10	0.812	0.000	11.674	0.000	6.780	0.975	110.965	0.285
4860	10	2.479	0.000	9.029	0.000	16.455	0.000	103.515	0.000
4870	10	1.387	0.133	9.198	0.000	19.330	0.665	91.135	0.000
4880	10	0.809	1.677	9.756	0.000	10.980	9.050	94.770	0.000
4890	10	0.483	1.621	5.975	0.000	6.460	16.490	78.655	0.000
4900	10	2.253	0.000	6.926	0.000	13.680	8.105	64.505	0.000
4910	10	2.817	0.000	11.213	0.000	25.350	0.000	90.695	0.000
4920	10	2.054	0.003	11.623	0.000	24.355	0.015	114.180	0.000
4930	10	1.266	8.552	10.364	0.000	16.600	42.775	109.935	0.000
4940	10	1.535	0.169	9.508	0.000	14.005	43.605	99.360	0.000
4950	10	2.432	0.000	9.236	0.000	19.835	0.845	93.720	0.000
4960	10	2.811	0.000	9.638	0.000	26.215	0.000	94.370	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
4970	10	3.516	0.000	11.626	0.000	31.635	0.000	106.320	0.000
4980	10	3.761	0.000	13.045	0.000	36.385	0.000	123.355	0.000
4990	10	1.937	0.000	11.229	0.000	28.490	0.000	121.370	0.000
5000	10	0.184	0.929	11.326	0.039	10.605	4.645	112.775	0.195
5010	10	0.000	1.801	9.172	0.231	0.920	13.650	102.490	1.350
5020	10	2.359	2.086	16.915	0.000	11.795	19.435	130.435	1.155
5030	10	0.542	0.718	20.577	0.000	14.505	14.020	187.460	0.000
5040	10	0.245	1.200	24.583	0.000	3.935	9.590	225.800	0.000
5050	10	0.359	1.989	31.868	0.000	3.020	15.945	282.255	0.000
5060	10	0.151	2.122	30.996	0.000	2.550	20.555	314.320	0.000
5070	10	0.153	1.663	31.530	0.000	1.520	18.925	312.630	0.000
5080	10	0.005	2.271	21.144	0.000	0.790	19.670	263.370	0.000
5090	10	0.000	2.888	13.309	0.009	0.025	25.795	172.265	0.045
5100	10	0.000	3.343	5.927	0.539	0.000	31.155	96.180	2.740
5110	10	0.000	2.509	0.000	1.961	0.000	29.260	29.635	12.500
5120	10	0.000	2.061	0.348	0.247	0.000	22.850	1.740	11.040
5130	10	0.009	0.676	1.471	0.000	0.045	13.685	9.095	1.235
5140	10	1.198	0.000	3.630	0.000	6.035	3.380	25.505	0.000
5150	10	6.031	0.000	5.455	0.000	36.145	0.000	45.425	0.000
5160	10	8.302	0.000	7.266	0.000	71.665	0.000	63.605	0.000
5170	10	5.966	0.000	7.606	0.000	71.340	0.000	74.360	0.000
5180	10	5.776	0.000	6.760	0.000	58.710	0.000	71.830	0.000
5190	10	4.452	0.000	6.062	0.000	51.140	0.000	64.110	0.000
5200	10	0.861	0.978	5.536	0.000	26.565	4.890	57.990	0.000
5210	10	2.467	0.000	4.780	0.000	16.640	4.890	51.580	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
5220	10	9.701	0.000	6.987	0.000	60.840	0.000	58.835	0.000
5230	10	10.892	0.000	7.609	0.000	102.965	0.000	72.980	0.000
5240	10	5.860	0.000	4.951	0.000	83.760	0.000	62.800	0.000
5250	10	3.343	0.000	3.430	0.000	46.015	0.000	41.905	0.000
5260	10	2.125	0.000	1.896	0.296	27.340	0.000	26.630	1.480
5270	10	2.704	0.000	1.603	0.142	24.145	0.000	17.495	2.190
5280	10	3.261	0.000	1.630	0.366	29.825	0.000	16.165	2.540
5290	10	3.552	0.000	4.033	0.000	34.065	0.000	28.315	1.830
5300	10	9.213	0.000	4.387	0.000	63.825	0.000	42.100	0.000
5310	10	11.199	0.000	5.522	0.000	102.060	0.000	49.545	0.000
5320	10	16.598	0.000	6.430	0.000	138.985	0.000	59.760	0.000
5330	10	15.797	0.000	4.225	0.000	161.975	0.000	53.275	0.000
5340	10	19.568	0.000	5.114	0.000	176.825	0.000	46.695	0.000
5350	10	12.269	0.000	6.166	0.000	159.185	0.000	56.400	0.000
5360	10	9.371	0.000	4.098	0.000	108.200	0.000	51.320	0.000
5370	10	6.521	0.000	2.453	0.251	79.460	0.000	32.755	1.255
5380	10	5.765	0.000	4.808	0.000	61.430	0.000	36.305	1.255
5390	10	6.952	0.000	4.391	0.000	63.585	0.000	45.995	0.000
5400	10	4.548	0.000	3.585	0.000	57.500	0.000	39.880	0.000
5410	10	7.237	0.000	4.752	0.000	58.925	0.000	41.685	0.000
5420	10	8.789	0.000	6.799	0.000	80.130	0.000	57.755	0.000
5430	10	11.899	0.000	6.717	0.000	103.440	0.000	67.580	0.000
5440	10	10.932	0.000	5.919	0.000	114.155	0.000	63.180	0.000
5450	10	6.933	0.000	4.629	0.000	89.325	0.000	52.740	0.000
5460	10	4.196	0.000	4.409	0.000	55.645	0.000	45.190	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
5470	10	4.920	0.000	6.178	0.000	45.580	0.000	52.935	0.000
5480	10	5.522	0.000	5.772	0.000	52.210	0.000	59.750	0.000
5490	10	6.155	0.000	6.056	0.000	58.385	0.000	59.140	0.000
5500	10	5.890	0.000	5.667	0.000	60.225	0.000	58.615	0.000
5510	10	5.548	0.000	5.289	0.000	57.190	0.000	54.780	0.000
5520	10	5.524	0.000	5.040	0.000	55.360	0.000	51.645	0.000
5530	10	5.064	0.000	3.367	0.000	52.940	0.000	42.035	0.000
5540	10	5.581	0.000	4.131	0.000	53.225	0.000	37.490	0.000
5550	10	6.022	0.000	4.673	0.000	58.015	0.000	44.020	0.000
5560	10	8.325	0.000	6.475	0.000	71.735	0.000	55.740	0.000
5570	10	7.088	0.000	5.681	0.000	77.065	0.000	60.780	0.000
5580	10	6.247	0.000	5.142	0.000	66.675	0.000	54.115	0.000
5590	10	5.913	0.000	5.862	0.000	60.800	0.000	55.020	0.000
5600	10	5.416	0.000	5.633	0.000	56.645	0.000	57.475	0.000
5610	10	6.050	0.000	6.462	0.000	57.330	0.000	60.475	0.000
5620	10	5.832	0.000	7.105	0.000	59.410	0.000	67.835	0.000
5630	10	6.025	0.000	6.503	0.000	59.285	0.000	68.040	0.000
5640	10	6.623	0.000	5.197	0.000	63.240	0.000	58.500	0.000
5650	10	5.961	0.000	6.057	0.000	62.920	0.000	56.270	0.000
5660	10	6.495	0.000	6.930	0.000	62.280	0.000	64.935	0.000
5670	10	5.887	0.000	6.036	0.000	61.910	0.000	64.830	0.000
5680	10	6.242	0.000	4.155	0.000	60.645	0.000	50.955	0.000
5690	10	6.265	0.000	3.717	0.000	62.535	0.000	39.360	0.000
5700	10	5.911	0.000	3.381	0.000	60.880	0.000	35.490	0.000
5710	10	5.852	0.000	4.508	0.000	58.815	0.000	39.445	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
5720	10	6.208	0.000	5.533	0.000	60.300	0.000	50.205	0.000
5730	10	5.987	0.000	5.375	0.000	60.975	0.000	54.540	0.000
5740	10	5.838	0.000	4.903	0.000	59.125	0.000	51.390	0.000
5750	10	4.992	0.000	4.736	0.000	54.150	0.000	48.195	0.000
5760	10	5.069	0.000	4.530	0.000	50.305	0.000	46.330	0.000
5770	10	5.448	0.000	4.870	0.000	52.585	0.000	47.000	0.000
5780	10	4.637	0.000	5.137	0.076	50.425	0.000	50.035	0.380
5790	10	6.141	0.000	6.247	0.000	53.890	0.000	56.920	0.380
5800	10	6.621	0.000	5.608	0.000	63.810	0.000	59.275	0.000
5810	10	5.588	0.000	7.784	0.000	61.045	0.000	66.960	0.000
5820	10	4.965	0.000	7.258	0.000	52.765	0.000	75.210	0.000
5830	10	5.304	0.000	6.459	0.000	51.345	0.000	68.585	0.000
5840	10	5.190	0.000	7.220	0.000	52.470	0.000	68.395	0.000
5850	10	6.160	0.000	7.748	0.000	56.750	0.000	74.840	0.000
5860	10	5.892	0.000	5.754	0.000	60.260	0.000	67.510	0.000
5870	10	6.380	0.000	6.566	0.000	61.360	0.000	61.600	0.000
5880	10	6.689	0.000	6.485	0.000	65.345	0.000	65.255	0.000
5890	10	6.790	0.000	6.298	0.000	67.395	0.000	63.915	0.000
5900	10	7.396	0.000	7.159	0.000	70.930	0.000	67.285	0.000
5910	10	7.257	0.000	6.721	0.000	73.265	0.000	69.400	0.000
5920	10	8.736	0.000	7.484	0.000	79.965	0.000	71.025	0.000
5930	10	6.727	0.000	7.067	0.000	77.315	0.000	72.755	0.000
5940	10	6.733	0.000	7.086	0.000	67.300	0.000	70.765	0.000
5950	10	7.022	0.000	5.359	0.000	68.775	0.000	62.225	0.000
5960	10	6.499	0.000	4.693	0.000	67.605	0.000	50.260	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
5970	10	5.031	0.000	4.133	0.000	57.650	0.000	44.130	0.000
5980	10	4.528	0.000	5.304	0.000	47.795	0.000	47.185	0.000
5990	10	4.968	0.000	7.623	0.000	47.480	0.000	64.635	0.000
6000	10	5.588	0.000	9.513	0.000	52.780	0.000	85.680	0.000
6010	10	6.315	0.000	9.514	0.000	59.515	0.000	95.135	0.000
6020	10	6.379	0.000	6.194	0.000	63.470	0.000	78.540	0.000
6030	10	6.723	0.000	5.616	0.000	65.510	0.000	59.050	0.000
6040	10	5.907	0.000	3.488	0.000	63.150	0.000	45.520	0.000
6050	10	5.506	0.000	2.320	0.000	57.065	0.000	29.040	0.000
6060	10	6.063	0.000	6.517	0.000	57.845	0.000	44.185	0.000
6070	10	5.202	0.000	6.674	0.000	56.325	0.000	65.955	0.000
6080	10	3.714	0.000	5.873	0.000	44.580	0.000	62.735	0.000
6090	10	3.649	0.000	4.829	0.000	36.815	0.000	53.510	0.000
6100	10	1.876	0.131	6.096	0.154	27.625	0.655	54.625	0.770
6110	10	3.280	0.054	3.950	0.151	25.780	0.925	50.230	1.525
6120	10	4.861	0.000	6.232	0.000	40.705	0.270	50.910	0.755
6130	10	4.314	0.000	5.995	0.000	45.875	0.000	61.135	0.000
6140	10	6.538	0.000	6.016	0.000	54.260	0.000	60.055	0.000
6150	10	5.982	0.000	5.068	0.000	62.600	0.000	55.420	0.000
6160	10	5.441	0.000	5.245	0.000	57.115	0.000	51.565	0.000
6170	10	5.487	0.000	5.396	0.000	54.640	0.000	53.205	0.000
6180	10	5.531	0.000	4.475	0.000	55.090	0.000	49.355	0.000
6190	10	6.323	0.000	3.572	0.000	59.270	0.000	40.235	0.000
6200	10	6.636	0.000	3.408	0.000	64.795	0.000	34.900	0.000
6210	10	6.712	0.000	3.687	0.000	66.740	0.000	35.475	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
6220	10	6.208	0.000	4.894	0.000	64.600	0.000	42.905	0.000
6230	10	6.525	0.000	3.807	0.000	63.665	0.000	43.505	0.000
6240	10	5.434	0.000	3.666	0.000	59.795	0.000	37.365	0.000
6250	10	4.443	0.000	3.964	0.000	49.385	0.000	38.150	0.000
6260	10	5.494	0.000	4.770	0.000	49.685	0.000	43.670	0.000
6270	10	6.704	0.000	4.516	0.000	60.990	0.000	46.430	0.000
6280	10	6.541	0.000	5.483	0.000	66.225	0.000	49.995	0.000
6290	10	5.300	0.000	7.858	0.000	59.205	0.000	66.705	0.000
6300	10	8.053	0.000	6.547	0.000	66.765	0.000	72.025	0.000
6310	10	10.868	0.000	7.690	0.000	94.605	0.000	71.185	0.000
6320	10	9.084	0.000	6.559	0.000	99.760	0.000	71.245	0.000
6330	10	10.386	0.000	5.521	0.000	97.350	0.000	60.400	0.000
6340	10	8.479	0.000	5.944	0.000	94.325	0.000	57.325	0.000
6350	10	5.982	0.000	6.605	0.000	72.305	0.000	62.745	0.000
6360	10	3.235	0.000	7.383	0.000	46.085	0.000	69.940	0.000
6370	10	3.400	0.000	5.893	0.000	33.175	0.000	66.380	0.000
6380	10	4.411	0.000	4.135	0.000	39.055	0.000	50.140	0.000
6390	10	5.735	0.000	3.615	0.000	50.730	0.000	38.750	0.000
6400	10	7.937	0.000	4.904	0.000	68.360	0.000	42.595	0.000
6410	10	13.074	0.000	5.731	0.000	105.055	0.000	53.175	0.000
6420	10	10.016	0.000	4.356	0.000	115.450	0.000	50.435	0.000
6430	10	11.016	0.000	5.506	0.000	105.160	0.000	49.310	0.000
6440	10	17.938	0.000	5.942	0.000	144.770	0.000	57.240	0.000
6450	10	20.717	0.000	6.695	0.000	193.275	0.000	63.185	0.000
6460	10	19.419	0.000	5.906	0.000	200.680	0.000	63.005	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
6470	10	19.200	0.000	4.545	0.000	193.095	0.000	52.255	0.000
6480	10	13.650	0.000	3.951	0.000	164.250	0.000	42.480	0.000
6490	10	15.884	0.000	3.739	0.043	147.670	0.000	38.450	0.215
6500	10	11.157	0.000	4.957	0.000	135.205	0.000	43.480	0.215
6510	10	13.281	0.000	4.076	0.000	122.190	0.000	45.165	0.000
6520	10	14.692	0.000	4.157	0.000	139.865	0.000	41.165	0.000
6530	10	16.682	0.000	4.013	0.000	156.870	0.000	40.850	0.000
6540	10	8.008	0.000	5.262	0.000	123.450	0.000	46.375	0.000
6550	10	6.835	0.000	6.938	0.000	74.215	0.000	61.000	0.000
6560	10	10.072	0.000	14.238	0.000	84.535	0.000	105.880	0.000
6570	10	6.834	0.000	10.017	0.000	84.530	0.000	121.275	0.000
6580	10	12.482	0.000	4.921	0.000	96.580	0.000	74.690	0.000
6590	10	8.632	0.000	3.660	0.000	105.570	0.000	42.905	0.000
6600	10	8.275	0.000	3.898	0.000	84.535	0.000	37.790	0.000
6610	10	11.330	0.000	4.571	0.000	98.025	0.000	42.345	0.000
6620	10	10.912	0.000	6.249	0.000	111.210	0.000	54.100	0.000
6630	10	11.296	0.000	7.970	0.000	111.040	0.000	71.095	0.000
6640	10	15.257	0.000	9.451	0.000	132.765	0.000	87.105	0.000
6650	10	11.947	0.000	7.850	0.000	136.020	0.000	86.505	0.000
6660	10	9.923	0.000	8.959	0.000	109.350	0.000	84.045	0.000
6670	10	11.325	0.000	5.609	0.000	106.240	0.000	72.840	0.000
6680	10	6.937	0.000	4.696	0.000	91.310	0.000	51.525	0.000
6690	10	6.643	0.000	4.783	0.000	67.900	0.000	47.395	0.000
6700	10	8.030	0.000	4.969	0.000	73.365	0.000	48.760	0.000
6710	10	6.630	0.000	3.484	0.000	73.300	0.000	42.265	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
6720	10	7.232	0.000	4.198	0.000	69.310	0.000	38.410	0.000
6730	10	8.420	0.000	5.847	0.000	78.260	0.000	50.225	0.000
6740	10	5.084	0.000	8.418	0.000	67.520	0.000	71.325	0.000
6750	10	5.148	0.000	7.335	0.000	51.160	0.000	78.765	0.000
6760	10	3.977	0.000	8.732	0.000	45.625	0.000	80.335	0.000
6770	10	4.878	0.000	6.177	0.000	44.275	0.000	74.545	0.000
6780	10	3.579	0.000	5.761	0.000	42.285	0.000	59.690	0.000
6790	10	4.286	0.000	6.159	0.000	39.325	0.000	59.600	0.000
6800	10	4.014	0.000	5.309	0.000	41.500	0.000	57.340	0.000
6810	10	4.534	0.000	4.484	0.000	42.740	0.000	48.965	0.000
6820	10	5.005	0.000	3.301	0.000	47.695	0.000	38.925	0.000
6830	10	2.771	0.022	4.219	0.000	38.880	0.110	37.600	0.000
6840	10	4.523	0.000	3.820	0.000	36.470	0.110	40.195	0.000
6850	10	5.205	0.000	5.377	0.000	48.640	0.000	45.985	0.000
6860	10	4.863	0.000	4.739	0.000	50.340	0.000	50.580	0.000
6870	10	3.188	0.000	2.409	0.000	40.255	0.000	35.740	0.000
6880	10	3.867	0.000	1.543	0.212	35.275	0.000	19.760	1.060
6890	10	5.033	0.000	2.550	0.033	44.500	0.000	20.465	1.225
6900	10	4.080	0.000	3.858	0.000	45.565	0.000	32.040	0.165
6910	10	5.634	0.000	5.716	0.000	48.570	0.000	47.870	0.000
6920	10	5.544	0.000	6.056	0.000	55.890	0.000	58.860	0.000
6930	10	6.107	0.000	6.785	0.000	58.255	0.000	64.205	0.000
6940	10	6.298	0.000	7.208	0.000	62.025	0.000	69.965	0.000
6950	10	6.603	0.000	8.647	0.000	64.505	0.000	79.275	0.000
6960	10	6.244	0.000	7.355	0.000	64.235	0.000	80.010	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
6970	10	2.043	0.669	5.055	0.000	41.435	3.345	62.050	0.000
6980	10	4.245	0.000	6.362	0.000	31.440	3.345	57.085	0.000
6990	10	2.860	0.170	8.022	0.000	35.525	0.850	71.920	0.000
7000	10	4.002	0.000	9.309	0.000	34.310	0.850	86.655	0.000
7010	10	2.736	0.000	6.620	0.000	33.690	0.000	79.645	0.000
7020	10	2.632	0.046	5.983	0.000	26.840	0.230	63.015	0.000
7030	10	3.912	0.000	6.558	0.000	32.720	0.230	62.705	0.000
7040	10	3.085	0.000	5.807	0.000	34.985	0.000	61.825	0.000
7050	10	3.641	0.000	8.020	0.000	33.630	0.000	69.135	0.000
7060	10	5.399	0.000	8.588	0.000	45.200	0.000	83.040	0.000
7070	10	5.779	0.000	12.739	0.000	55.890	0.000	106.635	0.000
7080	10	4.580	0.000	9.144	0.000	51.795	0.000	109.415	0.000
7090	10	4.014	0.000	6.997	0.000	42.970	0.000	80.705	0.000
7100	10	2.168	0.436	6.695	0.000	30.910	2.180	68.460	0.000
7110	10	2.031	1.706	5.729	0.000	20.995	10.710	62.120	0.000
7120	10	1.562	2.276	5.495	0.000	17.965	19.910	56.120	0.000
7130	10	1.904	1.388	5.390	0.000	17.330	18.320	54.425	0.000
7140	10	2.536	0.000	5.016	0.000	22.200	6.940	52.030	0.000
7150	10	6.271	0.000	5.817	0.000	44.035	0.000	54.165	0.000
7160	10	8.512	0.000	4.358	0.000	73.915	0.000	50.875	0.000
7170	10	14.935	0.000	4.319	0.000	117.235	0.000	43.385	0.000
7180	10	16.174	0.000	4.971	0.000	155.545	0.000	46.450	0.000
7190	10	12.379	0.000	8.244	0.000	142.765	0.000	66.075	0.000
7200	10	6.601	0.000	5.843	0.000	94.900	0.000	70.435	0.000
7210	10	4.772	0.000	7.051	0.000	56.865	0.000	64.470	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
7220	10	3.352	0.068	13.437	0.000	40.620	0.340	102.440	0.000
7230	10	3.277	0.000	13.417	0.000	33.145	0.340	134.270	0.000
7240	10	4.263	0.000	16.510	0.000	37.700	0.000	149.635	0.000
7250	10	5.055	0.000	14.156	0.000	46.590	0.000	153.330	0.000
7260	10	3.564	0.000	13.799	0.000	43.095	0.000	139.775	0.000
7270	10	2.909	0.000	12.612	0.000	32.365	0.000	132.055	0.000
7280	10	3.498	0.000	9.185	0.000	32.035	0.000	108.985	0.000
7290	10	3.505	0.000	18.349	0.000	35.015	0.000	137.670	0.000
7300	10	3.774	0.000	33.354	0.000	36.395	0.000	258.515	0.000
7310	10	5.238	0.000	30.235	0.000	45.060	0.000	317.945	0.000
7320	10	5.512	0.000	41.872	0.000	53.750	0.000	360.535	0.000
7330	10	4.799	0.000	43.198	0.000	51.555	0.000	425.350	0.000
7340	10	5.281	0.000	24.898	0.000	50.400	0.000	340.480	0.000
7350	10	4.848	0.278	14.717	0.000	50.645	1.390	198.075	0.000
7360	10	4.914	0.053	12.934	0.000	48.810	1.655	138.255	0.000
7370	10	4.446	0.833	8.841	0.000	46.800	4.430	108.875	0.000
7380	10	3.086	1.712	14.652	0.000	37.660	12.725	117.465	0.000
7390	10	3.819	0.449	16.695	0.000	34.525	10.805	156.735	0.000
7400	10	5.933	0.000	27.666	0.000	48.760	2.245	221.805	0.000
7410	10	5.036	0.000	28.047	0.000	54.845	0.000	278.565	0.000
7420	10	4.417	0.000	23.997	0.000	47.265	0.000	260.220	0.000
7430	10	5.658	0.000	16.812	0.000	50.375	0.000	204.045	0.000
7440	10	4.896	0.000	19.988	0.000	52.770	0.000	184.000	0.000
7450	10	6.251	0.000	6.003	0.000	55.735	0.000	129.955	0.000
7460	10	0.518	3.099	2.160	0.000	33.845	15.495	40.815	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
7470	10	0.000	2.911	0.495	0.132	2.590	30.050	13.275	0.660
7480	10	2.099	0.000	0.852	0.000	10.495	14.555	6.735	0.660
7490	10	4.589	0.000	2.611	0.000	33.440	0.000	17.315	0.000
7500	10	5.516	0.000	8.938	0.000	50.525	0.000	57.745	0.000
7510	10	6.650	0.000	10.795	0.000	60.830	0.000	98.665	0.000
7520	10	6.630	0.000	7.816	0.000	66.400	0.000	93.055	0.000
7530	10	6.802	0.000	11.286	0.000	67.160	0.000	95.510	0.000
7540	10	6.490	0.000	9.270	0.000	66.460	0.000	102.780	0.000
7550	10	7.998	0.000	8.134	0.000	72.440	0.000	87.020	0.000
7560	10	8.687	0.000	5.007	0.000	83.425	0.000	65.705	0.000
7570	10	7.356	0.000	3.589	0.068	80.215	0.000	42.980	0.340
7580	10	5.946	0.000	6.376	0.000	66.510	0.000	49.825	0.340
7590	10	5.221	0.000	7.307	0.000	55.835	0.000	68.415	0.000
7600	10	4.714	0.000	5.917	0.000	49.675	0.000	66.120	0.000
7610	10	6.687	0.000	6.096	0.000	57.005	0.000	60.065	0.000
7620	10	5.206	0.000	3.120	0.000	59.465	0.000	46.080	0.000
7630	10	4.389	0.000	2.656	0.000	47.975	0.000	28.880	0.000
7640	10	5.126	0.000	4.118	0.000	47.575	0.000	33.870	0.000
7650	10	6.142	0.000	11.187	0.000	56.340	0.000	76.525	0.000
7660	10	6.239	0.000	11.577	0.000	61.905	0.000	113.820	0.000
7670	10	4.804	0.000	5.573	0.000	55.215	0.000	85.750	0.000
7680	10	3.382	0.000	2.664	0.015	40.930	0.000	41.185	0.075
7690	10	5.814	0.000	14.254	0.000	45.980	0.000	84.590	0.075
7700	10	5.925	0.000	22.333	0.000	58.695	0.000	182.935	0.000
7710	10	6.039	0.000	17.910	0.000	59.820	0.000	201.215	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
7720	10	4.167	0.000	11.880	0.000	51.030	0.000	148.950	0.000
7730	10	4.105	0.000	9.331	0.000	41.360	0.000	106.055	0.000
7740	10	3.088	0.000	10.794	0.000	35.965	0.000	100.625	0.000
7750	10	2.052	0.000	11.058	0.000	25.700	0.000	109.260	0.000
7760	10	3.092	0.000	12.082	0.000	25.720	0.000	115.700	0.000
7770	10	5.006	0.000	22.871	0.000	40.490	0.000	174.765	0.000
7780	10	7.254	0.000	21.409	0.000	61.300	0.000	221.400	0.000
7790	10	5.482	0.000	13.466	0.000	63.680	0.000	174.375	0.000
7800	10	4.436	0.000	21.057	0.000	49.590	0.000	172.615	0.000
7810	10	4.361	0.000	14.944	0.000	43.985	0.000	180.005	0.000
7820	10	6.056	0.000	14.359	0.000	52.085	0.000	146.515	0.000
7830	10	3.426	0.240	9.148	0.000	47.410	1.200	117.535	0.000
7840	10	1.641	4.320	10.735	0.000	25.335	22.800	99.415	0.000
7850	10	1.452	6.494	4.728	0.000	15.465	54.070	77.315	0.000
7860	10	2.394	0.258	8.878	0.000	19.230	33.760	68.030	0.000
7870	10	3.608	0.000	10.753	0.000	30.010	1.290	98.155	0.000
7880	10	6.035	0.000	20.370	0.000	48.215	0.000	155.615	0.000
7890	10	2.864	0.000	5.354	0.000	44.495	0.000	128.620	0.000
7900	10	0.783	0.457	3.853	0.000	18.235	2.285	46.035	0.000
7910	10	1.001	1.639	2.675	0.000	8.920	10.480	32.640	0.000
7920	10	0.507	2.298	3.122	0.000	7.540	19.685	28.985	0.000
7930	10	0.972	0.169	3.952	0.000	7.395	12.335	35.370	0.000
7940	10	4.728	0.000	2.069	0.653	28.500	0.845	30.105	3.265
7950	10	6.558	0.000	1.530	6.633	56.430	0.000	17.995	36.430
7960	10	5.650	0.000	1.284	2.269	61.040	0.000	14.070	44.510

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
7970	10	5.015	0.000	1.749	0.680	53.325	0.000	15.165	14.745
7980	10	4.301	0.000	4.462	0.000	46.580	0.000	31.055	3.400
7990	10	4.542	0.000	10.800	0.000	44.215	0.000	76.310	0.000
8000	10	2.854	0.034	17.139	0.000	36.980	0.170	139.695	0.000
8010	10	2.518	1.000	26.510	0.000	26.860	5.170	218.245	0.000
8020	10	4.508	0.000	44.229	0.000	35.130	5.000	353.695	0.000
8030	10	5.974	0.000	69.607	0.000	52.410	0.000	569.180	0.000
8040	10	6.441	0.000	69.170	0.000	62.075	0.000	693.885	0.000
8050	10	5.107	0.000	40.634	0.000	57.740	0.000	549.020	0.000
8060	10	3.929	0.000	30.284	0.000	45.180	0.000	354.590	0.000
8070	10	4.591	0.000	34.747	0.000	42.600	0.000	325.155	0.000
8080	10	3.284	0.000	12.830	0.000	39.375	0.000	237.885	0.000
8090	10	2.630	0.176	7.189	0.000	29.570	0.880	100.095	0.000
8100	10	1.791	2.201	4.839	0.000	22.105	11.885	60.140	0.000
8110	10	0.734	12.145	1.090	2.249	12.625	71.730	29.645	11.245
8120	10	1.247	3.807	9.547	0.000	9.905	79.760	53.185	11.245
8130	10	1.947	1.870	14.136	0.000	15.970	28.385	118.415	0.000
8140	10	2.390	1.774	7.752	0.000	21.685	18.220	109.440	0.000
8150	10	3.015	0.360	7.134	0.000	27.025	10.670	74.430	0.000
8160	10	8.025	0.000	7.784	0.000	55.200	1.800	74.590	0.000
8170	10	12.006	0.000	6.175	0.000	100.155	0.000	69.795	0.000
8180	10	15.263	0.000	5.583	0.000	136.345	0.000	58.790	0.000
8190	10	30.017	0.000	6.727	0.000	226.400	0.000	61.550	0.000
8200	10	16.931	0.000	6.121	0.000	234.740	0.000	64.240	0.000
8210	10	7.607	0.000	4.874	0.000	122.690	0.000	54.975	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
8220	10	3.328	0.000	4.194	0.000	54.675	0.000	45.340	0.000
8230	10	4.037	0.000	4.037	0.000	36.825	0.000	41.155	0.000
8240	10	5.139	0.000	4.186	0.000	45.880	0.000	41.115	0.000
8250	10	3.844	0.000	4.414	0.000	44.915	0.000	43.000	0.000
8260	10	4.377	0.000	5.541	0.000	41.105	0.000	49.775	0.000
8270	10	5.409	0.000	5.656	0.000	48.930	0.000	55.985	0.000
8280	10	6.188	0.000	4.590	0.000	57.985	0.000	51.230	0.000
8290	10	7.454	0.000	5.499	0.000	68.210	0.000	50.445	0.000
8300	10	10.221	0.000	5.010	0.000	88.375	0.000	52.545	0.000
8310	10	12.882	0.000	5.058	0.000	115.515	0.000	50.340	0.000
8320	10	6.112	0.000	4.779	0.000	94.970	0.000	49.185	0.000
8330	10	5.834	0.000	4.654	0.000	59.730	0.000	47.165	0.000
8340	10	7.451	0.000	5.372	0.000	66.425	0.000	50.130	0.000
8350	10	5.440	0.000	4.284	0.000	64.455	0.000	48.280	0.000
8360	10	5.116	0.000	4.088	0.000	52.780	0.000	41.860	0.000
8370	10	5.079	0.000	4.245	0.000	50.975	0.000	41.665	0.000
8380	10	4.859	0.000	3.025	0.000	49.690	0.000	36.350	0.000
8390	10	3.695	0.000	1.568	0.484	42.770	0.000	22.965	2.420
8400	10	1.374	0.024	2.395	0.000	25.345	0.120	19.815	2.420
8410	10	0.553	0.862	2.535	0.000	9.635	4.430	24.650	0.000
8420	10	0.904	0.738	2.601	0.000	7.285	8.000	25.680	0.000
8430	10	1.590	2.313	6.024	0.000	12.470	15.255	43.125	0.000
8440	10	2.015	2.530	5.302	0.000	18.025	24.215	56.630	0.000
8450	10	2.807	0.763	6.139	0.000	24.110	16.465	57.205	0.000
8460	10	5.141	0.000	4.684	0.000	39.740	3.815	54.115	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
8470	10	3.880	0.000	1.372	1.987	45.105	0.000	30.280	9.935
8480	10	3.057	0.000	0.886	2.953	34.685	0.000	11.290	24.700
8490	10	2.373	0.001	1.189	1.271	27.150	0.005	10.375	21.120
8500	10	2.052	1.363	1.691	0.094	22.125	6.820	14.400	6.825
8510	10	2.400	0.447	2.180	0.000	22.260	9.050	19.355	0.470
8520	10	3.320	0.000	1.477	1.018	28.600	2.235	18.285	5.090
8530	10	4.332	0.000	1.502	0.231	38.260	0.000	14.895	6.245
8540	10	4.545	0.000	3.553	0.000	44.385	0.000	25.275	1.155
8550	10	9.577	0.000	5.192	0.000	70.610	0.000	43.725	0.000
8560	10	8.198	0.000	5.157	0.000	88.875	0.000	51.745	0.000
8570	10	6.747	0.000	6.858	0.000	74.725	0.000	60.075	0.000
8580	10	9.401	0.000	8.398	0.000	80.740	0.000	76.280	0.000
8590	10	18.936	0.000	5.825	0.000	141.685	0.000	71.115	0.000
8600	10	21.840	0.000	3.887	0.032	203.880	0.000	48.560	0.160
8610	10	7.146	0.000	5.604	0.000	144.930	0.000	47.455	0.160
8620	10	7.429	0.000	4.429	0.000	72.875	0.000	50.165	0.000
8630	10	9.260	0.000	5.184	0.000	83.445	0.000	48.065	0.000
8640	10	12.236	0.000	5.510	0.000	107.480	0.000	53.470	0.000
8650	10	13.445	0.000	5.646	0.000	128.405	0.000	55.780	0.000
8660	10	13.411	0.000	5.546	0.000	134.280	0.000	55.960	0.000
8670	10	16.089	0.000	5.493	0.000	147.500	0.000	55.195	0.000
8680	10	11.234	0.000	5.710	0.000	136.615	0.000	56.015	0.000
8690	10	6.550	0.000	6.347	0.000	88.920	0.000	60.285	0.000
8700	10	5.405	0.000	7.259	0.000	59.775	0.000	68.030	0.000
8710	10	4.170	0.000	13.407	0.000	47.875	0.000	103.330	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
8720	10	4.934	0.000	21.421	0.000	45.520	0.000	174.140	0.000
8730	10	5.222	0.000	34.672	0.000	50.780	0.000	280.465	0.000
8740	10	4.623	0.000	55.842	0.000	49.225	0.000	452.570	0.000
8750	10	6.376	0.000	63.058	0.000	54.995	0.000	594.500	0.000
8760	10	6.779	0.000	41.527	0.000	65.775	0.000	522.925	0.000
8770	10	4.637	0.000	25.553	0.000	57.080	0.000	335.400	0.000
8780	10	2.794	0.318	11.769	0.000	37.155	1.590	186.610	0.000
8790	10	2.951	0.127	8.531	0.000	28.725	2.225	101.500	0.000
8800	10	4.329	0.000	10.247	0.000	36.400	0.635	93.890	0.000
8810	10	4.780	0.000	28.128	0.000	45.545	0.000	191.875	0.000
8820	10	4.860	0.000	43.957	0.000	48.200	0.000	360.425	0.000
8830	10	5.740	0.000	32.196	0.000	53.000	0.000	380.765	0.000
8840	10	5.890	0.000	6.064	0.000	58.150	0.000	191.300	0.000
8850	10	4.939	0.000	4.479	0.000	54.145	0.000	52.715	0.000
8860	10	2.769	0.022	4.881	0.000	38.540	0.110	46.800	0.000
8870	10	2.389	0.102	4.162	0.000	25.790	0.620	45.215	0.000
8880	10	3.370	0.000	3.868	0.000	28.795	0.510	40.150	0.000
8890	10	3.581	0.000	4.964	0.000	34.755	0.000	44.160	0.000
8900	10	3.825	0.000	4.682	0.000	37.030	0.000	48.230	0.000
8910	10	4.657	0.000	4.011	0.000	42.410	0.000	43.465	0.000
8920	10	5.285	0.000	5.456	0.000	49.710	0.000	47.335	0.000
8930	10	12.197	0.000	2.667	0.450	87.410	0.000	40.615	2.250
8940	10	14.820	0.000	4.283	0.000	135.085	0.000	34.750	2.250
8950	10	26.714	0.015	5.294	0.000	207.670	0.075	47.885	0.000
8960	10	20.643	0.000	4.413	0.000	236.785	0.075	48.535	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
8970	10	20.429	0.000	4.203	0.000	205.360	0.000	43.080	0.000
8980	10	19.612	0.000	4.669	0.000	200.205	0.000	44.360	0.000
8990	10	10.219	0.000	4.519	0.000	149.155	0.000	45.940	0.000
9000	10	6.196	0.000	2.645	0.037	82.075	0.000	35.820	0.185
9010	10	4.013	0.000	0.361	7.480	51.045	0.000	15.030	37.585
9020	10	3.834	0.000	0.954	1.248	39.235	0.000	6.575	43.640
9030	10	4.999	0.000	2.332	0.318	44.165	0.000	16.430	7.830
9040	10	5.707	0.000	4.888	0.000	53.530	0.000	36.100	1.590
9050	10	5.642	0.000	1.455	5.046	56.745	0.000	31.715	25.230
9060	10	5.690	0.000	1.255	4.152	56.660	0.000	13.550	45.990
9070	10	8.054	0.000	1.978	1.025	68.720	0.000	16.165	25.885
9080	10	16.307	0.000	4.796	0.000	121.805	0.000	33.870	5.125
9090	10	19.977	0.000	5.586	0.000	181.420	0.000	51.910	0.000
9100	10	19.032	0.000	6.209	0.000	195.045	0.000	58.975	0.000
9110	10	14.115	0.000	5.330	0.000	165.735	0.000	57.695	0.000
9120	10	18.768	0.000	4.723	0.000	164.415	0.000	50.265	0.000
9130	10	16.335	0.000	5.416	0.000	175.515	0.000	50.695	0.000
9140	10	8.495	0.000	4.733	0.000	124.150	0.000	50.745	0.000
9150	10	7.714	0.000	5.176	0.000	81.045	0.000	49.545	0.000
9160	10	6.812	0.000	4.091	0.000	72.630	0.000	46.335	0.000
9170	10	6.712	0.000	1.785	1.027	67.620	0.000	29.380	5.135
9180	10	4.630	0.001	0.000	5.331	56.710	0.005	8.925	31.790
9190	10	4.293	0.000	0.009	2.212	44.615	0.005	0.045	37.715
9200	10	5.528	0.000	5.567	0.000	49.105	0.000	27.880	11.060
9210	10	5.170	0.000	5.897	0.000	53.490	0.000	57.320	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
9220	10	3.666	0.000	13.891	0.000	44.180	0.000	98.940	0.000
9230	10	4.384	0.000	25.027	0.000	40.250	0.000	194.590	0.000
9240	10	4.532	0.000	44.903	0.000	44.580	0.000	349.650	0.000
9250	10	5.119	0.000	43.374	0.000	48.255	0.000	441.385	0.000
9260	10	7.230	0.000	17.081	0.000	61.745	0.000	302.275	0.000
9270	10	1.751	0.000	5.076	0.000	44.905	0.000	110.785	0.000
9280	10	1.818	0.000	5.287	0.000	17.845	0.000	51.815	0.000
9290	10	2.937	0.064	5.881	0.000	23.775	0.320	55.840	0.000
9300	10	2.274	1.348	5.560	0.000	26.055	7.060	57.205	0.000
9310	10	2.631	0.555	5.969	0.000	24.525	9.515	57.645	0.000
9320	10	2.841	1.102	5.365	0.000	27.360	8.285	56.670	0.000
9330	10	5.963	0.000	8.103	0.000	44.020	5.510	67.340	0.000
9340	10	6.818	0.000	6.336	0.000	63.905	0.000	72.195	0.000
9350	10	6.405	0.000	2.831	0.000	66.115	0.000	45.835	0.000
9360	10	6.332	0.000	4.620	0.000	63.685	0.000	37.255	0.000
9370	10	6.473	0.000	4.574	0.000	64.025	0.000	45.970	0.000
9380	10	7.152	0.000	5.539	0.000	68.125	0.000	50.565	0.000
9390	10	5.532	0.000	5.530	0.000	63.420	0.000	55.345	0.000
9400	10	6.236	0.000	5.836	0.000	58.840	0.000	56.830	0.000
9410	10	6.475	0.000	5.874	0.000	63.555	0.000	58.550	0.000
9420	10	6.803	0.000	6.312	0.000	66.390	0.000	60.930	0.000
9430	10	6.808	0.000	5.695	0.000	68.055	0.000	60.035	0.000
9440	10	6.962	0.000	5.692	0.000	68.850	0.000	56.935	0.000
9450	10	7.143	0.000	6.428	0.000	70.525	0.000	60.600	0.000
9460	10	5.597	0.000	7.553	0.000	63.700	0.000	69.905	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
9470	10	3.785	0.010	7.259	0.000	46.910	0.050	74.060	0.000
9480	10	4.378	0.000	7.710	0.000	40.815	0.050	74.845	0.000
9490	10	4.402	0.000	6.533	0.000	43.900	0.000	71.215	0.000
9500	10	5.502	0.000	6.549	0.000	49.520	0.000	65.410	0.000
9510	10	6.505	0.000	6.526	0.000	60.035	0.000	65.375	0.000
9520	10	3.141	0.000	6.626	0.000	48.230	0.000	65.760	0.000
9530	10	2.440	0.644	7.407	0.000	27.905	3.220	70.165	0.000
9540	10	4.965	0.000	12.025	0.000	37.025	3.220	97.160	0.000
9550	10	2.075	2.373	7.865	0.000	35.200	11.865	99.450	0.000
9560	10	1.623	8.061	7.716	0.000	18.490	52.170	77.905	0.000
9570	10	2.763	0.741	9.999	0.000	21.930	44.010	88.575	0.000
9580	10	5.911	0.000	9.791	0.000	43.370	3.705	98.950	0.000
9590	10	6.008	0.000	13.356	0.000	59.595	0.000	115.735	0.000
9600	10	5.787	0.000	8.231	0.000	58.975	0.000	107.935	0.000
9610	10	6.856	0.000	6.826	0.000	63.215	0.000	75.285	0.000
9620	10	7.386	0.000	8.502	0.000	71.210	0.000	76.640	0.000
9630	10	6.620	0.000	14.107	0.000	70.030	0.000	113.045	0.000
9640	10	6.590	0.000	30.300	0.000	66.050	0.000	222.035	0.000
9650	10	9.669	0.000	46.175	0.000	81.295	0.000	382.375	0.000
9660	10	22.899	0.000	59.876	0.000	162.840	0.000	530.255	0.000
9670	10	8.370	0.000	37.426	0.000	156.345	0.000	486.510	0.000
9680	10	7.980	0.000	18.947	0.000	81.750	0.000	281.865	0.000
9690	10	14.609	0.000	7.281	0.000	112.945	0.000	131.140	0.000
9700	10	7.879	0.000	4.280	0.000	112.440	0.000	57.805	0.000
9710	10	7.755	0.000	4.225	0.000	78.170	0.000	42.525	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
9720	10	5.498	0.000	4.799	0.000	66.265	0.000	45.120	0.000
9730	10	4.433	0.000	2.922	1.676	49.655	0.000	38.605	8.380
9740	10	4.872	0.000	1.706	5.090	46.525	0.000	23.140	33.830
9750	10	4.716	0.000	0.443	8.054	47.940	0.000	10.745	65.720
9760	10	5.242	0.000	1.034	8.308	49.790	0.000	7.385	81.810
9770	10	16.509	0.000	1.792	1.223	108.755	0.000	14.130	47.655
9780	10	30.072	0.000	6.615	0.000	232.905	0.000	42.035	6.115
9790	10	27.103	0.000	6.064	0.000	285.875	0.000	63.395	0.000
9800	10	13.929	0.000	4.649	0.000	205.160	0.000	53.565	0.000
9810	10	5.664	0.000	2.221	0.000	97.965	0.000	34.350	0.000
9820	10	4.224	0.000	4.329	0.000	49.440	0.000	32.750	0.000
9830	10	4.671	0.000	4.160	0.000	44.475	0.000	42.445	0.000
9840	10	4.490	0.000	3.376	0.008	45.805	0.000	37.680	0.040
9850	10	4.980	0.000	2.340	0.096	47.350	0.000	28.580	0.520
9860	10	5.476	0.000	2.245	0.613	52.280	0.000	22.925	3.545
9870	10	6.911	0.000	1.839	0.744	61.935	0.000	20.420	6.785
9880	10	15.745	0.000	2.525	0.005	113.280	0.000	21.820	3.745
9890	10	18.385	0.000	4.617	0.000	170.650	0.000	35.710	0.025
9900	10	17.008	0.000	5.106	0.000	176.965	0.000	48.615	0.000
9910	10	12.715	0.000	5.187	0.000	148.615	0.000	51.465	0.000
9920	10	6.172	0.000	4.320	0.000	94.435	0.000	47.535	0.000
9930	10	5.596	0.000	3.090	0.000	58.840	0.000	37.050	0.000
9940	10	5.103	0.000	4.121	0.000	53.495	0.000	36.055	0.000
9950	10	4.282	0.000	4.249	0.000	46.925	0.000	41.850	0.000
9960	10	4.197	0.000	4.777	0.000	42.395	0.000	45.130	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
9970	10	4.379	0.000	3.120	0.000	42.880	0.000	39.485	0.000
9980	10	4.129	0.000	1.716	0.037	42.540	0.000	24.180	0.185
9990	10	4.991	0.000	1.127	0.433	45.600	0.000	14.215	2.350
10000	10	5.273	0.000	3.002	0.115	51.320	0.000	20.645	2.740
10010	10	11.407	0.000	2.151	0.000	83.400	0.000	25.765	0.575
10020	10	15.847	0.000	3.111	0.000	136.270	0.000	26.310	0.000
10030	10	26.543	0.000	6.044	0.000	211.950	0.000	45.775	0.000
10040	10	37.719	0.000	4.634	0.000	321.310	0.000	53.390	0.000
10050	10	41.448	0.000	3.821	0.000	395.835	0.000	42.275	0.000
10060	10	24.600	0.000	3.756	0.000	330.240	0.000	37.885	0.000
10070	10	24.570	0.000	4.230	0.000	245.850	0.000	39.930	0.000
10080	10	22.914	0.000	4.380	0.000	237.420	0.000	43.050	0.000
10090	10	16.446	0.000	6.324	0.000	196.800	0.000	53.520	0.000
10100	10	16.836	0.000	6.182	0.000	166.410	0.000	62.530	0.000
10110	10	12.893	0.000	5.862	0.000	148.645	0.000	60.220	0.000
10120	10	6.993	0.000	5.958	0.000	99.430	0.000	59.100	0.000
10130	10	8.771	0.000	5.520	0.000	78.820	0.000	57.390	0.000
10140	10	8.541	0.000	5.129	0.000	86.560	0.000	53.245	0.000
10150	10	5.494	0.000	5.114	0.000	70.175	0.000	51.215	0.000
10160	10	8.850	0.000	4.153	0.000	71.720	0.000	46.335	0.000
10170	10	11.446	0.000	4.049	0.000	101.480	0.000	41.010	0.000
10180	10	14.140	0.000	4.499	0.000	127.930	0.000	42.740	0.000
10190	10	21.759	0.000	4.193	0.000	179.495	0.000	43.460	0.000
10200	10	25.575	0.000	3.896	0.000	236.670	0.000	40.445	0.000
10210	10	20.405	0.000	3.524	0.000	229.900	0.000	37.100	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
10220	10	21.318	0.000	3.377	0.000	208.615	0.000	34.505	0.000
10230	10	20.890	0.000	3.603	0.000	211.040	0.000	34.900	0.000
10240	10	11.789	0.000	3.745	0.000	163.395	0.000	36.740	0.000
10250	10	10.788	0.000	4.335	0.000	112.885	0.000	40.400	0.000
10260	10	10.386	0.000	4.223	0.000	105.870	0.000	42.790	0.000
10270	10	12.892	0.000	4.049	0.000	116.390	0.000	41.360	0.000
10280	10	19.112	0.000	3.971	0.000	160.020	0.000	40.100	0.000
10290	10	24.236	0.000	4.539	0.000	216.740	0.000	42.550	0.000
10300	10	26.984	0.000	5.623	0.000	256.100	0.000	50.810	0.000
10310	10	13.826	0.000	5.630	0.000	204.050	0.000	56.265	0.000
10320	10	10.338	0.000	5.900	0.000	120.820	0.000	57.650	0.000
10330	10	5.742	0.000	5.181	0.000	80.400	0.000	55.405	0.000
10340	10	6.108	0.000	2.842	0.087	59.250	0.000	40.115	0.435
10350	10	5.812	0.000	4.185	0.061	59.600	0.000	35.135	0.740
10360	10	4.544	0.000	3.550	0.256	51.780	0.000	38.675	1.585
10370	10	4.159	0.000	1.488	2.553	43.515	0.000	25.190	14.045
10380	10	5.057	0.000	2.206	0.759	46.080	0.000	18.470	16.560
10390	10	9.515	0.000	4.615	0.000	72.860	0.000	34.105	3.795
10400	10	26.293	0.000	4.455	0.000	179.040	0.000	45.350	0.000
10410	10	27.419	0.000	4.191	0.000	268.560	0.000	43.230	0.000
10420	10	19.567	0.000	3.628	0.000	234.930	0.000	39.095	0.000
10430	10	17.146	0.000	3.016	0.000	183.565	0.000	33.220	0.000
10440	10	9.791	0.000	4.001	0.000	134.685	0.000	35.085	0.000
10450	10	7.482	0.000	5.087	0.000	86.365	0.000	45.440	0.000
10460	10	11.577	0.000	5.105	0.000	95.295	0.000	50.960	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
10470	10	12.965	0.000	4.335	0.000	122.710	0.000	47.200	0.000
10480	10	14.412	0.000	6.114	0.000	136.885	0.000	52.245	0.000
10490	10	10.900	0.000	5.633	0.000	126.560	0.000	58.735	0.000
10500	10	10.296	0.000	6.192	0.000	105.980	0.000	59.125	0.000
10510	10	5.946	0.000	7.038	0.000	81.210	0.000	66.150	0.000
10520	10	7.261	0.000	5.590	0.000	66.035	0.000	63.140	0.000
10530	10	6.139	0.000	6.193	0.000	67.000	0.000	58.915	0.000
10540	10	6.462	0.000	6.427	0.000	63.005	0.000	63.100	0.000
10550	10	6.431	0.000	7.974	0.000	64.465	0.000	72.005	0.000
10560	10	7.584	0.000	7.338	0.000	70.075	0.000	76.560	0.000
10570	10	6.164	0.000	9.211	0.000	68.740	0.000	82.745	0.000
10580	10	6.787	0.000	7.201	0.000	64.755	0.000	82.060	0.000
10590	10	8.761	0.000	7.260	0.000	77.740	0.000	72.305	0.000
10600	10	9.981	0.000	12.845	0.000	93.710	0.000	100.525	0.000
10610	10	11.366	0.000	6.636	0.000	106.735	0.000	97.405	0.000
10620	10	24.844	0.000	5.205	0.000	181.050	0.000	59.205	0.000
10630	10	33.904	0.000	5.750	0.000	293.740	0.000	54.775	0.000
10640	10	22.676	0.000	4.253	0.000	282.900	0.000	50.015	0.000
10650	10	16.741	0.000	3.579	0.000	197.085	0.000	39.160	0.000
10660	10	15.077	0.000	6.175	0.000	159.090	0.000	48.770	0.000
10670	10	11.766	0.000	4.929	0.000	134.215	0.000	55.520	0.000
10680	10	10.347	0.000	5.216	0.000	110.565	0.000	50.725	0.000
10690	10	6.376	0.000	5.638	0.000	83.615	0.000	54.270	0.000
10700	10	6.322	0.000	3.989	0.000	63.490	0.000	48.135	0.000
10710	10	7.607	0.000	3.284	0.000	69.645	0.000	36.365	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
10720	10	11.245	0.000	5.120	0.000	94.260	0.000	42.020	0.000
10730	10	18.588	0.000	5.127	0.000	149.165	0.000	51.235	0.000
10740	10	17.803	0.000	6.150	0.000	181.955	0.000	56.385	0.000
10750	10	21.011	0.000	6.218	0.000	194.070	0.000	61.840	0.000
10760	10	10.343	0.000	5.352	0.000	156.770	0.000	57.850	0.000
10770	10	5.303	0.000	5.052	0.000	78.230	0.000	52.020	0.000
10780	10	4.266	0.000	4.428	0.000	47.845	0.000	47.400	0.000
10790	10	4.917	0.000	2.489	0.012	45.915	0.000	34.585	0.060
10800	10	7.005	0.000	4.357	0.000	59.610	0.000	34.230	0.060
10810	10	5.557	0.000	7.438	0.000	62.810	0.000	58.975	0.000
10820	10	5.905	0.000	6.245	0.000	57.310	0.000	68.415	0.000
10830	10	6.236	0.000	5.871	0.000	60.705	0.000	60.580	0.000
10840	10	5.694	0.000	2.369	0.205	59.650	0.000	41.200	1.025
10850	10	8.475	0.000	4.570	0.000	70.845	0.000	34.695	1.025
10860	10	21.703	0.000	4.401	0.000	150.890	0.000	44.855	0.000
10870	10	23.618	0.000	5.080	0.000	226.605	0.000	47.405	0.000
10880	10	25.169	0.000	4.605	0.000	243.935	0.000	48.425	0.000
10890	10	15.336	0.000	5.051	0.000	202.525	0.000	48.280	0.000
10900	10	18.769	0.000	4.628	0.000	170.525	0.000	48.395	0.000
10910	10	10.909	0.000	5.525	0.000	148.390	0.000	50.765	0.000
10920	10	8.753	0.000	5.734	0.000	98.310	0.000	56.295	0.000
10930	10	9.177	0.000	5.746	0.000	89.650	0.000	57.400	0.000
10940	10	9.762	0.000	5.368	0.000	94.695	0.000	55.570	0.000
10950	10	13.438	0.000	5.364	0.000	116.000	0.000	53.660	0.000
10960	10	15.033	0.000	4.933	0.000	142.355	0.000	51.485	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
10970	10	6.990	0.000	3.443	0.013	110.115	0.000	41.880	0.065
10980	10	6.308	0.000	2.315	0.167	66.490	0.000	28.790	0.900
10990	10	6.819	0.000	4.588	0.000	65.635	0.000	34.515	0.835
11000	10	5.322	0.000	4.435	0.000	60.705	0.000	45.115	0.000
11010	10	5.503	0.000	3.055	0.041	54.125	0.000	37.450	0.205
11020	10	4.159	0.132	4.074	0.025	48.310	0.660	35.645	0.330
11030	10	4.737	0.737	5.819	0.000	44.480	4.345	49.465	0.125
11040	10	4.036	0.178	5.976	0.000	43.865	4.575	58.975	0.000
11050	10	3.051	0.218	5.487	0.000	35.435	1.980	57.315	0.000
11060	10	2.223	3.704	5.047	0.000	26.370	19.610	52.670	0.000
11070	10	3.412	0.000	1.704	0.230	28.175	18.520	33.755	1.150
11080	10	4.976	0.000	0.948	2.967	41.940	0.000	13.260	15.985
11090	10	5.584	0.000	1.148	2.807	52.800	0.000	10.480	28.870
11100	10	5.097	0.000	2.453	0.728	53.405	0.000	18.005	17.675
11110	10	3.508	0.047	3.446	0.168	43.025	0.235	29.495	4.480
11120	10	2.651	0.735	5.208	0.001	30.795	3.910	43.270	0.845
11130	10	5.628	0.000	3.065	2.012	41.395	3.675	41.365	10.065
11140	10	5.628	0.000	2.306	4.944	56.280	0.000	26.855	34.780
11150	10	5.698	0.000	1.974	6.158	56.630	0.000	21.400	55.510
11160	10	2.614	0.000	1.216	0.899	41.560	0.000	15.950	35.285
11170	10	1.624	0.610	1.109	0.000	21.190	3.050	11.625	4.495
11180	10	1.699	0.594	2.786	0.000	16.615	6.020	19.475	0.000
11190	10	1.781	0.255	2.283	0.000	17.400	4.245	25.345	0.000
11200	10	2.041	0.884	3.408	0.000	19.110	5.695	28.455	0.000
11210	10	4.342	0.000	5.560	0.000	31.915	4.420	44.840	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
11220	10	5.388	0.000	5.587	0.000	48.650	0.000	55.735	0.000
11230	10	5.947	0.000	5.704	0.000	56.675	0.000	56.455	0.000
11240	10	6.611	0.000	5.833	0.000	62.790	0.000	57.685	0.000
11250	10	5.353	0.000	5.037	0.000	59.820	0.000	54.350	0.000
11260	10	5.647	0.000	3.947	0.000	55.000	0.000	44.920	0.000
11270	10	5.022	0.000	3.210	0.000	53.345	0.000	35.785	0.000
11280	10	1.686	0.819	3.838	0.000	33.540	4.095	35.240	0.000
11290	10	1.137	0.046	3.538	0.000	14.115	4.325	36.880	0.000
11300	10	2.781	0.364	4.693	0.000	19.590	2.050	41.155	0.000
11310	10	3.632	0.135	8.108	0.000	32.065	2.495	64.005	0.000
11320	10	2.995	0.014	10.076	0.000	33.135	0.745	90.920	0.000
11330	10	4.297	0.000	11.059	0.000	36.460	0.070	105.675	0.000
11340	10	6.442	0.000	19.879	0.000	53.695	0.000	154.690	0.000
11350	10	5.372	0.000	16.494	0.000	59.070	0.000	181.865	0.000
11360	10	3.866	0.000	13.103	0.000	46.190	0.000	147.985	0.000
11370	10	2.381	0.836	8.950	0.000	31.235	4.180	110.265	0.000
11380	10	2.012	0.353	13.305	0.000	21.965	5.945	111.275	0.000
11390	10	4.440	0.000	21.011	0.000	32.260	1.765	171.580	0.000
11400	10	5.336	0.000	19.787	0.000	48.880	0.000	203.990	0.000
11410	10	2.969	0.000	18.833	0.000	41.525	0.000	193.100	0.000
11420	10	2.622	0.001	15.692	0.000	27.955	0.005	172.625	0.000
11430	10	4.111	0.000	17.406	0.000	33.665	0.005	165.490	0.000
11440	10	3.090	1.039	13.692	0.000	36.005	5.195	155.490	0.000
11450	10	3.163	0.255	10.564	0.000	31.265	6.470	121.280	0.000
11460	10	3.750	0.057	5.150	0.000	34.565	1.560	78.570	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
11470	10	1.683	0.160	4.369	0.000	27.165	1.085	47.595	0.000
11480	10	0.207	4.480	3.375	0.000	9.450	23.200	38.720	0.000
11490	10	0.000	17.311	3.041	0.784	1.035	108.955	32.080	3.920
11500	10	0.055	3.813	2.770	0.000	0.275	105.620	29.055	3.920
11510	10	3.584	0.000	10.989	0.000	18.195	19.065	68.795	0.000
11520	10	4.871	0.000	35.407	0.000	42.275	0.000	231.980	0.000
11530	10	5.799	0.000	25.439	0.000	53.350	0.000	304.230	0.000
11540	10	3.868	0.000	21.063	0.000	48.335	0.000	232.510	0.000
11550	10	1.242	2.058	14.540	0.000	25.550	10.290	178.015	0.000
11560	10	2.444	0.000	26.489	0.000	18.430	10.290	205.145	0.000
11570	10	3.113	0.000	34.038	0.000	27.785	0.000	302.635	0.000
11580	10	3.975	0.000	25.504	0.000	35.440	0.000	297.710	0.000
11590	10	1.217	1.816	9.895	0.000	25.960	9.080	176.995	0.000
11600	10	1.943	0.722	8.169	0.000	15.800	12.690	90.320	0.000
11610	10	3.797	0.005	6.274	0.000	28.700	3.635	72.215	0.000
11620	10	2.285	2.200	5.687	0.000	30.410	11.025	59.805	0.000
11630	10	0.323	4.443	4.079	0.000	13.040	33.215	48.830	0.000
11640	10	0.056	3.613	3.088	0.000	1.895	40.280	35.835	0.000
11650	10	2.386	0.000	5.139	0.000	12.210	18.065	41.135	0.000
11660	10	3.012	0.000	4.050	0.000	26.990	0.000	45.945	0.000
11670	10	3.533	0.000	4.095	0.000	32.725	0.000	40.725	0.000
11680	10	2.760	0.000	4.813	0.000	31.465	0.000	44.540	0.000
11690	10	2.204	0.000	10.618	0.000	24.820	0.000	77.155	0.000
11700	10	2.580	0.000	6.328	0.000	23.920	0.000	84.730	0.000
11710	10	1.375	0.114	1.548	0.000	19.775	0.570	39.380	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
11720	10	0.180	0.962	0.355	0.000	7.775	5.380	9.515	0.000
11730	10	0.098	2.037	0.665	0.158	1.390	14.995	5.100	0.790
11740	10	0.140	3.270	5.109	0.000	1.190	26.535	28.870	0.790
11750	10	0.230	0.398	4.668	0.000	1.850	18.340	48.885	0.000
11760	10	1.162	0.000	5.634	0.000	6.960	1.990	51.510	0.000
11770	10	5.113	0.000	7.711	0.000	31.375	0.000	66.725	0.000
11780	10	5.744	0.000	6.781	0.000	54.285	0.000	72.460	0.000
11790	10	5.621	0.000	7.643	0.000	56.825	0.000	72.120	0.000
11800	10	5.154	0.000	7.525	0.000	53.875	0.000	75.840	0.000
11810	10	4.475	0.000	5.243	0.000	48.145	0.000	63.840	0.000
11820	10	5.321	0.000	5.532	0.000	48.980	0.000	53.875	0.000
11830	10	7.704	0.000	5.475	0.000	65.125	0.000	55.035	0.000
11840	10	4.431	0.000	7.170	0.000	60.675	0.000	63.225	0.000
11850	10	5.418	0.000	9.079	0.000	49.245	0.000	81.245	0.000
11860	10	7.433	0.000	8.048	0.000	64.255	0.000	85.635	0.000
11870	10	4.945	0.000	6.280	0.000	61.890	0.000	71.640	0.000
11880	10	3.301	0.013	5.267	0.000	41.230	0.065	57.735	0.000
11890	10	2.966	0.149	5.012	0.000	31.335	0.810	51.395	0.000
11900	10	2.557	0.477	10.091	0.000	27.615	3.130	75.515	0.000
11910	10	2.977	0.202	19.810	0.000	27.670	3.395	149.505	0.000
11920	10	2.499	0.452	17.497	0.000	27.380	3.270	186.535	0.000
11930	10	3.470	0.000	24.453	0.000	29.845	2.260	209.750	0.000
11940	10	3.701	0.000	36.555	0.000	35.855	0.000	305.040	0.000
11950	10	3.704	0.000	24.522	0.000	37.025	0.000	305.385	0.000
11960	10	4.125	0.000	6.961	0.000	39.145	0.000	157.415	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
11970	10	5.560	0.000	5.799	0.000	48.425	0.000	63.800	0.000
11980	10	8.289	0.000	5.025	0.000	69.245	0.000	54.120	0.000
11990	10	6.072	0.000	1.775	1.311	71.805	0.000	34.000	6.555
12000	10	6.611	0.000	2.210	0.292	63.415	0.000	19.925	8.015
12010	10	7.568	0.000	4.479	0.000	70.895	0.000	33.445	1.460
12020	10	17.639	0.000	4.997	0.000	126.035	0.000	47.380	0.000
12030	10	21.398	0.000	5.520	0.000	195.185	0.000	52.585	0.000
12040	10	11.332	0.000	3.953	0.000	163.650	0.000	47.365	0.000
12050	10	5.289	0.000	1.376	0.061	83.105	0.000	26.645	0.305
12060	10	4.103	0.000	1.664	0.000	46.960	0.000	15.200	0.305
12070	10	26.107	0.000	4.872	0.000	151.050	0.000	32.680	0.000
12080	10	36.353	0.000	5.384	0.000	312.300	0.000	51.280	0.000
12090	10	41.602	0.000	5.930	0.000	389.775	0.000	56.570	0.000
12100	10	41.535	0.000	7.348	0.000	415.685	0.000	66.390	0.000
12110	10	9.520	0.000	5.743	0.000	255.275	0.000	65.455	0.000
12120	10	10.355	0.000	4.402	0.000	99.375	0.000	50.725	0.000
12130	10	13.970	0.000	4.031	0.000	121.625	0.000	42.165	0.000
12140	10	16.213	0.000	3.775	0.000	150.915	0.000	39.030	0.000
12150	10	13.029	0.000	3.775	0.000	146.210	0.000	37.750	0.000
12160	10	7.536	0.000	4.792	0.000	102.825	0.000	42.835	0.000
12170	10	5.412	0.000	1.965	0.433	64.740	0.000	33.785	2.165
12180	10	3.148	0.000	0.803	0.000	42.800	0.000	13.840	2.165
12190	10	3.414	0.000	2.701	0.000	32.810	0.000	17.520	0.000
12200	10	5.001	0.000	5.304	0.000	42.075	0.000	40.025	0.000
12210	10	6.513	0.000	2.535	0.050	57.570	0.000	39.195	0.250

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
12220	10	6.795	0.000	3.785	0.066	66.540	0.000	31.600	0.580
12230	10	8.707	0.000	8.060	0.000	77.510	0.000	59.225	0.330
12240	10	7.820	0.000	6.370	0.000	82.635	0.000	72.150	0.000
12250	10	6.139	0.000	5.653	0.000	69.795	0.000	60.115	0.000
12260	10	5.178	0.000	2.881	0.247	56.585	0.000	42.670	1.235
12270	10	5.734	0.000	1.260	0.678	54.560	0.000	20.705	4.625
12280	10	6.601	0.000	4.129	0.000	61.675	0.000	26.945	3.390
12290	10	7.895	0.000	4.298	0.000	72.480	0.000	42.135	0.000
12300	10	6.379	0.000	2.706	0.054	71.370	0.000	35.020	0.270
12310	10	6.064	0.000	2.216	3.789	62.215	0.000	24.610	19.215
12320	10	4.905	0.000	2.520	0.703	54.845	0.000	23.680	22.460
12330	10	5.240	0.000	1.463	2.476	50.725	0.000	19.915	15.895
12340	10	8.645	0.000	1.930	3.681	69.425	0.000	16.965	30.785
12350	10	11.272	0.000	5.824	0.000	99.585	0.000	38.770	18.405
12360	10	11.180	0.000	4.614	0.000	112.260	0.000	52.190	0.000
12370	10	7.853	0.000	3.031	0.000	95.165	0.000	38.225	0.000
12380	10	5.680	0.000	3.483	0.000	67.665	0.000	32.570	0.000
12390	10	16.779	0.000	4.074	0.000	112.295	0.000	37.785	0.000
12400	10	21.523	0.000	4.446	0.000	191.510	0.000	42.600	0.000
12410	10	16.806	0.000	5.193	0.000	191.645	0.000	48.195	0.000
12420	10	19.368	0.000	4.505	0.000	180.870	0.000	48.490	0.000
12430	10	21.447	0.000	4.367	0.000	204.075	0.000	44.360	0.000
12440	10	18.988	0.000	4.751	0.000	202.175	0.000	45.590	0.000
12450	10	15.725	0.000	3.920	0.000	173.565	0.000	43.355	0.000
12460	10	12.848	0.000	4.167	0.000	142.865	0.000	40.435	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
12470	10	5.125	0.000	4.402	0.000	89.865	0.000	42.845	0.000
12480	10	1.223	1.166	2.851	0.000	31.740	5.830	36.265	0.000
12490	10	1.494	0.835	2.826	0.076	13.585	10.005	28.385	0.380
12500	10	1.619	0.345	1.568	7.807	15.565	5.900	21.970	39.415
12510	10	1.539	3.384	1.644	4.910	15.790	18.645	16.060	63.585
12520	10	1.546	1.435	2.235	1.994	15.425	24.095	19.395	34.520
12530	10	6.985	0.000	2.657	0.669	42.655	7.175	24.460	13.315
12540	10	9.970	0.000	5.388	0.000	84.775	0.000	40.225	3.345
12550	10	13.019	0.000	5.841	0.000	114.945	0.000	56.145	0.000
12560	10	10.756	0.000	5.537	0.000	118.875	0.000	56.890	0.000
12570	10	7.829	0.000	5.375	0.000	92.925	0.000	54.560	0.000
12580	10	6.597	0.000	5.447	0.000	72.130	0.000	54.110	0.000
12590	10	7.956	0.000	5.302	0.000	72.765	0.000	53.745	0.000
12600	10	7.592	0.000	5.449	0.000	77.740	0.000	53.755	0.000
12610	10	7.468	0.000	5.789	0.000	75.300	0.000	56.190	0.000
12620	10	6.473	0.000	4.568	0.000	69.705	0.000	51.785	0.000
12630	10	2.692	0.000	2.086	2.532	45.825	0.000	33.270	12.660
12640	10	1.595	0.323	1.478	2.668	21.435	1.615	17.820	26.000
12650	10	1.952	0.000	1.974	0.000	17.735	1.615	17.260	13.340
12660	10	1.828	0.000	2.024	0.000	18.900	0.000	19.990	0.000
12670	10	3.151	0.000	2.134	0.000	24.895	0.000	20.790	0.000
12680	10	21.715	0.000	4.011	0.000	124.330	0.000	30.725	0.000
12690	10	18.269	0.000	6.144	0.000	199.920	0.000	50.775	0.000
12700	10	10.058	0.000	4.889	0.000	141.635	0.000	55.165	0.000
12710	10	6.688	0.000	3.252	0.000	83.730	0.000	40.705	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
12720	10	2.783	0.058	1.645	0.000	47.355	0.290	24.485	0.000
12730	10	1.168	0.705	0.897	0.183	19.755	3.815	12.710	0.915
12740	10	0.659	3.296	2.777	0.000	9.135	20.005	18.370	0.915
12750	10	1.531	0.033	2.895	0.000	10.950	16.645	28.360	0.000
12760	10	1.651	0.163	3.006	0.000	15.910	0.980	29.505	0.000
12770	10	7.172	0.000	3.437	0.000	44.115	0.815	32.215	0.000
12780	10	7.416	0.000	2.329	0.000	72.940	0.000	28.830	0.000
12790	10	10.344	0.000	4.031	0.000	88.800	0.000	31.800	0.000
12800	10	14.322	0.000	5.263	0.000	123.330	0.000	46.470	0.000
12810	10	8.287	0.000	3.731	0.000	113.045	0.000	44.970	0.000
12820	10	9.321	0.000	3.762	0.000	88.040	0.000	37.465	0.000
12830	10	3.863	0.000	3.921	0.000	65.920	0.000	38.415	0.000
12840	10	3.661	0.002	3.563	0.009	37.620	0.010	37.420	0.045
12850	10	3.902	0.000	1.613	0.250	37.815	0.010	25.880	1.295
12860	10	6.470	0.000	4.535	0.000	51.860	0.000	30.740	1.250
12870	10	4.619	0.000	3.621	0.000	55.445	0.000	40.780	0.000
12880	10	1.816	0.139	2.697	0.000	32.175	0.695	31.590	0.000
12890	10	3.390	0.000	2.317	0.000	26.030	0.695	25.070	0.000
12900	10	2.438	0.000	2.085	0.000	29.140	0.000	22.010	0.000
12910	10	2.819	0.000	1.886	0.000	26.285	0.000	19.855	0.000
12920	10	3.078	0.000	2.605	0.000	29.485	0.000	22.455	0.000
12930	10	5.537	0.000	2.629	0.000	43.075	0.000	26.170	0.000
12940	10	6.313	0.000	2.841	0.000	59.250	0.000	27.350	0.000
12950	10	10.726	0.000	3.354	0.000	85.195	0.000	30.975	0.000
12960	10	12.197	0.000	3.411	0.000	114.615	0.000	33.825	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
12970	10	9.695	0.000	3.094	0.000	109.460	0.000	32.525	0.000
12980	10	5.664	0.000	3.360	0.000	76.795	0.000	32.270	0.000
12990	10	3.447	0.000	2.579	0.000	45.555	0.000	29.695	0.000
13000	10	2.414	0.000	2.094	0.000	29.305	0.000	23.365	0.000
13010	10	2.854	0.000	0.988	0.000	26.340	0.000	15.410	0.000
13020	10	2.964	0.000	0.135	1.962	29.090	0.000	5.615	9.810
13030	10	3.050	0.000	0.146	0.742	30.070	0.000	1.405	13.520
13040	10	3.807	0.000	2.112	0.000	34.285	0.000	11.290	3.710
13050	10	5.160	0.000	2.276	0.000	44.835	0.000	21.940	0.000
13060	10	5.387	0.000	2.633	0.000	52.735	0.000	24.545	0.000
13070	10	5.075	0.000	2.944	0.000	52.310	0.000	27.885	0.000
13080	10	5.154	0.000	3.474	0.000	51.145	0.000	32.090	0.000
13090	10	5.295	0.000	2.819	0.000	52.245	0.000	31.465	0.000
13100	10	6.444	0.000	3.255	0.000	58.695	0.000	30.370	0.000
13110	10	5.468	0.000	3.759	0.000	59.560	0.000	35.070	0.000
13120	10	4.410	0.000	4.376	0.000	49.390	0.000	40.675	0.000
13130	10	4.007	0.000	4.747	0.000	42.085	0.000	45.615	0.000
13140	10	4.590	0.000	4.892	0.000	42.985	0.000	48.195	0.000
13150	10	5.075	0.000	6.765	0.000	48.325	0.000	58.285	0.000
13160	10	4.674	0.000	6.122	0.000	48.745	0.000	64.435	0.000
13170	10	2.770	0.027	4.796	0.000	37.220	0.135	54.590	0.000
13180	10	1.098	0.270	3.596	0.000	19.340	1.485	41.960	0.000
13190	10	3.160	0.000	4.443	0.000	21.290	1.350	40.195	0.000
13200	10	4.944	0.000	6.365	0.000	40.520	0.000	54.040	0.000
13210	10	5.543	0.000	2.818	0.000	52.435	0.000	45.915	0.000

Design Chainage	Length (meters)	Cut_Area_LHS (sqm)	Fill_Area_LHS (sqm)	Cut_Area_RHS (sqm)	Fill_Area_RHS (sqm)	Cut_Vol_LHS (cum)	Fill_Vol_LHS (cum)	Cut_Vol_RHS (cum)	Fill_Vol_RHS (cum)
13220	10	5.973	0.000	2.838	0.000	57.580	0.000	28.280	0.000
13230	10	6.362	0.000	2.627	0.000	61.675	0.000	27.325	0.000
13240	10	6.410	0.000	2.699	0.000	63.860	0.000	26.630	0.000
13250	10	5.731	0.000	2.340	0.000	60.705	0.000	25.195	0.000
13260	10	5.698	0.000	1.982	0.000	57.145	0.000	21.610	0.000
13270	10	5.786	0.000	2.415	0.086	57.420	0.000	21.985	0.430
13280	10	6.338	0.000	2.979	0.067	60.620	0.000	26.970	0.765
13290	10	7.362	0.000	3.409	0.043	68.500	0.000	31.940	0.550
13300	10	7.933	0.000	3.510	0.018	76.475	0.000	34.595	0.305

Appendix 23

Dadhol Ladrour: Details of impacted structures						
S. No	**Str. No.**	**Chainage**	**Side**	**Name of the Hamlet**	**Head of the Household**	**Impact on Structure 1.>10%, 2.10%to20%, 3.21%to50%, 4.Above 50%**
1	R1	0/039	Right	Padyalag	Prem Lal	9%
2	R2	0/048	Right	Padyalag	Sonu	8%
3	R3	0/056	Right	Padyalag	Shuk Dav	6%
4	R4	0/068	Right	Padyalag	ShukDev	9%
5	R21	0/716	Right	Padyalag	NA	52%
6	R60	3/399	Right	Chakrana	Shanker Ram Kaushal	1%
7	R89	6/151	Right	ladhyani	Karm Singh	5%
8	R95	6/243	Right	ladhyani	Suman	33%
9	R114	6/695	Right	Bharari	Raksha Devi	12%
10	R129	7/053	Right	Bharari	Baldev Singh	5%
11	R130	7/060	Right	Bharari	Subham	7%
12	R131	7/063	Right	Bharari	Darm Singh	6%
13	R132	7/067	Right	Bharari	Bhrmi Devi	3%
14	R133	7/084	Right	Bharari	Nirmal Devi	5%
15	R134	7/194	Right	Bharari	Amrik Singh	3%
16	R135	7/501	Right	Bharari	Baldev Singh	5%
17	R136	7/560	Right	Baharghat	Baldev	9%
18	R136A	7/578	Right	Baharghat	Baldev	8%
19	R137	7/618	Right	Baharghat	Rakesh Kumar	8%
20	R138	7/641	Right	Baharghat	Sunil Kumar	7%
21	R138A	7/644	Right	Bharari	Rahul	5%
22	R138B	7/645	Right	Baharghat	Sunil Kumar	2%
23	R138C	7/650	Right	Bharari	Sunil Kumar	5%
24	R138D	7/655	Right	Baharghat	Tilak Raj	6%
25	R138E	7/656	Right	Baharghat	Tilak Raj	8%
26	R138F	7/660	Right	Baharghat	Tilak Raj	6%
27	R138G	7/662	Right	Baharghat	Sunil Kumar	7%
28	R139	7/677	Right	Baharghat	Bharat	4%
29	R140	7/702	Right	Baharghat	Baldev Singh	9%
30	R141	7/694	Right	Baharghat	Karm Chand	4%
31	R142	7/703	Right	Baharghat	Pawan Kumar	6%
32	R143	7/712	Right	Baharghat	Hosiyar Singh	4%
33	R144	7/715	Right	Baharghat	Dheeraj	8%
34	R145	7/719	Right	Baharghat	Omkar Singh	9%
35	R146	7/723	Right	Baharghat	Bhagwat Ram	7%
36	R146A	7/727	Right	baradaghat	Rakesh Kumar	8%
37	R147	7/962	Right	Baharghat	Raj Kumar	6%
38	R147A	7/966	Right	Baharghat	Jeet Ram Sharma	8%
39	R148	7/976	Right	Baharghat	Suresh Kumar	7%
40	R149	8/208	Right	Baharghat	Amro Devi	7%
41	R150	8/252	Right	Baharghat	Prakash Chand	2%
42	R151	8/445	Right	Baharghat	Pradeep Kumar	9%

Dadhol Ladrour: Details of impacted structures						
S. No	**Str. No.**	**Chainage**	**Side**	**Name of the Hamlet**	**Head of the Household**	**Impact on Structure 1.>10%, 2.10%to20%, 3.21%to50%, 4.Above 50%**
43	R152	8/460	Right	Mihada	Gopal Chand	4%
44	R153	9/157	Right	Mihada	Inder Ram	4%
45	R154	9/187	Right	Mihada	Klan Devi	9%
46	R155	9/194	Right	Mihada	Klan Devi	6%
47	R156	9/342	Right	Mihada	Devraj sharma	4%
48	R157	9/347	Right	Mihada	Khyal Dai	8%
49	R158	9/353	Right	Mihada	Kmle Devi	9%
50	R159	9/368	Right	Mihada	Baldev Ram Sharma	6%
51	R160	9/377	Right	Mihada	Kuldeep Kumar	4%
52	R177	10/702	Right	Kothi	Dev Raj	4%
53	R178	10/715	Right	Kothi	Sai Das Sharma	14%
54	R182	10/758	Right	Kothi	KamalRaj Sharma	8%
55	R192	11/238	Right	Kothi	Geeta Devi	9%
56	R193	11/250	Right	Kothi	Geeta Devi	9%
57	R196	11/292	Right	Kothi	Nirmla	8%
58	R197	11/901	Right	Ghanwin	Meera Devi	6%
59	R198	11/966	Right	Ghanwin	BusiSingh	9%
60	R199	12/274	Right	Ghandalwin	Gain Chand	6%
61	R199A	12/281	Right	Ghandalwin	Dinesh Kumar	5%
62	R200	12/456	Right	Ghandalwin	Tilak Raj	7%
63	R201	12/463	Right	Ghandalwin	Tilak Raj	4%
64	R202	12/469	Right	Ghandalwin	Parstotam lal	8%
65	R203	12/488	Right	Ghandalwin	Karmi Devi	5%
66	R204	12/548	Right	Ghandalwin	PrakashChand	9%
67	R205	12/555	Right	Ghandalwin	VidhiChand	4%
68	R206	12/563	Right	Ghandalwin	Ramesh Chand	9%
69	R207	13/013	Right	Ghandalwin	Rasheed Akhtar	8%
70	R207A	13/028	Right	Ghandalwin	Pardeep Singh	6%
71	R208	13/182	Right	Ladror	Purustotam Lal	4%
72	R209	13/218	Right	Ladror	Amar Singh	6%
73	R210	13/225	Right	Ladror	Baldev Singh	6%
74	R211	13/231	Right	Ladror	Ravi Kumar	8%
75	R212	13/241	Right	Ladror	Anil Kumar	7%
76	R213	13/250	Right	Ladror	NA	6%
77	R214	13/253	Right	Ladror	Banita	7%
78	R221	13/313	Right	Ladror	Sr PanchiRame	9%
79	L15	0/856	Left	Padyalag	Suram Singh	9%
80	L31	2/056	Left	Lethwin	Rattan Lal	37%
81	L61	4/819	Left	Ladyani	Ramesh	28%
82	L104	6/773	Left	Bhareri	Pramod Kumar	10%
83	L119	7/622	Left	Barandaghat	AMARNATH LAKHAPAL	1%
84	L129	8/274	Left	BadaraGhat	Gopal Ram	13%
85	L135	9/140	Left	Mihara	PrakashChand	17%
86	L136	9/170	Left	Mihara	Bhandarilal	3%
87	L162	10/969	Left	kothi	dinanth	52%

Dadhol Ladrour: Details of impacted structures						
S. No	**Str. No.**	**Chainage**	**Side**	**Name of the Hamlet**	**Head of the Household**	**Impact on Structure 1.>10%, 2.10%to20%, 3.21%to50%, 4.Above 50%**
88	L165	11/036	Left	kothi	baghith sharma	5%
89	L166	11/158	Left	kothi	ishwar das	4%
90	L177	11/914	Left	kothi	bhari singh	9%
91	L178	12/023	Left	ghandalwin	NA	1%
92	L179	12/037	Left	ghandalwin	gyan chand	7%
93	L180	12/055	Left	ghandalwin	madan lal	8%
94	L181	12/065	Left	ghandalwin	pawan kumar	5%
95	l182	12/074	Left	ghandalwin	amar singh	6%
96	L183	12/267	Left	ghandalwin	satish kumar	5%
97	L184	12/274	Left	ghandalwin	uttam singh	4%
98	L185	12/286	Left	ghandalwin	NA	6%
99	L186	12/296	Left	Ghandalwin	NIKKA RAM	8%
100	L187	12/303	Left	Ghandalwin	RoopLalVerma	9%
101	L187A	12/306	Left	Ghandalwin	NA	9%
102	L188	12/322	Left	Ghandalwin	NA	8%
103	L189	12/335	Left	Ghandalwin	Chambaie Singh	6%
104	L190	12/463	Left	Ghandalwin	KamalaDevi	4%
105	L191	12/502	Left	Ghandalwin	NA	8%
106	L192	12/632	Left	Ghandalwin	milap singh	14%
107	L193	12/639	Left	Ghandalwin	milap singh	7%
108	L194	12/648	Left	Ghandalwin	milap singh	9%
109	L195	12/687	Left	Ghandalwin	Nikkaram	7%
110	L196	12/943	Left	Ghandalwin	Arjun singh	8%
111	L197	12/994	Left	Ghandalwin	krishna chand	7%
112	L198	13/065	Left	Ghandalwin	nandlal	3%
113	L199	13/081	Left	kothi	hosiyar singh	2%
114	L200	13/107	Left	Ghandalwin	premlal	3%
115	L201	13/121	Left	Ghandalwin	Hem Raj	5%
116	L201A	13/131	Left	Ghandalwin	Prem Lal	4%
117	L201B	13/137	Left	Ghandalwin	LakhmanDas	7%
118	L202	13/154	Left	Ghandalwin	Puran Chand	5%
119	L203	13/189	Left	Ghandalwin	Parsotam Lal	9%
120	L204	13/278	Left	Ladrour	Kisori Lal	8%
121	L205	13/284	Left	Ladrour	Madan Lal	7%
122	L206	13/288	Left	Ladrour	Sanjeev Kumar`	4%
123	L207	13/297	Left	Ladrour	Ram Lal	2%
124	L208	13/302	Left	Kadram	Madan Lal	8%
125	L209	13/313	Left	Ladram	Sarkilmr	4%
126	L209A	13/321	Left	Kadram	Brij Lal	9%
127	L209B	13/331	Left	Kadram	Neraj	7%
128	L210	13/345	Left	Kadram	Kahar Chand	5%
129	L210A	13/350	Left	Kadram	Sanjeev kumar	9%
130	L210B	13/355	Left	Ladram	Gyan Chand	8%
131	L211	13/358	Left	Ladram	Surjeet Singh	4%
132	L212	13/364	Left	Ladram	Madan Lal	6%
133	L213A	13/371	Left	ladromi	fazaldeen	7%

Dadhol Ladrour: Details of impacted structures						
S. No	**Str. No.**	**Chainage**	**Side**	**Name of the Hamlet**	**Head of the Household**	**Impact on Structure 1.>10%, 2.10%to20%, 3.21%to50%, 4.Above 50%**
134	L214	13/376	Left	ladromi	kishore chand	9%
135	L215	13/383	Left	ladromi	ravi kant	9%
136	L216	13/387	Left	ladromi	madavlal	9%