



0191-2474553(J)/0194-0194-2494585 (S)
Ministry of Environment, Forest & Climate Change, Govt. of India.
J&K UT LEVEL EXPERT APPRAISAL COMMITTEE (JKEAC)
Department of Ecology, Environment & Remote Sensing
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MINUTES OF MEETING

MINUTES OF MEETING OF THE JK EXPERT APPRAISAL COMMITTEE HELD ON 03rd OF JUNE, 2024 VIA VIRTUAL (HYBRID) MODE

In pursuance of Meeting Notice issued vide No. JKEAC/2024/ 643-59 Dated: 30-05-2024, the Meeting of JK Level Expert Appraisal Committee (JKEAC) was held on 03rd of June, 2024 at 11am via video Conferencing (Hybrid mode) to further evaluate the compliance of left over points of observations recorded in previous Minutes, in accordance with directions of the JKEIAA recorded in 95th Meeting of JKEIAA.

The following attended the meeting:-

No.	Name	Designation
1	Mr. Arun Tikku, IFS(Rtd.)	Chairman,
2	Mr. Shuja Hydri IFS(Rtd.)	Member
3	Er. Javed Jaffar Rtd. Chief Engineer	Member
4	Er. Rajinder Pal Gupta Rtd. Chief Engineer	Member
5	Dr. Kulwant Singh	Member
6	Prof. Masood-ul-Hassan Balkhi	Member
7	Dr. Sham Lal Gupta	Member
8	Dr. Gulzar Ahmad Mukhtar	Member
9	Prof. Anil Kumar Raina	Member
10	Mr. Humayun Rashid	Member Secretary

The Member Secretary, JKEAC welcomed the Chairman, Member of the JK Expert Appraisal Committee, Shri HL Langeh, Joint Director (J), J&K Mining Dept. and Shri Kulwant Singh, Nodal Officer, DSR formulation. The representative e of the consultant was not present.

AGENDA: To further evaluate the updated version of District Survey Report (DSR) of Jammu District received from DGM by email on 29/05/2024.

DELIBERATION

Member Secretary informed the forum that JKEAC had recommended the draft DSR subject to correction of some minor mistakes but JKEIAA in its 95th Meeting desired JKEAC to appraise the updation of the leftover observations as well and to recommend the DSR in its final form. Since, the consultant had not joined, the Member Secretary, JKEAC presented the pertinent MoMs of 121st JKEAC relating to DSR of Jammu and the compliance made by the consultant to address the following leftover observations of Members in the previous meeting:-

1. The text of the 'Disclaimer' clause may be refined as suggested earlier.

2. As repeatedly advised, the Seismic map, physiographic map and Slope map of erstwhile state of J&K be replaced by UT specific maps of J&K.
3. Information given on *Ichthyofauna*(Fish fauna) of Rivers Chenab & Tawi in Jammu district under Table No.25 is inadequate/deficient and erroneous too which may be authenticated by the Fisheries Dept., GoJK as advised earlier.
4. Legend of maps under fig.16-19 need to be made readable as already advised.

It was noticed that the consultant had incorporated the necessary corrections in the latest updated version now which was circulated to the members. But while doing so, the title of elevation map had been written as slope map. Therefore, the JKEAC asked the representatives of DGM to ensure that the corrected version is submitted by evening of 03/06/2024 itself which infact was received in the evening and was circulated to JKEAC Members. Further, the copy of letter No. II |JDJ| DsSR|2022-23/647-648 dated 29/05/2024 issued by Joint Director(J), Mining Dept. addressed to Member Secretary, JKEIAA also came under discussion which reads, '*This office has uploaded Draft District survey Report on the NIC portal of District Jammu on 01-03-2024 and in this regard no comment/observation has been received w.r.t the document under reference. In view of non-receipt of any comment, it is therefore requested that the document accordingly may kindly be considered for approval as per the observations made by the JKEAC*'. Accordingly, it was desired to accept the DSR for submission to JKEIAA for consideration of its approval.

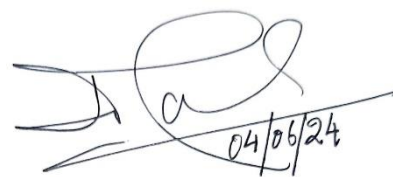
RECOMMENDATION

In the light of above deliberations, JKEAC recommended the latest updated version of draft of District Survey Report (DSR) of Jammu received by email on 03/06/2024, to JKEIAA for accord of kind approval. The JKEAC also desired that the Mining department should forward two sets of updated version of the DSR in colour hard copy for record and reference in the office of JKEIAA and JKEAC, each.

The meeting ended with vote of thanks to the Chair.

Issued in consultation with JKEAC Members and with approval of the Chairman, JKEAC

Encl: The copy of final version of the DSR of Jammu
With JD(J)'s letter dated 29/05/24 forms
Annexure to these Minutes of Meeting.



(Humayun Rashid)
Member-Secretary,
JK Expert Appraisal Committee

No. JKEAC/2024/03/676-91

Dated: 04-06-2024

Copy to:-

1. The Member, Secretary, JK Level Environment Impact Assessment Authority (JKEIAA), Srinagar/Jammu for favour of Kind information and necessary action.
2. The Chairman, JKEAC for favour of kind information.
3. All Members of JK Expert Appraisal Committee for favour of kind information.
4. Director, Geology & Mining Department, J&K Govt., Jammu for information and necessary action.

5. Accounts Officer, Ecology, Environment & Remote Sensing Department, J&K Government, Jammu for information and necessary action.
6. Environmental Forester, Incharge, JKEIAA Support Office, Ecology, Environment & Remote Sensing Department, J&K Government, Jammu for information and necessary action.
7. Mr. Jahangir Ahmad, Sr. Stenographer for information and necessary action.
8. Mr. Sheikh Sajid, Supporting staff, JKEAC to circulate and upload the Minutes of Meeting on Parivesh portal.

ANNEXURE



Government of Jammu and Kashmir
Directorate of Geology and Mining, J&K
4th Floor, Udyog Bhawan, Jammu

Member Secretary,
JK Environment Impact Assessment Authority
J&K (UT)

No:-58/MCC/DGM/DSR/18/3054


Dated: 29.05.2024

Subject: Submission of District Survey Report (DSR) of District, Jammu.

Sir,

Kindly refer to the above cited subject, I am directed to submit the final updated version of the **District Survey Report (DSR) of District, Jammu** as an attachment which is updated as per the minutes of 121st meeting of the EXPERT APPRAISAL COMMITTEE held on 20th of may 2024 along with comments regarding document which was uploaded on NIC portal of District Jammu as Annexure "A" for favour of kind information and necessary action at your end.

Encl: A/A

Yours faithfully,

29-05-2024
(Kulwant Singh)
Nodal Officer
DSR, Jammu



Annexure 'A'

Government of Jammu and Kashmir
Directorate of Geology and Mining, J&K
4th Floor, Udyog Bhawan, Jammu

Member Secretary
JK Environment Impact Assessment Authority.
J&K (UT)

No: -II/JDJ/OSR/2022-23/647-648

Dated: 29.05.2024

Subject: Draft District survey report uploaded on NIC portal of District Jammu.

Sir,

This office has uploaded Draft District survey Report on the NIC portal of District Jammu on 01-03-2024 and in this regard no comment/observation has been received w.r.t the Document under reference. In view of non receipt of any comment, it is therefore requested that the document accordingly may kindly be considered for approval as per the observations made by the JKEAC.

Yours faithfully,


(H. L. LANGEH)

Joint Director

Geology & Mining Department
Jammu.

Copy to

1 Director Geology and Mining for Information.



Geology & Mining Department, Jammu, J&K

DISTRICT SURVEY REPORT

JAMMU DISTRICT, J&K

As per Sustainable Sand Mining Management Guidelines, 2016
and Enforcement & Monitoring Guidelines for Sand Mining,
2020, Ministry of Environment, Forest and Climate Change
(MoEFCC)

Period of Operation of the DSR: 2024 to 2029

MAY 2024

Prepared by:



RSP Green Development & Laboratories Pvt. Ltd

DISTRICT SURVEY REPORT


JAMMU DISTRICT

Period of Operation of the DSR: 2024 to 2029



Geology & Mining Department, Jammu, J&K UT Government
JL. Nehru Udyog Bhawan 4th floor, Rail Head Complex,
Jammu Pin: 180006
Ph. No: 01912477903(Jammu)
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Prepared By

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DISCLAIMER

There are several rivers present in Jammu District. Every year the banks of the rivers are filled with river bed minerals like cobbles, pebbles and boulders as well as the sand. Therefore, we got huge amount of river bed minerals during field work in Jammu District. Apart from these, we could not find any other minerals other than River Bed Minerals in Jammu District. So, our field work did not encompass those minerals which are not yet identified / explored as per the advice of Joint Director, Geology & Mining Department, Jammu. The data generated during the field work have been incorporated in the District Survey Report of Jammu which to be submitted to Expert Appraisal Committee (JKEAC). Hence the district survey report is prepared as per the part-I format of S.O. 3611 of 2018.

At present there are no proposals for extraction of minor mineral other than RBM in Jammu district. The information regarding part-II of Minor Mineral other than RBM as per S.O. 3611 of 2018 is not required in the preparation of District Survey Report of Jammu for 2024. If the Mining Dept. intends to Explore and allot quarry sites for extraction of stones or any other mineral other than River Bed Minerals in Jammu district at that point of time, Part-II of the DSR will be formulated accordingly and will be get appraised and approved by JKEAC so that it is appended with the Part-I.

EXECUTIVE SUMMARY

The District Survey Report (DSR) is a comprehensive assessment of the minerals in a district, including their type, extraction methods, potential areas, and reserves. It helps identify potential mining areas and distinguishes them from those not permitted due to infrastructure, erosion, or environmental sensitivity. The report also estimates the annual supply rate. The main objective of the DSR is to identify and quantify mineral resources, manage mining potential, and control excessive sand and RBM mining. It also aids in providing environmental approvals, controlling illegal mining, controlling flooding, and maintaining revenue records.

The methodology for the creation of DSRs includes the collection of primary and secondary data from various district departments. Field data are collected through DGPS during field work. Then the data is interpreted and analyzed by software. Secondary data are collected from various departments to create a reliable and authentic district survey report. Field data is collected twice of a year i.e., before and after the monsoon to determine the rate of replenishment and identify mineral potential sites. Here, the pre-monsoon data are provided by the Geology and Mining department of the district and post monsoon data are collected by field survey by us. The method of identifying the potential zones and zone of aggradation of the river by using satellite images, field observations and DGPS survey. The finalized deposition zones are included in District Survey Report (DSR) and put on Public Domain for one month. In case of public consultations, the Government of the State will broadcast public comments on the list of mining leases that must be auctioned in local and national newspapers. The DSR will be published for at least one month, and the comments will be considered by the Divisional Committee. The final list of sand mining areas will be defined in the DSR and details of clusters and adjacent clusters will be provided.

The District Survey Report of Jammu provides an overview of minor mining activities, leases, revenues, sand production, sediments and land use of Jammu district. The report aims to identify potential mineral areas for increasing revenues and site sustainability. The District Survey Report of Jammu has been prepared by us (**RSP Green Development & Laboratories Pvt. Ltd., Howrah**) in co-assistance with the **Department of Geology and Mining of the Government of Jammu and Kashmir** based on the guidelines of **SSMG,2016 and EMGSM,2020**. Not only the mining guidelines, but all the NGT ACTs and notification (OMs) are also kept in mind while preparing the district survey report of Jammu. The importance of District survey Report in Jammu district is to operate the e-auctioned mining leases as the mining leases are closed due to NGT acts. There are 30 existing mining leases of river bed mineral present in the district. Apart from these leases, 9 leases are newly e-auctioned. The total production of the existing leases is about 1162743.43 tonn. The Department of Geology and Mining of Jammu District has prepared multi-departmental unit of a district level task force to prevent illegal mining with various departments and officials.

The district has seven rivers that flow through them and the sedimentation is estimated using a recovery basin. In the last three years, total mineral deliveries in the Jammu district have increased, from 19,615.82 tonnes in 2020-2021 to 247,975.32 tonnes in 2022-2023, and district surveys have identified areas of illegal mining and must be reported to the Directorate of Geology and Mining. Inspections of mining belts and flora and fauna are also carried out. The EMGSM 2020 guidelines outline a restricted mining area that requires a distance of one-fourth of the river width and 7.5 meters from the banks. No mining area is up to 1 km from the main bridges, highways, active edges of the sediments or concave side of the river. The protected wildlife area is 1 km from the mining area. The J&K Water Resources Act 2010 prohibits small mineral concessions.



GEOLOGY AND MINING DEPARTMENT

GOVERNMENT OF JAMMU AND KASHMIR

PREFACE



**Director
Geology and Mining
Department, J&K**

The Ministry of Environment, Forest and Climate Change (MoEF&CC) have issued guidelines from time to time with regard to obtaining of Environment Clearance (EC) for execution of various development projects including mining. In view of the Environmental Impact of various development activities, a notification was issued by the MoEF&CC vide S.O 1533 (E), dated 14th September 2006, which made obtaining of EC mandatory for different kinds of development projects as listed in Schedule-1 to the said notification. Further, the Hon'ble Supreme Court of India in I.A. No.12-13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar Vs State of Haryana and Others, vide its judgment dated 27th February, 2012 ordered that *the leases of minor minerals and their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from MoEF&CC*. Likewise, the Hon'ble National Green Tribunal, vide its order dated 13th January, 2015 in the matter regarding sand mining directed to make a policy on environmental clearance for mining leases of minor minerals in cluster. The MoEF&CC, in compliance of above orders of the Hon'ble Supreme Court and the NGT thus prepared '*Sustainable Sand Mining Guidelines, 2016*' in consultation with State Governments, detailing the provisions on Environmental Clearance (EC) for mining clusters, Creation of District Environment Impact Assessment, Preparation of District Survey Reports and proper monitoring of minor minerals.


Thus, the need for District Survey Report (DSR) have been necessitated by Ministry of Environment, Forest and Climate Change (MoEF& CC) vide their Notification No. 125 (Extraordinary, Part II Section 3, Sub-section ii), issued under S.O. 141 (E), dated 15th January 2016. The notification was addressed to bring certain amendments with respect to the EIA notification of 2006 and in order to have a better control over the legislation, District Level Committees were introduced in the system. As a part of this notification, preparation of District Survey Reports has been introduced. Subsequently, MoEF&CC published another Notification No. 3611 (E), dt. 25th July, 2018 regarding inclusion of the 'Minerals Other than Sand' and a format for preparation of the DSR has been specified. Enforcement and Monitoring Guidelines for Sand Mining (EMGSM) January 2020 were also

Issued by the MoEF& CC considering various orders/directions issued by the Hon'ble NGT in the matters pertaining to illegal sand mining and also based on the reports submitted by expert committees and investigation teams.

This DSR has thus been prepared in conformity with the S. O. 141 (E), S. O. 3611 (E) and other Sand Mining Guidelines published by MoEF&CC from time to time as well as the requirement specified in the Jammu and Kashmir Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016. The purpose of DSR is to identify the mineral potential areas where mining can be allowed; and also to distinguish the areas where mining will not be allowed due to proximity to infrastructural structures and installations, areas of erosion, areas of environmental sensitivities etc. The DSR would also help to estimate the annual rate of replenishment wherever applicable.

Preparation of this DSR involved both primary and secondary data generation. The primary data generation involved the site inspections, survey, ground truthing etc. while secondary data has been acquired through various authenticated sources and satellite imagery studies. The secondary data related to district profile, local geology, mineralization and other activities are available in rather a piecemeal fashion. The DSR of Jammu district describes the general geographical profile of the district, distribution of natural resources, livelihood, climatic conditions, inventory of minor minerals and revenue generation.

This report shall act as a compendium of available mineral resources, geological set up, environmental and ecological set up of the district and is based on data of various departments like Revenue, Water Resources, Forest, Geology and Mining in the district as well as statistical data uploaded by various State Government departments. The main purpose of preparation of District Survey Report is to identify the mineral resources and developing the mining activities along with other relevant data of the district on scientific lines which is environmentally sustainable.



P. S. Rathore
Director, Geology and Mining, J&K



GEOLOGY AND MINING DEPARTMENT
GOVERNMENT OF JAMMU AND KASHMIR

CERTIFICATE



Nodal Officer (DSR)
Geology and Mining
Department, J&K

The District Survey Report preparation has been undertaken in compliance as per Notification No. S.O. 3611 (E) New Delhi, the 25th July, 2018 of Ministry of Environment Forests and Climate Change, Government of India in accordance with Clause II of Appendix X of the notification.

Preparation of this DSR involved both primary and secondary data generation. The primary data generation involved the site inspection, survey, ground truthing etc. while secondary data has been acquired through various authenticated sources and satellite imagery studies. The Pre-monsoon Data was collected and provided to the Consultant by the Geology and Mining Department, J& K

Every effort has been made to cover sand mining location, area and overview of mining activity in the district with all its relevant features pertaining to geology and mineral wealth in replenishable and non-replenishable areas of rivers, stream and other sand sources.

This report will be a model and guiding document which is a compendium of available mineral resources, geographical set up, environmental and ecological set up of the district and is based on data of various departments, published reports, and websites. The District Survey Report will form the basis for application for environmental clearance, preparation of reports and appraisal of projects.


Kulwant Singh

Nodal Officer (DSR)

Geology and Mining
Department, J&K

ACKNOWLEDGEMENT

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CONFIDENTIALITY **CLAUSE**

This District Survey Report (DSR) of Jammu District, Jammu & Kashmir, has been prepared by RSP Green Development and Laboratories Pvt. Ltd., Howrah, West Bengal, India.

Any reproduction, direct or indirect other than for the specific purpose for which the report has been prepared, should not be carried out, without prior written consent of RSP Green Development and Laboratories Pvt. Ltd. and Geology and Mining department of Jammu & Kashmir Government.



LIABILITY CLAUSE

Limitation of Liability

RSP Green Development & Laboratories PVT.LTD undertakes the responsibility for the entire report excepting Pre-monsoon data provided by the Geology and Mining Department, Jammu. All the authenticated Secondary data included in the report has been obtained from the Various Government departments, Jammu Division.



Managing Director

Mr. Pinaki Roy



Directors

Smt. Mousumi Chakraborty

Smt. Saswati Roy



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Certificate of Accreditation

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The organization is accredited as **Category-B** under the QCI-NABET Scheme for Accreditation of EIA Consultant Organization, Version 3: for preparing EIA-EMP reports in the following Sectors –

S. No	Sector Description	Sector (as per)		Cat.
		NABET	MoEFCC	
1	Mining of minerals - opencast mining only	1	1 (a) (i)	B
2	Metallurgical industries (ferrous only)	8	3 (a)	B
3	Distilleries	22	5 (g)	B
4	Aerial ropeways	35	7 (g)	B
5	Common municipal solid waste management facility (CMSWMF)	37	7 (j)	B
6	Building and construction projects	38	8 (a)	B

Note: Names of approved EIA Coordinators and Functional Area Experts are mentioned in SAAC minutes dated May 6, 2022 and supplementary minutes dated July 8, 2022 posted on QCI-NABET website.

The Accreditation shall remain in force subject to continued compliance to the terms and conditions mentioned in QCI-NABET's letter of accreditation bearing no. QCI/NABET/ENV/ACO/22/2519 dated September 15, 2022. The accreditation needs to be renewed before the expiry date by RSP Green Development & Laboratories Pvt. Ltd, following due process of assessment.

Sr. Director, NABET
Dated: September 15, 2022

Certificate No.
NABET/EIA/2124/SA 0176

Valid up to
Feb 9, 2024

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March 19, 2023

RSP Green Development & Laboratories Pvt. Ltd.
7F Dinobandhu Mukherjee Lane
P.O.:Shibpir, Hawara
West Bengal

Sub.: Extension of Validity of Accreditation till June 18, 2024 – regarding
Ref.. 1. Certificate no NABET/EIA/2124/SA 0176
2. Request mail March 18, 2023

Dear Sir/Madam

This has reference to the accreditation of your organization under QCI-NABET EIA Scheme, the validity **RSP Green Development & Laboratories Pvt. Ltd** is hereby extended till June 18, 2024 or completion of the assessment process, whichever is earlier.

The above extension is subject to the submitted documents/required information with respect to your application and timely submission and closure of NC/Obs during the process of assessment.

You are requested not to use this letter after the expiry of the above-stated date.

With best regards.

(A.K.Jha)
Sr. Director, NABET

Extension of the NABET Certificate of the respected Consultant

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ABBREVIATIONS AND SYMBOLS USED

ABBREVIATIONS & SYMBOLS USED	:	FULL FORMS
%	:	Percent
'	:	Minute
"	:	Second
<	:	less than (strict inequality)
=	:	Equal to (strict equality)
>	:	greater than (strict inequality)
≈	:	approximately equal
°	:	Degree
°C	:	Degree Centigrade
°F	:	Degree Fahrenheit
ArcGIS	:	ArcGIS is a GIS for working with maps and geographic information maintained by the ESRI.
CD blocks	:	Community development blocks
cm	:	Centimeter
cum	:	Cubic meter
Dec	:	December
DEIAA	:	District Level Environment Impact Assessment Authority
DSR	:	District Survey Report
E	:	East
<i>e.g.,</i>	:	<i>'exempli gratia'</i> (Latin phrase) means 'for example'
EC	:	Environmental Clearance
<i>et.al.,</i>	:	<i>'et alia'</i> (Latin phrase) means 'and others'
G:2 stage	:	General Exploration (stage of exploration as per UNFC norms)
G:3 stage	:	Prospecting (stage of exploration as per UNFC norms)
GIS	:	Geographical Information System
Govt.	:	Government
GPS	:	Global Positioning System
Ha	:	Hectare

ABBREVIATIONS & SYMBOLS USED		FULL FORMS
<i>i.e.</i> ,	:	<i>'id est'</i> (Latin phrase) means 'that is'/'in other words'
ICAR	:	Indian Council of Agricultural Research
Inch	:	inches
kg/ha	:	Kilogram per hectare
km	:	kilometer
km/ hour	:	Kilometer per hour
km ²	:	kilometer square
LANDSAT	:	Land Satellite stands for Low Altitude Satellite
LULC	:	Land use and land cover
m	:	Meter
Mar	:	March
Max.	:	Maximum
mbgl	:	Meter Below Ground Level
Min.	:	Minimum
mm	:	Millimeter
MoEFCC	:	Ministry of Environment, Forest and Climate Change
N	:	North
NH	:	National Highways
No.(s)	:	Number(s)
RI value	:	River Index value
S	:	South
SEIAA	:	State Environment Impact Assessment Authority
Sept	:	September
<i>sp.</i>	:	species
sq.km	:	Square kilometer
Temp	:	Temperature
<i>viz.</i> ,	:	Latin phrase <i>'videre licet'</i> , and is used as a synonym for "namely",
W	:	West

CHAPTER 1: INTRODUCTION

1.0 BACKGROUND AND GENERAL INFORMATION

As per Gazette notification of 15th January 2016 of Ministry of Environment, Forest and Climate Change a Survey shall be carried out by the District Environment Impact Assessment Authority (DEIAA) with assistance of irrigation department, Drainage department, Forest department, Mining department and Revenue department in the district for preparation of District Survey Report. The main objective of DSR is to identify the areas of aggradations or deposition where mining can be allowed; and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and estimation of annual rate of replenishment and allowing time for replenishment after mining in that area. The DSR would also help to calculate the annual rate of replenishment wherever applicable and allow time for replenishment. Besides the sand mining, the DSR also include the potential development scope of in situ minor minerals. Every efforts have been made to cover sand mining locations, areas & overview of Mining activity in the district with all it's relevant features pertaining to Geology & mineral wealth in replenish-able and non-replenish-able areas of rivers, stream and other sand sources. The mineral potential is calculated based on field investigation & geology of the catchment area of the river or streams. Also, as per the site conditions and locations, depth of minable mineral is defined. The area for removal of the mineral in a river or stream is decided depending on geo-morphology & other factors, it can be 50% to 60% of the area of a particular river or stream. This District Survey Report shall form the basis for application for environment clearance, preparation of reports and appraisal of projects. The report shall be updated once every five years.

The District Survey Report of Jammu District has been prepared as per the guide line of Ministry of Environment, Forests & Climate Change (MoEF&CC), Government of India vide Notification S.O.-1533(E) dated 14th Sept, 2006 and subsequent MoEF& CC Notification S.O. 141(E) dated 15th Jan, 2016. This report shall guide systematic and scientific utilization of natural resources, so that present and future generation may be benefitted at large. Further, MoEF& CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report which has been followed in preparation of this District Survey Report.

The main objectives of the District Survey Report are in the following:

1. Identification and Quantification of Mineral Resource and its optimal utilization.
2. To regulate the Sand Mining in the district, identification of site-specific end-use consumers and reduction in demand & supply gaps.
3. Use of information technology (IT) & latest scientific method of mining for surveillance of the sand mining at each step.
4. District Survey report shall enable appraisal and grant Environmental Clearance for cluster of Sand and Gravel Mines. It shall assist concern Department during post Environmental Clearance Monitoring.
5. To check and control the instance of illegal mining.
6. To control the flood in the area.
7. To maintain the livelihood of aquatic habitat.
8. To protect the incursion of ground water in the area. Limiting extraction of material in floodplains to an elevation above the water table generally disturbs more surface area than allowing extraction

of material below the water table.

9. To keep accumulated data records viz. details of Mineral Resource, potential area, lease, approved mining plan, co-ordinates of a district at one place.
10. To maintain the records of revenue generation.

The following principles are to be kept in view whilst identifying the areas and extent of mining leases:

1. In-stream extraction of RBM from below the water level of a stream generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the water level.
2. In-stream extraction of RBM below the deepest part of the channel generally causes more changes to the natural hydrologic processes than limiting extraction to a reference point above the thalweg.
3. Excavating sand from a small straight channel with a narrow floodplain generally will have a greater impact on the natural hydrologic processes than excavations on a braided channel with a wide floodplain.
4. Extracting sand and gravel from a large river or stream will generally create less impact than extracting the same amount of material from a smaller river or stream.

Whilst sand is a vitally important and essential requirement for all construction work and several other industries, its injudicious mining can lead to severe environmental problems. The deleterious effects of indiscriminate sand and gravel mining include the following:

1. Extraction of bed material in excess of replenishment by transport from upstream causes the bed to lower (degrade) upstream and downstream of the site of removal.
2. In-stream habitat is impacted by the increase in river gradient, suspended load, sediment transport, and sediment deposition. Excessive sediment deposition for replenishment increases turbidity which prevents penetration of light required for photosynthesis and reduces food availability of aquatic fauna.
3. Riparian habitat including a vegetative cover on and adjacent to the river banks controls erosion, provides nutrient inputs into the stream, and prevents intrusion of pollutants in the stream through runoff. Bank erosion and change of morphology of the river can destroy the riparian vegetative cover.
4. Bed degradation is responsible for channel shifting, causing loss of properties and degradation of the landscape; it can also undermine bridge supports, pipelines or other structures.
5. Degradation may change the morphology of the riverbed.
6. Degradation can deplete the entire depth of gravelly bed material, exposing other substrates that may underlie the gravel, which could in turn affect the quality of aquatic habitat. Lowering of the ground water table in the flood plain because of lowering of riverbed level as well as river water level takes place because of extraction and draining out of excessive ground water from the adjacent areas. So, if a floodplain aquifer drains into the stream, groundwater levels can be lowered as a result of bed degradation.
7. Lowering of the water table can destroy riparian vegetation.
8. Excessive pumping of ground water in the process of mining in abandoned channels depletes ground water causing scarcity of irrigation and drinking water.
9. Un-scientific and unregulated sand and gravel mining tends to increase channel bank scouring and

erosion. This causes a large degree of meandering of rivers.

10. Rapid bed degradation may induce bank collapse and erosion by increasing the heights of banks.
11. Polluting ground water by reducing the thickness of the filter material especially if mining is taking place at top of recharge fissures.
12. Choking of the sand layer which acts as a filter for ingress of ground water from the river by dumping of finer material, compaction of filter zone due to movement of heavy vehicles. It also reduces the permeability and porosity of the filter material.
13. Removal of sand and gravel from bars may cause downstream bars to erode if they subsequently receive less bed material than is carried downstream from them by fluvial transport.
14. Ecological effects on bird nesting, fish migration, angling, etc.
15. Indiscrete mining activities lead to increased concentration of suspended sediments in the river which in turn causes siltation of water resources projects.
16. Un-scientific and unregulated sand and gravel mining lead to severe health hazards like air quality degradation and dust fog.
17. Direct destruction from heavy equipment operation; discharges from equipment and refueling.
18. Biosecurity and pest risks.

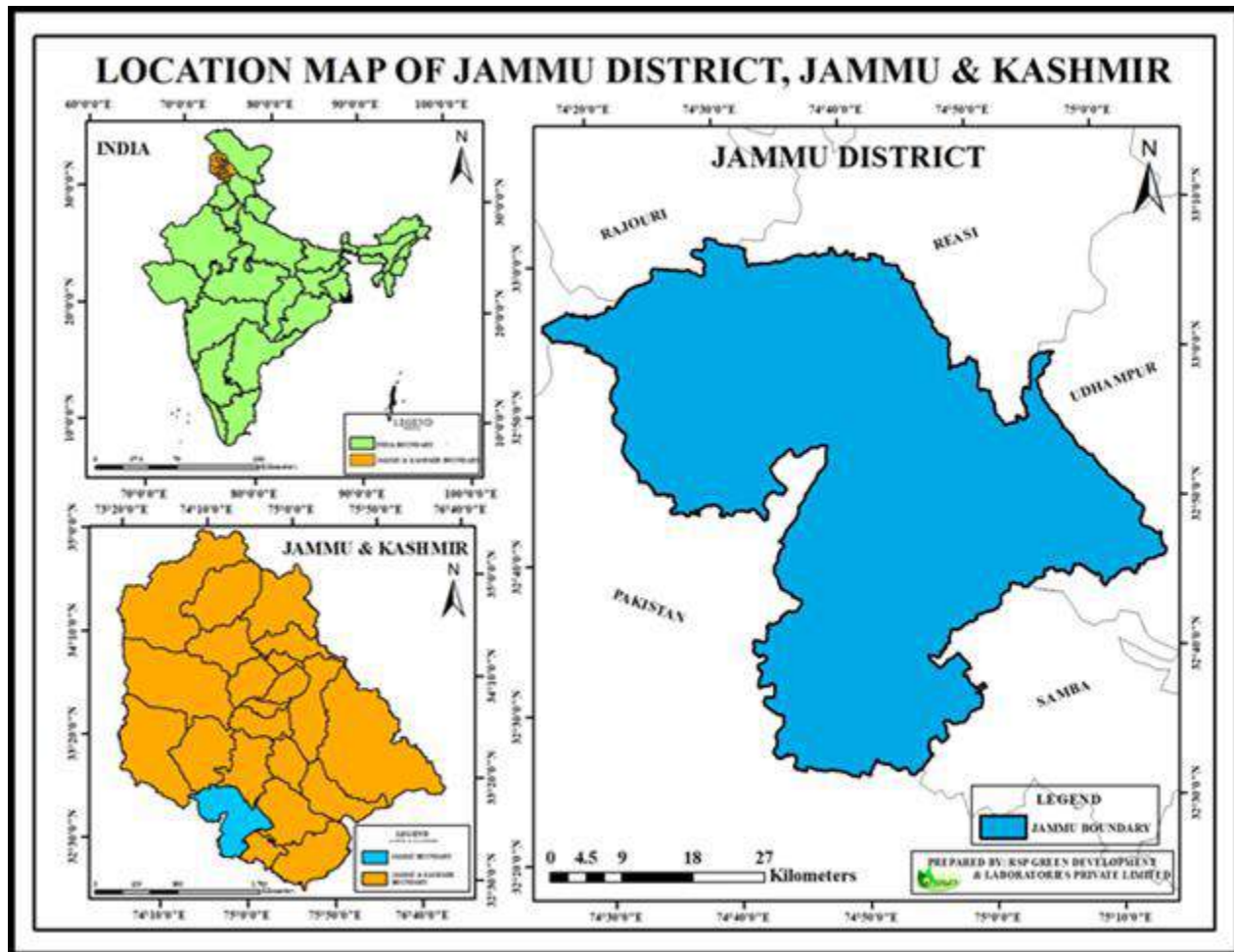


Figure 1.1: Location Map of the District

Jammu and Kashmir is the northern most state of the Union of India. It is situated between $32^{\circ}17'$ and $36^{\circ}58'$ north latitude and $73^{\circ}26'$ and $83^{\circ}30'$ east longitude. The state shares international border with China and Afghanistan in the north, Tibet in the east and Pakistan in the west. The states of Punjab and Himachal Pradesh form its southern border. Major parts of the Jammu & Kashmir state represent high and rugged mountainous terrain. Geographically this state is divided into four zones - the mountainous and semi-mountainous plain known as Kandi belt, hills including Siwalik ranges, mountains of Kashmir valley and Pir Panjal range and Tibetan tract of Ladakh. This state has a number of lakes, rivers, rivulets and glacial regions. The important rivers of this state are Indus, Chenab and Sutlej (Jhelum). There are extreme variations in climate in the state, due to its location and topography. The temperature of this state varies spatially. Leh is coldest and Jammu is the hottest. In winter night temperatures go down below zero and very often the state experiences snowfall.

Jammu district is known as winter capital of the Jammu & Kashmir. The district is bound by Udhampur district in the north and north-east, Samba district in the east and southeast, Pakistan (Sialkote) in west and Rajauri district and POK (Bhimber) in the northwest. It is situated on a hillock, on the bank of river Tawi. Jammu district is located $74^{\circ}24'$ and $75^{\circ}18'$, East longitude and $32^{\circ}50'$ and $33^{\circ}30'$ North latitude. It falls under sub-mountainous region. Jammu district can be divided in two major units which are. Siwalik ranges (Northern Hilly area) and Southern Outer plains. The Siwalik

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

ranges rise gradually in the north part of the district, behind the Jammu town and merges with the Indo Gangetic plains in the South. On the other hand, Southern outer plains area located at the foot of the outer most Siwalik hills and it have an altitude which varies between 280m and 400m above mean sea level. Numerous seasonal nallahs travels across the area. The plains can further be divided into two parts, that is Kandi and Sirowal Belts. The southern plainest tract of Jammu district is occupied by Sirowal belt.

1.1 THE ACTS, RULES, GUIDELINES, NOTIFICATIONS, OMS AND GOVT. ORDERS ISSUED BY CENTRAL GOVT. AND UT OF JAMMU & KASHMIR FROM TIME TO TIME THAT EXCLUSIVELY DEAL WITH MINING ACTIVITIES.

Table No.1: Legal Framework governing mining activity:

YEAR	PARTICULARS
1957	Mines and Minerals (Development and Regulation) act, 1957 Act is the principal Act for regulation of mines and development of minerals.
1986	The environment (Protection) act, 1986 was enacted in 1986 by the Ministry of Environment and Forests with the objective of providing for the protection and improvement of the environment.
1994	The Ministry of Environment, Forest & Climate Change (MoEF&CC) published Environmental Impact Assessment Notification 1994 which is only applicable for the Major Minerals more than 5 ha.
2006	In order to cover the minor minerals also into the preview of EIA, the MoEF&CC has issued EIA Notification SO 1533 (E), dated 14th September 2006, made mandatory to obtain environmental clearance for both Major& Minor Mineral more than 5 Ha.
2010	Jammu and Kashmir Water Resources (Regulation and Management) ACT, 2010. It is an act to consolidate the law relating to water, it's usage and measurement.
2012	Further, Hon'ble Supreme Court wide order dated the 27th February, 2012 in I.A. No.12-13 of 2011 in Special Leave Petition (C) No.19628-19629 of 2009, in the matter of Deepak Kumar etc. Vs. State of Haryana and Others etc., ordered that "leases of minor minerals including their renewal for an area of less than five hectares be granted by the States/Union Territories only after getting environmental clearance from MoEF".
2015	Hon'ble National Green Tribunal, order dated the 13th January, 2015 in the matter regarding sand mining has directed for making a policy on environmental clearance for mining leases in cluster for minor Minerals.
2016	The MoEF&CC in compliance of above Hon'ble Supreme Court's and NGT'S order has prepared "Sustainable Sand Mining Guidelines (SSMG), 2016" in consultation with State governments, detailing the provisions on environmental clearance (EC) for cluster, creation of District Environment Impact Assessment Authority, preparation of District survey report and proper monitoring of minor mineral. There by issued Notification dated 15.01.2016 for making certain amendments in the EIA Notification, 2006 and made mandatory to obtain EC for all minor minerals. Provisions have been made for the preparation of District survey report (DSR) for River bed mining and other minor minerals.
2016	SRO 105 in exercise of the powers conferred by section 15 read with section 23C of the

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	<p>Mines and Minerals (Development & Regulation) Act.1957, (Central Act 67 of 1957), the Government of Jammu & Kashmir hereby makes the following rules for regulating the grant of various forms of mineral concessions in respect of minor minerals and storage, transportation of minerals and prevention of illegal mining in the State.</p>
2017	<p>Government of Jammu and Kashmir, Industries and Commerce Jammu/Srinagar published a notification SRO 267 Dated 3rd July, 2017. amending Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016. The changes include replacing clauses with new terms, redefining the term "District Mineral Officer" to include an officer with a degree in Mining/Geology & Drilling, and replacing sub-rules with new terms. The rules also include omitting certain provisions, modifying the wording of rules, and adding provisions for short-term disposal permits issued to State Government/Central Government agencies.</p>
2017	<p>Government of Jammu and Kashmir, Industries and Commerce Jammu/Srinagar published a notification SRO 302 Dated 19th July, 2017. The Government of Jammu and Kashmir has issued a comprehensive notification detailing rules for the exploitation of minor minerals.</p>
2018	<p>MoEF& CC published a notification S.O. 3611(E) Dated 25th July, 2018 and recommended the format for District Survey Report. The notification stated about the objective of DSR i.e., "Identification of areas of aggradations or deposition where mining can be allowed and identification of areas of erosion and proximity to infrastructural structures and installations where mining should be prohibited and calculation of annual rate of replenishment and allowing time for replenishment after mining in that area".</p>
2019	<p>Government of Jammu and Kashmir, Industries and Commerce Jammu/Srinagar published a notification SRO 161 Dated 7th March, 2019. The Jammu and Kashmir Government has made amendments to the Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016, replacing "open auction" with "e-auction".</p>
2020	<p>Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 has been published modifying Sustainable and Mining Guidelines, 2016 by MoEF&CC for effective enforcement of regulatory provisions and their monitoring. The EMGSM 2020 directed the states to carry out river audits put detailed survey reports of all mining areas online and in the public domain, conduct replenishment studies of river beds, constantly monitor mining with drones, aerial surveys, and ground surveys and set up dedicated task forces at district levels. The guidelines also push for online sales and purchase of sand and other river bed materials to make the process transparent. The guidelines propose night surveillance of mining activity through night-vision drones.</p>
2020	<p>S.O. 1224(E).—WHEREAS, vide the Mineral Laws (Amendment) Act, 2020 (2 of 2020), the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) (hereinafter referred to as MMDR Act) has been amended with effect from the 10th day of January, 2020 and, inter alia, new section 8B relating to the provisions for transfer of statutory clearances has been inserted;</p> <p>The successful bidder of the mining leases, expiring under the provisions of sub-sections (5) and (6) of section 8A of the Mines and Minerals (Development and Regulation) Act, 1957 (67 of 1957) and selected through auction as per the procedure provided under that Act and the rules made thereunder, shall be deemed to have acquired valid prior</p>

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	<p>environmental clearance vested with the previous lessee for a period of two years, from the date of commencement of new lease and it shall be lawful for the new lessee to continue mining operations as per the same terms and conditions of environmental clearance granted to the previous lessee on the said lease area for a period of two years from the date of commencement of new lease or till the new lessee obtains a fresh environmental clearance with the terms and conditions mentioned therein, whichever is earlier</p>
February 2020	<p>NGT order no 63 of 2020 pronounced on 8TH February 2020 for approval of DSR by SEAC. The NGT order necessitates that District Survey Report, DSR needs to be appraised by SEAC and approved by SEIAA before auction of mining leases.</p>
May,2020	<p>Government of Jammu and Kashmir published a notification S.O. 169 Dated 19th May, 2020. In that notification Government of Jammu and Kashmir has made amendments to the Jammu and Kashmir Minor Mineral Concession, Storage, Transportation of Minerals, and Prevention of Illegal Mining Rules, 2016. It ensures Environmental Clearance from the Competent authority under the relevant Act or rules" and requiring consent to establish/operate from the Jammu and Kashmir Pollution Control Committee under the Water (Prevention & Control of Pollution) Act, 1974 and Air (Prevention & Control of Pollution) Act, 1981. The rules also allow the government to reserve and grant mining leases for exploitation of minor minerals for key construction material to government departments.</p>
July,2020	<p>Fast Tracking of Environment Clearance Process in minor minerals mining operations. OM No. IND/MNF/082016 dated 28-07-2020 from Industries and Commerce Department. the UT of J&K is grappling with acute paucity of raw material like sand/aggregate/RBM materials for developmental works, consequent upon banning of mining of minor minerals without Environmental Clearance (EC) and Consent to Operate (CTO) in November, 2019 in compliance to the directions of Hon'ble National Green Tribunal and Hon'ble Supreme Court.</p>
August, 2020	<p>Government of Jammu and Kashmir, Industries and Commerce Jammu/Srinagar published a notification S.O 258 Dated 18th August. The Jammu and Kashmir Government has made amendments to the Minor Mineral Concession, Storage, Transportation of Minerals and Prevention of Illegal Mining Rules, 2016 to grant short-term permits up to 01 hectare to Panchayati Raj Institutions. The changes include exempting payment of advance royalty and allowing the Department of Geology & Mining to secure clearance from Competent Authorities. This provision will be applicable until 30.09.2021, or as notified by the Government.</p>
October 2020	<p>(In IA No 40/2020 41/2020, 46/2020, 47/2020) and vide order dated 14th October 2020 NGT also mandates that DSR/Replenishment Study should be prepared by a consultant having accreditation from NABET which further should be appraised by SEAC and approved by SEIAA. The consultant must follow procedure laid down under SSMMG-2016 and EMGSM-2020 during preparation of DSR.</p>
January 2021	<p>Vide OA No. 360/2015 NGT dated 15th January 2021 ensures updation of enforcement and monitoring guidelines mechanism to control and regulating illegal sand mining. The notification also touched upon Various issue such as</p> <ul style="list-style-type: none">• Seizer and release of vehicle involved in illegal mining.• Scale of compensations for violation on pollutant pays principle.

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	<ul style="list-style-type: none">• Procedure for DSR/EC• Adverse impact on unscientific/Unregulated Sand mining.• Need for regulation under water, air and EP Acts by PCBs.• Salient features of EMGSM-2020-construction of District Level Task Force (DLTF) for regular watch on mining activities, submission of annual environmental audit etc.• It also suggested various additional requirement for effective monitory
2021	S.O. 221(E). In view of the outbreak of Corona Virus (COVID-19) and subsequent lockdowns (total or partial) declared for its control, implementation of projects or activities in the field has been affected. Ministry of Environment, Forest and Climate Change is in receipt of number of requests for extension of the validity of prior environmental clearances beyond the maximum period allowed in the said notification, as the COVID-19 pandemic has not yet come to an end. The matter has been examined in the said Ministry and the concern is genuine keeping in view the fact that due to lockdowns (total or partial), continuation of activities in the field has been difficult.
June, 2022	Hon'ble Supreme Court of India vide its orders dated 03.06.2022 in IA No 1000 of 2003 that each protected forest, that is national park or wildlife sanctuary must have an ESZ of minimum one kilometer measured from the demarcated boundary of such protected forest in which the activities proscribed and 53 prescribed in the Guidelines of 9th February 2011 shall be strictly adhered to. For Jamuna Ramgarh wildlife sanctuary, it shall be 500 meters so far as subsisting activities are concerned.
October, 2022	NGT order exemption of EC – NGT order 190/2020 dated 28/10/2022 exempt new leases, mining leases (where EC has been granted to earlier leases) form requirement of EC for two years from the date of original issue and also for extraction of earth for linear projects, such as roads, pipelines, desilting of damed, river canals for purpose of their maintenance upkeep and disaster management.
<i>Source: Geology and Mining Department of Jammu & Kashmir, Jammu region</i>	

1.2 METHODOLOGY ADOPTED FOR DSR PREPARATION

The steps followed during the preparation of District Survey Report are given in Figure 1.2. The individual steps that are followed by us have been discussed in the following:

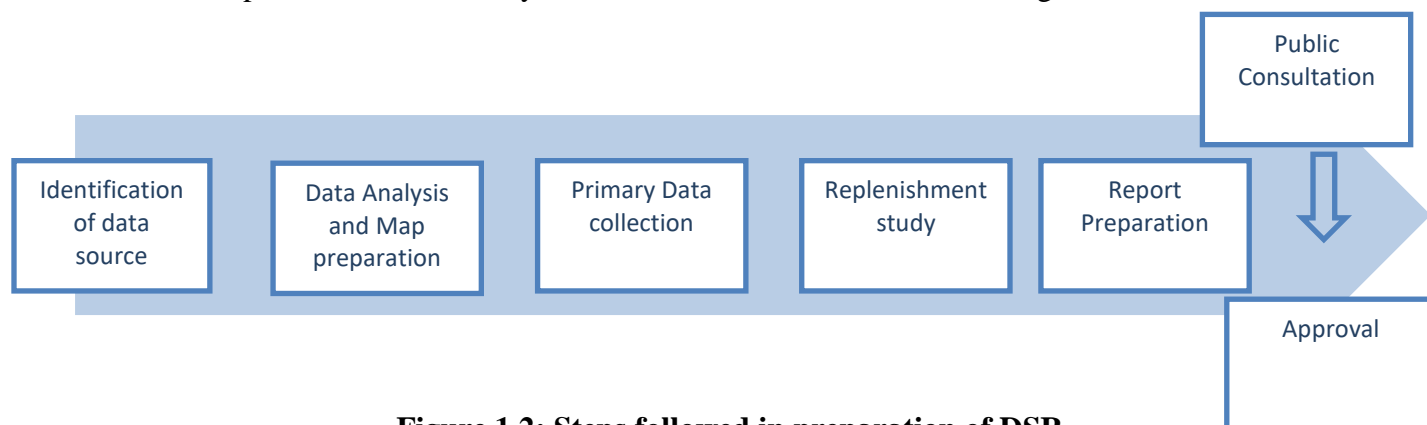


Figure 1.2: Steps followed in preparation of DSR

1.2.1 Data source Identification

We have prepared the report based on Primary data and secondary data base. The secondary data sources which are used in DSR are mostly Government published data based on the published report in reputed journal. District profile has been prepared based on the District Statistical handbook published by Jammu & Kashmir Government as well as District Census 2011. Potential mineral resources have been described based on GSI or any other govt. agencies work done. Mining lease details and the revenue generated from minor minerals has been prepared based on available data from district mining officers of the district. Satellite image has been used for map preparation related to physiography and land utilization pattern of the district.

1.2.2 Data Analysis and Map preparation

To prepare the Maps of the district the We have collected the data set which are captured during the report preparation. They have gone through detail analysis work. District Survey Report involves the analytical implication of captured dataset to prepare relevant maps. We have given the respected maps in the report:

- i. Location map of the district
- ii. Land Use and Land Cover Map
- iii. Geological Map
- iv. Geomorphological Map
- v. Rocks and mineral map of district
- vi. Block Map
- vii. Drainage Map
- viii. Catchment Map
- ix. Transport Map
- x. Forest Cover map has been provided by the States
- xi. Wildlife Sanctuary and National Park Location Map has been provided by the States.
- xii. Physiographic map incorporated from Maps of India.
- xiii. Slop map has been provided by the States.

1.2.3 Primary Data Collection

We have captured the primary data or field data to prepare the DSR. The field study involves assessment of the mineral resources of the district by means of pitting / trenching in specific interval. This provides clear picture of mineral matters characterization and their distribution over the area.

1.2.4 Replenishment study

We have conducted Physical survey by the help of DGPS to define the topography, contours and offsets of the riverbed. The surveys clearly depict the important attributes of the stretch of the river and its nearby important civil and other feature of importance. This information will provide the eligible spatial area for mining. One of the principal causes of environmental impacts from in-stream mining is the removal of more sediment than the system can replenish. It is therefore need for replenishment study for river bed sand in order to nullify the adverse impacts arising due to excess sand extraction. The annual rate of replenishment carried out on every river of the district to have proper assessment of the sand reserve for mining purposes.

1.2.5 Report Preparation

In the DSR we have portrayed the general profile, geomorphology, land use pattern and geology of the district. The report then describes the availability and distribution of riverbed sands and other minor minerals in the district. Apart from delineation the potential mining blocks, the report also includes inventorization of the minerals, recent trends of production of minor minerals and revenue generation there from. Annual replenishment of the riverbed sand has been estimated using field observation, satellite imagery and empirical formula. The road network connecting arterial road to potential mining blocks has been identified. Potential environmental impacts of mining of these minerals, their mitigation measures along with risk assessment and disaster management plan have also been discussed. Finally, the reclamation strategy for already mined out areas is also chalked out.

1.2.6 Public Consultation & Approval

In accordance with the Enforcement and Monitoring Guidelines for Sand Mining, the UT of J&K Government would look for public feedback on the list of mining zones that will be placed up for auction. The DSR, which includes the list of zones will be advertised in local and national newspapers as well as in district administration website. The public will have one month to provide their input or any comment which will then be considered by the district committee. Sand mining zones, including clusters and contiguous clusters, will be defined in the final DSR. The final list of sand mining areas, including riverbed, Patta land, Khatedari, desiltation locations and M-sand Plants will be defined in the final DSR, following the public hearing as per Annexure-V. Details regarding clusters and contiguous clusters will be provided in Annexure-VI and Annexure-VII.

The process flow diagram is as follows:

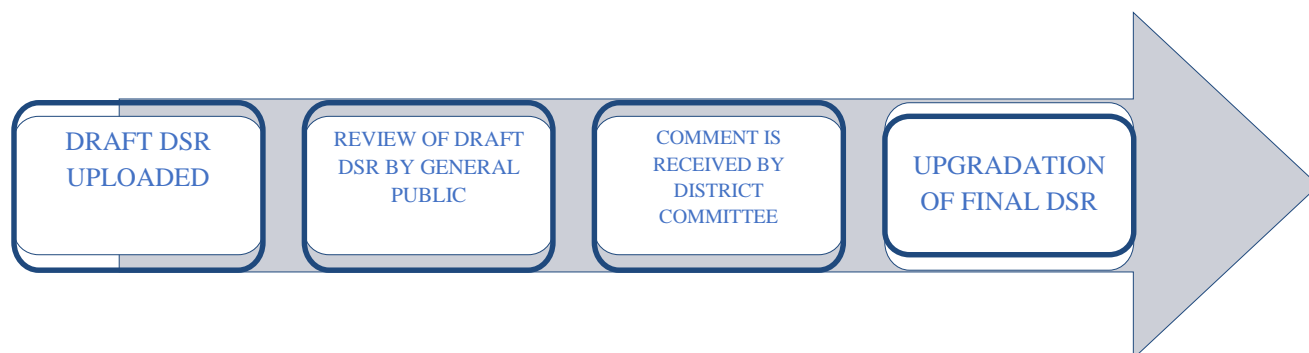


Figure 1.3: Schematic Representation of Public Consultation

CHAPTER 2: OVERVIEW OF MINING ACTIVITY IN THE DISTRICT

2.0 OVERVIEW

The National Mineral Policy, 1993 facilitated the growth of mineral based industries through investment in the private sector. As per the policy, processing units which desire to develop captive mines to secure assured supplies of raw material are allowed foreign equity participation in the manner and to the extent applicable to such processing units.

The extraction of sand and gravel from river and stream terraces, floodplains, and channels commonly attracts attention because in some situations excavation of sand and gravel may conflict with other resources such as fisheries, esthetic and recreational functions, or with the need for stable river channels. On one hand it is possible to excavate sand and gravel from sources located in or near river or stream channels within acceptable environmental limits provided that proper safeguards and practices are utilized. On the other hand, development of sand and gravel from sources located in or near river or stream channels may create far reaching environmental impacts if proper safeguards and practices are not followed.

River bed mining or sand mining adjacent to a river or stream has a direct impact on the physical characteristics of the stream such as channel geometry, bed elevation, substratum composition and stability, in-stream roughness of the bed, velocity, discharge capacity, sediment transport capacity, turbidity, temperature etc.

The rivers passing through this district are Chenab, Jammu Tawi, and Munwar Tawi. Chenab river and Twai river are forming the main drainage system of this district. Some other khad or nalah also joins in this district are Bainwali Khad, Surewali Khad, Sardar Nalah, Siddrayanwali Khad, Jagti Nalah, Chairua Nalah, Dhokwaziran, Simbal LahirKhad, Pungaliwali Khad, Balin Nalah, Khanpur Khad, Sammahwali Khad, Mawawali Khad, Thindewali Khad, Lauki Khad, Tandewali Khad, Targual Khad, Naryah Khad, Kupahi Khad, Manoa Tawi, Jandiali Khad and Ramni Khad. Some boulders, pebbles, and gravels are found as riverbed mineral. There are 30 operational mining leases in the district on rivers Tawi, Nikki Tawi, Chenab and Khoura Walli Khad, Jad Khad, Kharandra Khad, Chuki Choura, Chhibbe Wali Khad.

2.1 MECHANISM FOR MONITORING AND CONTROL OF ILLEGAL MINING ACTIVITY IN THE DISTRICT

Existing Legal Frame Work

The Ministry of Environment Forest & Climate Change formulated the Sustainable Sand Management Guidelines 2016 which focuses on the Management of Sand Mining in the Country. But in the recent past, it has been observed that apart from management and systematic mining practices there is an urgent need to have a guideline for effective enforcement of regulatory provision and their monitoring.

Section 23 C of MMDR, Act 1957 empowered the State Government to make rules for preventing illegal mining, transportation and storage of minerals. But in the recent past, it has been observed that there was large number of illegal mining cases in the Country and in some cases, many of the officers lost their lives while executing their duties for curbing illegal mining incidence. The illegal and uncontrolled illegal mining leads to loss of revenue to the State and degradation of the environment.

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The Hon'ble NGT in its order dated 04.09.2018 in O.A. 173/2018 highlights the matter of Sudarsan Das vs. State of West Bengal & Ors. Inter-alia observed that "There can be no two views that an effective institutional monitoring mechanism is required not only at the stage when Environmental Clearance is granted but also at subsequent stages". "The guidelines focus on the preparation of District Survey Report and the Management Plan" We are of the view that all the safeguards which are suggested in sustainable sand mining guidelines as well as notification dated 15.01.2016 ought to be scrupulously followed." It is a known fact that in spite of the above-suggested guidelines being in existence, on the ground level, illegal mining is still going on. The existing mechanism has not been successful and effective in remedying the situation." ... Since there is an utter failure in the current monitoring mechanism followed by the State Boards, SEIAAs and DEIAAs, it is required to be revised for effective monitoring of sand and gravel mining and a dedicated monitoring mechanism be set up."

The Hon'ble NGT in its order dated 05.09.2018 in O.A. 44/2016 in the matter of Mushtakeem Vs. MoEF & CC & Ors. Inter-alia observed the following:

"Para 20. In Original Application No. 481/2016, the allegation is that there is the connivance of the District Administration with the miners and mining is going in violation of conditions of Environmental Clearance. According to the applicant, an effective mechanism is required to be evolved so that illegal mining does not place."

"Para 22. We proceed to consider the main question proposed for the consideration stated earlier hereinabove as to how to ensure the protection of the environment by checking illegal mining."

"Para 23. We have dealt with the identical issue relating to the illegal sand mining in the border districts in the State of West Bengal and Odisha in the order dated 04th September 2018 in Sudarsan Das Vs. State of West Bengal & Ors., Original Application No. 173 of 2018. We have directed the MoEF&CC to revise the guidelines on the subject for an effective mechanism for sand mining.

The Hon'ble NGT in its order dated 05.04.2019 in O.A. 360/2015 in the matter of National Green Tribunal Bar Association & Anr. Vs. Union of India & Ors. inter-alia observed the following:

"The 2016 Guidelines need revision in the light of the report of High-Powered Committee in September 2016, failure of Monitoring mechanism followed by State Boards, SEIIAs, DEIAAs and MSS system developed by Ministry of Mines & IBM with the assistance of BISAG and MAITY and other observations quoted in paras 12 to 15 above.

50. As noted earlier in paras 17, 23, 27, 31 and 35, States of West Bengal, Odisha, Gujarat, Karnataka, Maharashtra, Punjab, Haryana and Uttar Pradesh are required to follow SSMG, 2016 as may be revised by MoEF&CC and even other States where illegal sand mining is taking place.

The States may review the monitoring mechanism in terms of several directions of the Tribunal and guidelines of MoEF&CC.

The MoEF&CC in supplement to the "Sustainable Sand Mining Management Guideline-2016" (SSMG-2016), has issued "Enforcement & Monitoring Guidelines for Sand Mining-2020 ". These guidelines focus on the effective monitoring of the sand mining since from the identification of sand mineral sources to its dispatch and end-use by consumers and the general public

1. MONITORING MECHANISM

➤ Illegal Mining

The Hon'ble Supreme Court in its Judgment dated 2.08.2017 in W.P 114 of 2014 in the matter of Common Cause Vs Union of India & Ors, inter-alia passed the following:

Para 128. The simple reason for not accepting this interpretation is that Rule 2(ii-a) of the MCR was inserted by a notification dated 26th July 2012 while we are concerned with an earlier period. That apart, as mentioned above, the holder of a mining lease is required to adhere to the terms of the mining scheme, the mining plan and the mining lease as well as the statutes such as the EPA, the FCA, the Water (Prevention and Control of Pollution) Act, 1974 and the Air (Prevention and Control of Pollution) Act, 1981. If any mining operation is conducted in violation of any of these requirements, then that mining operation is illegal or unlawful. Any extraction of a mineral through an illegal or unlawful mining operation would become illegally or unlawfully extracted mineral."

In view of above Judgement, any mining activities which are not governed under the provision of Environment (Protection) Act, 1985, The Water (Prevention & Control of Pollution Act, 1974, The Air (Prevention & Control of Pollution) Act, 1981, Forest Conservation Act-1980, Wildlife Protection Act - 1972, shall be considered as illegal mining within the provision of section 21(5) of Mines and Minerals (Development & Regulation) Act, 1957 (MMDR Act) and the concerned authority shall take necessary action within the provision of MMDR Act.

As per the provision of 23(C) of MMDR Act, the State Government is empowered to make rules for preventing illegal mining, and transportation & storage of Illegal minerals. All such mining which qualifies under illegal, shall be dealt with in the provision of MMDR Act by the concern authorities. State Pollution Control Board (SPCB) is the nodal authority in the State for dealing with cases related to pollution or environment management coming under the purview of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981 and the Environment Protection Act 1986. SPCB shall initiate appropriate action under the provision of these acts for non-compliance of violation of the provisions.

➤ Assessing illegal mining

1. The assessment team collects the information and documents
2. The assessment team verifies the applicability/validity of statutes under EPA-1986, Air and Water Act, MMDR 1957, State Mines and Mineral Rules, etc.
3. Field visit are conducted for identification of mining lease area (in hectare) and boundary pillar constructed to indicate the same.
4. With the help of GPS instrument, the team assess the area where any extraction or mining have been carried out on the day of visit and calculate the mined-out area in a hectare.
5. If available, the team may avail the use of latest satellite images for calculating the total mined out area.

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6. The team verifies the Ground / Surface Level (in meter above MSL) of at least 04 highest points in or around the area where mining has been done. The Ground/surface level will then be computed based on averaging of 04 highest points verified by the team.
7. With the help of Depth Measurement kit or any depth measuring instruments, the depth is measured for at least 04 points in the mined-out area.
8. For computing, the depth, averaging of the value obtained at 04 points should be done.
9. Verification of compliance conditions of Environmental Clearance and Consent to operate, mining methodology under Mining Plan
10. Identification of vulnerable impacts observed on the field and non-compliance of conditions of Environmental Clearance and Consent to Operate.
11. Field Survey for identification, monitoring and verification of ecological species based on the information available and documents mentioned in the Pre-requisite section
12. Preparation of inventory of machinery used/observed on the field (optional)
13. Preparation of inventory of hydraulic structures observed on the field (optional)
14. Water sampling for assessment of water quality including physical and biological parameters. (optional)
15. Reconciliation collation of data/information and compilation to maintain violation.
16. Identification of restoration plan and computation of cost of the restoration plan.

➤ **District Level Task Force (DLTF)**

State Government have constituted a District Level Task Force (DLTF) under the Chairmanship of Deputy Commissioner/District Magistrate/Collector with Superintendents of Police and other related senior functionaries as follows:

1	Deputy Commissioner (concerned)	Chairman
2	Superintendent of Police (concerned)	Member
3	Assistant Commissioner, Revenue (concerned)	Member
4	Executive Engineer, I&FC Department (Concerned)	Member
5	Divisional Forest Officer (Concerned)	Member
6	Mineral Officer, Geology & Mining Department (concerned)	Member
7	District Mineral Officer (concerned)	Member Secretary

The mandate and term of reference of the Cell is as mentioned below:

- I. Identify sites located beyond the boundaries of leaseholds and agencies involved in illegal mining activities;
- II. Quantify material extracted on account of illegal mining and imposition of penalties including cost material, royalty and its recovery thereof;
- III. Refer such illegal mining activities to the Director, Geology & Mining Department empowered for such purpose in accordance with rules compounding of offence;
- IV. In case the offender does not attend to the Directorate of Geology & Mining for compounding of offence, such matters shall be referred to judicial authorities in consultation with the Cell;
- V. Inspect mining belts with respect to title of land, status of mining pits/benches with regard to existence of flora and fauna including forestation etc. and examining the issues related to safety besides, safeguarding Ecology and Geo-environment and highlighting the area of immediate concern and remedial measures thereof;
- VI. Identify sites where e-auction of material in nallah beds, quarry belts is to be undertaken;
- VII. Evaluate price/sale of mineral at Pit head, cost of transportation to its destination;
- VIII. Check whether extraction of major mineral is permitted under the garb of minor mineral;
- IX. Check whether the labour working in the mines is exploited by Owners in respect of wages, facilities. In Such a case, the labour laws and mines regulation shall be a guiding factor;
- X. Prevent illegal miners /forest contractors from violating rules of Geology & Mining Department;
- XI. Submit the annual progress reports of study and analysis together with its recommendations to the Industries &Commerce Department;
- XII. Enforce provisions of SRO-105 dated 31.03.2016 and SRO-302 dated 19.07.2017; and Chairman of this committee may constitute sub-Committee in the matter, if it is found necessary to enforce the TOR in more effective manner. By order of the Government of Jammu and Kashmir.

(Source: Government of Jammu and Kashmir, General Administration Department, Civil Secretariat, Srinagar)

2.2 TOTAL NUMBER OF OPERATIONAL EXISTING MINING LEASES ON THE DISTRICT

At present there are 30 existing mining leases in the district. Apart from them 9 number of blocks have been e-auctioned and LOI issued. The total production from the operational existing mining Leases is 1162743.43 Ton.

2.3 TOTAL MINERAL PRODUCTION/DISPATCH DURING LAST THREE YEARS

Table No. 2: Production and Revenue of Jammu District for the year 2020-21

Sl. No.	Name of the Mineral	Production (in MTs)	Rate	Royalty (in Rs.)
1	Ordinary sand	19,615.82	25	490,395.50
2	Screened sand	-	30	-
3	Nallah Muck/ RBM	127,349.16	25	3,183,729.00
4	N/Boulder	11,278.71	20	225,574.20
5	N/Bajri	344.79	35	12,067.50
6	C/Bajri	402.25	40	16,090.00
	TOTAL	158,990.73		3,927,856.2

(Source: District Mining Office, Jammu)

Table No. 3: Production and Revenue of Jammu district for the year 2021-22

Sl. No.	Name of the Mineral	Production (in MTs)	Rate	Royalty (in Rs.)
1	Ordinary sand	213,759.10	25	5,343,977.45
2	Screened sand	-	30	-
3	Nallah Muck/ RBM	934,072.54	25	23,351,81.44
4	N/Boulder	11,757.00	20	235,140.00
5	N/Bajri	3,411.00	35	119,385.00
6	C/Bajri	-	40	-
	TOTAL	1,162,999.64		2,696,026.89

(Source: District Mining Office, Jammu)

Table No. 4: Production and Revenue of Jammu for the year 2022-23

Sl. No.	Name of the Mineral	Production (in MTs)	Rate	Royalty (in Rs.)
1	Ordinary sand	247,975.32	25	6,199,382.97
2	Screened sand	4,000.00	30	120,000.00
3	Nallah Muck/ RBM	2,786,629.31	25	69,665,732.87
4	N/Boulder	34,183.83	20	683,676.61
5	N/Bajri	6,416.38	35	224,573.31
6	C/Bajri	-	40	-
	TOTAL	3,079,204.84		76,893,365.76

(Source: District Mining Office, Jammu)

• **DEMAND AND SUPPLY DATA GIVEN BY DISTRICT MINING OFFICE, JAMMU**

Due to want of EC certificate only one minor mineral block are in operation and from this block total available quantity per year is 88740 Mt. considering the requirement of minerals by different executing departments, other projects of NHAI, BRO PWD, public consumption etc. The available quantity of raw material in District will be insufficient to meet the requirement of DAK expressway (w.r.t Pkg-16(50%) & Pkg-17). After operationalization of all the blocks and nine recently auctioned blocks, the demand supply gap may be minimized.

• **Action Initiated for Implementation of Sustainable Sand Mining Guidelines, 2016 and Enforcement & Monitoring guidelines, for Sand Mining, 2020 issued by MoEF & CC.**

2016 Guideline mainly focuses on the impact of excess extraction on riverbed degradation and habitat, highlighting the importance of maintaining ecological balance. It also emphasizes the significance of riparian habitat for erosion control and nutrient input, underlining the need to protect natural habitats. The guideline highlights ecological effects on bird nesting, fish migration, and water quality, stressing the importance of considering environmental impacts in mining activities.

2020 Guideline allows extraction in areas experiencing deposition or aggradation to manage the problem, focusing on addressing specific issues in the river reach. It recommends developing sediment rating curves for potential mining sites to ensure sustainable extraction practices based on replenishment rates. The guideline also permits extraction across the entire active channel during the dry season, providing flexibility in mining operations based on seasonal variations.

The above two guidelines have been followed while making DSR and the following points have been incorporated:

- Sand and gravel cannot be extracted within 1 km of major bridges and highways, five times the span of a bridge on the upstream side and ten times the span on the downstream side.
- The mining depth should be limited to 3 meters and the distance from the bank should be 3 meters or 10% of the river width
- The mining process must maintain a 50-meter buffer distance after every 1000-meter block of un-mined land or at a distance prescribed by the regulatory authority.
- The mining process must maintain a 50-meter buffer distance after every 1000-meter block or distance prescribed by the regulatory authority.
- River bed sand mining should be limited to the central 3/4th width of the river or 7.5 meters from river banks, with up to 10% of the river's width allowed. The authority must minimize riverbank erosion and channel migration, with mineral removal not exceeding 60% of the mine lease area.
- The mining plan for non-government leases on agricultural fields/Patta land is approved only if mineral replenishment or riverbed mining is possible, while government projects can allow mining but only by government agencies.
- The minerals reserve for river bed areas is determined by depth, margins, width, and other dimensions, with a maximum of 60,000 MT per hectare for actual mining.

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• **SALE RATES OF MINOR MINERALS (RAW AND PROCESSED) FIXED BY THE DISTRICT ADMINISTRATION CONCERNED.**

The district's mineral prices, including GST, are listed in the table, along with the net sale rate, including GST, for various minerals like Jammu, Nallah Muck, Nallah Boulder, and Nallah Bajri.

Name of the District	Name of Mineral	Notified sale rate at sale/pit Head including loading without GST (Rs. Per MTs)	% Rate of GST @5%	Net sale rate Inclusive of GST
Jammu	Nallah Muck/GSB/RBM	58.83	2.94	61.78
	Sand	76.76	3.83	80.60
	Nallah Boulder	51.25	2.56	53.82
	Nallah Bajri	78.44	3.92	82.37
	Crusher Aggregate (6/10/12.5/20/25/40/50/63/75)	362.85	18.14	381
	Crusher aggregate (80 mm and above)	338.66	16.93	355.60
	Screened sand	362.85	18.14	381
	Crusher Dust	275.88	13.79	289.67

• **DETAILS INITIATION OF ENVIRONMENT MANAGEMENT PLAN:**

The Environment Management Plan (EMP) is required to ensure sustainable development in the project area. This section covers the proposed measures required for meeting the prevailing statutory requirements for protecting environment by suitable environmental management practices in connection with the proposed mining and related activities in the area. The Environmental Management Plan (EMP) has been designed within the framework of various Indian legislative and regulatory requirements on environmental and socio-economic aspects so as to attain sustainable development.

The major components of the Environmental Management Plan are:

- Mitigation of potentially adverse impacts.
- Monitoring during project implementation and operation.
- Implementation schedule and environmental cost estimates.
- Integration of EMP with project planning, design, construction and operation.
- Minimum disturbance to the native flora and fauna.
- Compliance with the air, water, soil and noise quality norms.
- Conservation of water to the extent possible.
- Encourage the socio-economic development.

• **ACTIVITIES AND UTILIZATION OF CSR / CER**

CER (Corporate Environmental Responsibility) and CSR (Corporate Social Responsibility) issues are crucial for a district survey report as they impact the local environment and community.

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Details of CER

As per the office memorandum dated 1st May, 2018, the fund allocation for Corporate MoEF Environment Responsibility (CER) is subject to capital investment. The fund allocation for CER shall be deliberated in the EAC, SEAC or DEAC as the case maybe, with a due diligence subject to maximum percentage as prescribed below for different cases:

Sl. No.	Capital Investment / Additional Capital Investment (in Rs.)	Greenfield Project% of Capital Investment	Brownfield Project-% of Additional Capital Investment
1.	≤ 100 crores	2.0%	1.0%
2	> 100 crores to ≤ 500 crores	1.5%	0.75%
3	>500 crores to ≤ 1000 crores	1.0%	0.50%
4	> From 1000 crores to ≤ 10000 crores	0.5%	0.25%
5	>10000 crores	0.25%	0.125%

Some Key points about CER are discussed in the following:

- Environmental degradation: Assess the district's environmental condition, including air and water pollution, deforestation, and waste management.
- Natural resource depletion: Evaluate the usage and conservation of natural resources like water, land, and minerals.
- Climate change: Analyze the district's vulnerability to climate change, including rising temperatures, extreme weather events, and their impact on local ecosystems.

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Table 5: OMs and Govt. Orders issued by MoEF& CC from time to time that exclusively deal with Corporate Environment Responsibility

OM DATED	PARTICULARS
1ST November,2010	MoEF& CC published circular no: J-11013/41/2006-IA. II(I) Dated 1 ST November 2010. It highlights the importance of obtaining environmental clearance for projects like thermal power and steel manufacturing, dependent on coal. It also emphasizes the need for firm coal linkage and environmental clearance for coal sources to avoid financial and environmental risks. Proposals for projects relying on coal as raw material will only be considered after securing coal linkage and environmental clearance. Pending proposals for power, steel, and sponge iron projects will be deferred until coal sourcing clearance is confirmed.
26th April 2011	No: J-11013/41/2006-IA II(I) Office Memorandum by MoEF& CC dated on 26 th April 2011 highlights the recommendations made by the committee on monitoring the projects. It emphasizes integrating environmental concerns into corporate policies. It states Major PSUs and companies are required to adopt Corporate Environmental Policies, Compliance with environmental clearances and forestry clearances is essential. Responsible persons must be designated at all levels to ensure adherence to the policy. Specific guidelines are provided for Central PSUs and major projects like thermal power plants, steel plants, cement plants, and petroleum refining.
19th May 2011	J-11013/41/2006-IA.II(I)-Part Office Memorandum by MoEF& CC dated 19 TH May, 2011 highlights The Office Memorandum dated 26th April, 2011 regarding Corporate Environmental Responsibility, has been amended to include the following TORs in prescribing TORs for various projects: 1) Having a well-established Environment Policy approved by the Board of Directors; 2) Providing standard operating procedures to highlight environmental infringements; 3) Having a hierarchical system for environmental issues and compliance with EC conditions; 4) Reporting non-compliances to the Board of Directors and stakeholders. The EACS may finalize these TORS with the Competent Authority's approval.
18th May, 2012	J-11013/41/2006-IA II(I)-Office Memorandum by MoEF& CC dated 18 th May 2012 states about institutionalizing of corporate Environmental Responsibility. The Ministry of Environment & Forests has initiated a draft concept paper outlining the elements of a Corporate Environmental Policy, aiming to integrate environmental concerns into corporate policies. The paper is open for public domain comments and suggestions from stakeholders, with a copy available for public access within 45 days.
18th May, 2012	11013/41/2006-IA II(I)-Office Memorandum by MoEF& CC dated 18 th May 2012 Incorporation of Corporate Environment Responsibility in TORs and ECs: Ministry of Environment & Forests emphasizes including Corporate Environment Responsibility in TORs and ECs for projects under EIA Notification, 2006. TORs should address company's Environment Policy, compliance procedures, reporting mechanisms, and hierarchical systems. EACs are tasked to finalize additional TORs.
1st may 2018	F. No.22-65/2017-IA.III Office Memorandum by MoEF& CC dated 8th May 2018 The Environment Impact Assessment (EIA) Notification, 2006, under the

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	<p>Environment (Protection) Act, 1986, prescribes the process for granting prior environment clearance (EC) for certain development projects. Sustainable development has various components, including social, economic, and environmental aspects. The EIA document prescribes Inter-alia public consultation, social impact assessment, and R&R action plan, along with an environmental management plan (EMP). The Companies Act, 2013 deals with Corporate Social Responsibility (CSR), and Schedule VII lists activities that can be included in CSR policies. However, the environmental clearance may not apply if the company is not net profit-making or not covered under the Act and Rules. The Ministry has conducted a detailed stakeholder consultation, including meetings with various ministries. To ensure transparency and uniformity, guidelines have been issued for recommending CER by EACs, SEACs, and DEACs. The cost of CER should be in addition to the cost of EIA/EMP implementation, including pollution control, environmental protection, R&R, wildlife and forest conservation measures.</p>
19th June 2018	<p>F.No.22-65/2017-IA.III Office Memorandum by MoEF& CC dated on 19th June 2018 states Corporate Environment Responsibility (CER) can be imposed on Environmental Clearances issued after May 1, 2018, with the approval of the Competent Authority.</p>
30th September 2020	<p>F.No.22-65/2017-IA.III Office Memorandum by MoEF& CC dated on 30th September 2020 is the Revision of Guidelines on Corporate Environment Responsibility of the OM, dated 1st May which highlights Deliberation on the commitments made by project proponent and requirements to address the concerned raised during the public consultation and prescribe as specific conditions while recommending the proposal, for prior environment clearance. The Expert Appraisal Committee or State Level Expert Appraisal Committee will decide on the matter and prescribe specific conditions for recommending prior environment clearance instead of Corporate Environment Responsibility. All activities proposed by the project proponent or prescribed by the committee will be part of the Environment Management Plan, with the approval of competent authority.</p>
20th October 2020	<p>F.No.22-65/2017-IA.III Office Memorandum by MoEF& CC dated on 20th October 2020 is about the implementation of the OM dated 30th September 2020. The Office Memorandum dated 30th September 2020 on Corporate Environment Responsibility (CER) has been implemented, requiring the Expert Appraisal Committee to address public consultation concerns and prescribe specific conditions for prior environment clearance instead of allocation of funds under Corporate Environment Responsibility. This will be included in all Environment Clearances issued after 30th September 2020.</p>

Details of CSR

The Government provides the broad framework for Corporate Social Responsibility (CSR) through Section 135 of the Companies Act, 2013 ('Act'), Schedule VII of the Act and Companies (CSR Policy) Rules, 2014. Schedule VII of the Act indicates the activities that can be undertaken as CSR which broadly relates to Health, sanitation, education, environment, sports, heritage, art and culture, rural development, slum area development, Disaster management, including relief, rehabilitation, and reconstruction activities, setting up old age homes, day care centers, measures for reducing inequalities faced by socially and economically backward groups etc. The Ministry vide General Circular no. 21/2014 dated 18th June, 2014 clarified that items mentioned in Schedule VII are broad based and can be interpreted liberally.

Some Key points about CSR are discussed in the following:

- Socio-economic development: It examine the district's socio-economic conditions, including poverty, education, healthcare, and employment opportunities.
- Community engagement: It Assess the level of community involvement in local decision-making processes and initiatives.
- Human rights: Evaluate the district's human rights record, including labour rights, gender equality, and access to basic services.

Recommended CSR activities:

- Implement sustainable practices in industries and agriculture.
- Develop and enforce environmental regulations.
- Promote eco-tourism and conservation efforts.
- Support community development initiatives and social programs.
- Encourage public-private partnerships for sustainable development.
- Conduct regular assessments and monitoring to ensure progress.

By addressing CER and CSR issues, the district can achieve sustainable development, improve the quality of life for its citizens and contribute to a better environment.

CHAPTER 3: EXISTING MINING LEASES WITH LOCATION, AREA AND PERIOD OF VALIDITY IN JAMMU DISTRICT

The Jammu District has operational mining blocks for mining of Minor minerals on river bed of Tawi river, Chenab River, Chauki Chaura khad, Kharandra Khad, Jad khad, Khoura Walli Khad, Chhibbe Wali Khad. Here is the list of existing mining leases with location, area and period of validity is given below:

Table No. 6: Details of Mining Leases in the District

Sl. No.	Name of the Project Proponent	Block No.	Geo-Coordinates		Area in Hectares	Production as per EC (MT)	Production/Dispatch during 2021-22 (tonnes)	Registration Date	Validity of the Lease
			Latitude	Longitude					
1.	Sh. Pavan Kumar Sharma S/o Sh. Hoti Lal, R/o 56 Krishna Lok, Rajpura. Mawana Road, Meerut, Rajpura, Uttar Pradesh-250001.	1/1	32°46'44.45"N	75°08'57.63"E	5.10	69360	18112.85	14.07.2021	13.07.2026
			32°46'51.11"N	75°09'11.04"E					
			32°46'54.46"N	75°09'09.68"E					
			32°46'48.24"N	75°08'54.76"E					
2.	Sh. Sahil Arora, S/o Sh. Sunil Arora, R/o H. No. 110/P, Sec-2, Ward No. 53, Jammu, Trikuta Nagar, Jammu- 180020	1/2	32°46'41.94"N	75° 7'52.99"E	9.21	48300	39177.37	01.03.2021	28.02.2026
			32°46'40.11"N	75° 7'48.77"E					
			32°47'0.19"N	75° 7'37.28"E					
			32°47'1.25"N	75° 7'43.74"E					
3.	M/s Sai Mines Logate Tehsil & District Kathua	1/3	32°47'17.42"N	75°07'26.22"E	6.90	93150	20922.54	06.07.2021	05.07.2026
			32°47'9.43"N	75°07'38.38"E					
			32°47'5.09"N	75°07'33.20"E					
			32°47'13.59"N	75°07'22.06"E					
4.	Sh. Sanchit Gautam S/o Sh. Ravi Kumar Gautam R/o Nagrota near Toll Post, Jammu	1/4	32°47'23.47"N	75° 7'1.73"E	9.82	106400	25520.17	09.07.2021	08.07.2026
			32°47'23.74"N	75° 7'14.31"E					
			32°47'13.41"N	75° 7'12.81"E					
			32°47'10.23"N	75° 7'4.69"E					

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5.	Sh. Karanveer Singh, S/o Sh. Surinder Singh, R/o Lane No. 3, Shaheed Udham Singh Nagar, Pathankot- 145001	1/5	32°47'11.49"N	75°06'43.49"E	9.86	88740	---	19.10.2022	18.10.2027
			32°47'7.81"N	75°07'1.85"E					
			32°47'1.25"N	75°07'1.24"E					
			32°47'4.09"N	75°06'43.83"E					
6.	Sh. Aditiya Mahajan, S/o Sh. S. K. Gupta, R/o H. No. 20 Sector 6/A W. No. 54, Trikuta Nagar, Jammu	1/6	32°46'44.81"N	75° 7'4.15"E	9.74	90720	90720	19.07.2021	18.07.2026
			32°46'51.33"N	75° 7'1.25"E					
			32°46'47.90"N	75° 7'24.15"E					
			32°46'42.20"N	75° 7'24.40"E					
7.	Sh. Parshotam Singh, S/o Sh. Baljit Singh, R/o H. No. 56 W. No. 3, Kamra Pati, Jaito Faridkot, Punjab	1/7	32°46'28.48"N	75°07'2.32"E	6.40	83250	39847.73	01.09.2021	31.08.2026
			32°46'18.09"N	75°06'51.23"E					
			32°46'15.78"N	75°06'53.40"E					
			32°46'24.72"N	75°07'8.43"E					
8.	Sh. Sushil Kumar S/o Sh. Tarsem Lal R/o Flat No B-13, Sector No.1, Dream Line Society, Trikuta Nagar, Jammu- 180020	1/8	32°46'15.28"N	75° 6'42.84"E	8.15	50325	2105.50	05.07.2021	04.07.2026
			32°46'11.46"N	75° 6'43.79"E					
			32°46'7.86"N	75° 6'29.09"E					
			32°45'57.40"N	75° 6'16.72"E					
9.	J&K Minerals Ltd.	5/1	32°51'54.92"N	74°43'5.03"E	9.57	171765	123044.90	14.01.2021	13.01.2026
			32°51'56.02"N	74°42'56.54"E					
			32°52'9.58"N	74°43'0.01"E					
			32°52'9.37"N	74°43'7.41"E					
10.	Sh. Zaheer Choudhary S/O Sh. Ghulam Mohd. R/O Madrasa Bhatthindi	5/2	32°51'47.11"N	74°43'3.76"E	9.16	81300	62950.53	19.01.2021	18.01.2026
			32°51'35.61"N	74°42'46.61"E					
			32°51'39.89"N	74°42'42.77"E					
			32°51'49.53"N	74°42'55.35"E					
11.	Mr. Vipin Kumar S/o Sh. Sat Pal Mehta R/o Dhangri, Rajouri	5/3	32°51'33.49"N	74°42'35.96"E	9.94	90000	65896.50	19.01.2021	18.01.2026
			32°51'33.89"N	74°42'21.85"E					
			32°51'42.36"N	74°42'21.44"E					
			32°51'41.79"N	74°42'36.15"E					

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12.	Mr. Rameshwar Singh, S/o Sh. Gian Singh R/o H. No. 03, Lane No. 01, Sharika Vihar, Talab Tillo, Jammu	5/4	32°51'34.19"N	74°42'12.83"E	9.32	84200	90527.21	22.01.2021	21.01.2026
			32°51'36.01"N	74°41'59.14"E					
			32°51'45.11"N	74°42'0.54"E					
			32°51'42.16"N	74°42'12.87"E					
13.	Sh. Sanchit Gautam S/o Sh. Ravi Gautam R/o Nagrota near Toll Post, Jammu	5/9	33° 1'59.03"N	74°46'32.18"E	9.52	86100	19672.10	01.06.2021	31.05.2026
			33° 1'59.75"N	74°46'44.81"E					
			33° 2'8.85"N	74°46'44.81"E					
			33° 2'9.43"N	74°46'32.58"E					
14.	Sh. Aditiya Mahajan, S/o Sh.S. K. Gupta R/o H. No.20 Sector 6/A W. No. 54,Trikuta Nagar, Jammu	5/11	33°2'9.66"N	74°44'56.98"E	8.59	76800	27273.60	07.06.2021	06.06.2026
			33° 2'6.78"N	74°44'45.78"E					
			33° 2'15.87"N	74°44'38.34"E					
			33° 2'15.75"N	74°44'54.52"E					
15.	Sh. Rahil Choudhary, S/o Sh. Rakesh Kumar R/o H. No-51 B/D, Gandhi Nagar, Jammu	5/12	33° 1'49.85"N	74°45'32.86"E	6.29	75480	18185.89	10.10.2021	09.10.2026
			33° 1'29.87"N	74°45'28.44"E					
			33° 1'29.78"N	74°45'31.73"E					
			33° 1'48.89"N	74°45'37.70"E					
16.	Sh.Sushil Kumar, S/o Sh. Tarsem Lal, R/o Flat No B-13, Sector No.1,Dream Line Society Trikuta Nagar, Jammu- 180020	5/13	33° 2'23.27"N	74°44'11.02"E	8.69	104200	10995.59	22.09.2021	21.09.2026
			33° 2'18.49"N	74°43'58.14"E					
			33° 2'21.78"N	74°43'56.13"E					
			33° 2'26.83"N	74°44'1.83"E					
			33° 2'27.72"N	74°44'15.74"E					
17.	Sh. Kuldeep SinghS/o Sh. Kaku Ram,R/o Arnas District, Reasi	5/21	32°52'26.54"E	74°35'22.61"E	9.35	82900	19205.07	26.08.2021	25.08.2026
			32°52'9.67"E	74°35'16.52"E					
			32°52'10.60"N	74°35'10.29"E					
			32°52'26.47"N	74°35'15.11"E					
18.	Harpal Singh S/O Sant Singh, R/O Chatha Farm Jammu	5/22	32°51'59.83"N	74°35'13.87"E	8.65	74300	42560.53	27.05.2021	25.05.2026
			32°51'46.92"N	74°35'8.60"E					
			32°51'38.54"N	74°35'0.66"E					
			32°51'40.29"N	74°34'56.70"E					
			32°51'53.97"N	74°35'7.25"E					
			32°52'0.86"N	74°35'10.78"E					

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19.	Kesri Nandan Mines, District Kathua	5/23	32°51'31.79"N	74°34'58.82"E	9.98	89100	20984.15	29.06.2021	28.06.2026
			32°51'15.58"N	74°34'51.59"E					
			32°51'16.97"N	74°34'45.60"E					
			32°51'34.24"N	74°34'51.62"E					
20.	Sh.Karanveer Singh S/o Sh. Surinder Singh R/o Lane No. 3, Shaheed Udham Singh Nagar	5/24	32°53'1.79"N	74°35'20.16"E	6.17	54284	16344.95	29.06.2021	28.06.2026
			32°53'12.91"N	74°35'22.44"E					
			32°53'12.63"N	74°35'28.45"E					
			32°53'0.12"N	74°35'28.34"E					
21.	Sh. Brinder Singh S/o Sh. Kimat Lal R/o Raipur Satwari, Jammu	5/25	32°53'19.35"N	74°35'20.39"E	9.43	90400	35222.88	01.06.2021	31.05.2026
			32°53'35.21"N	74°35'16.88"E					
			32°53'36.85"N	74°35'21.23"E					
			32°53'20.44"N	74°35'29.27"E					
22.	Sh. Parshotam Singh S/o Sh. Baljit Sing R/o H. No. 56 W. No- 3, Kamra Pati Jaito Faridkot, Punjab.	5/26	32°53'42.39"N	74°35'5.42"E	7.95	69100	34018.00	01.09.2021	31.08.2026
			32°53'57.17"N	74°34'51.96"E					
			32°53'58.73"N	74°34'55.33"E					
			32°53'45.89"N	74°35'10.83"E					
23.	J&K Minerals Ltd.	5/28	32°54'39.36"N	74°34'43.85"E	4.58	103050	27148.64	11.08.2020	10.08.2025
			32°54'39.45"N	74°34'47.96"E					
			32°54'51.94"N	74°34'47.79"E					
			32°54'48.11"N	74°34'41.75"E					
24.	Sh. Kimat Lal, S/o Sh. Kohla Ram, R/o Raipur Satwari, Jammu.	5/29	32°54'16.16"N	74°32'21.74"E	9.89	81900	74466.6	22.02.2021	14.02.2026
			32°54'16.05"N	74°32'14.38"E					
			32°54'15.44"N	74°31'58.91"E					
			32°54'12.77"N	74°31'53.14"E					
			32°54'8.94"N	74°31'47.42"E					
			32°54'11.87"N	74°31'43.00"E					
			32°54'14.31"N	74°31'48.33"E					
			32°54'18.60"N	74°32'3.86"E					
32°54'20.85"N	74°32'23.02"E								

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25.	Singh minerals Near Kali Mata Mandir Kolluwali Gali Pathankot.	5/30	32°53'35.08"N	74°31'15.29"E	9.61	86490	46460.52	04.06.2021	03.06.2026
			32°53'43.00"N	74°31'21.56"E					
			32°53'54.16"N	74°31'28.56"E					
			32°53'53.46"N	74°31'31.86"E					
			32°53'44.77"N	74°31'30.53"E					
			32°53'41.87"N	74°31'25.21"E					
			32°53'33.12"N	74°31'20.44"E					
26.	Sh. Mangal Singh, S/o Sh. Om Parkash, R/o Saidgarh, Bishnah	5/31	32°53'2.65"N	74°31'18.88"E	6.62	60000	25954.48	26.08.2021	25.08.2026
			32°53'2.64"N	74°31'25.21"E					
			32°52'57.08"N	74°31'25.98"E					
			32°52'54.70"N	74°31'36.32"E					
			32°52'59.43"N	74°31'37.93"E					
27.	Mahavir Mining Lane no03, Shaheed Udhamsingh Nagar Pathankot	5/32	32°52'20.99"N	74°31'57.08"E	7.50	67500	31552	12.02.2021	11.02.2026
			32°52'19.37"N	74°32'4.56"E					
			32°52'32.06"N	74°32'8.37"E					
			32°52'33.54"N	74°32'2.10"E					
28.	Sh. Rahil Choudhary, S/o Sh. Rakesh Kumar R/o51 B/D, Gandhi Nagar, Jammu.	5/33	32°51'44.68"N	74°31'33.63"E	9.66	82000	57834	12.02.2021	11.02.2026
			32°51'43.66"N	74°31'38.11"E					
			32°51'16.87"N	74°31'29.89"E					
			32°51'18.14"N	74°31'26.14"E					
29.	Sh. Rahil Choudhary, S/o Sh. Rakesh Kumar, R/o 51 B/D, Gandhi Nagar, Jammu	5/36	33° 1'48.44"N	74°41'13.80"E	5.28	61800	61622.61	15.02.2021	14.02.2026
			33° 1'49.59"N	74°41'15.50"E					
			33° 1'48.06"N	74°41'17.34"E					
			33° 1'49.65"N	74°41'25.43"E					
			33° 1'54.81"N	74°41'29.16"E					
			33° 2'0.17"N	74°41'30.47"E					
			33° 2'0.03"N	74°41'32.30"E					
			33° 1'53.20"N	74°41'30.02"E					
			33° 1'46.39"N	74°41'26.05"E					
			33° 1'44.39"N	74°41'22.39"E					
			33° 1'44.93"N	74°41'15.92"E					

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30.	Sh. Sahil Choudhary S/o Sh. Des Raj Choudhary, R/o Ward No: 05 Near New Era Public School, Raipur Satwari, Jammu-180003.	44	32°51'18.99"N	74°54'3.02"E	1.23	24907	14416.52	24.06.2021	23.06.2026
			32°51'15.91"N	74°54'3.38"E					
			32°51'14.50"N	74°54'5.40"E					
			32°51'14.28"N	74°54'7.44"E					
			32°51'15.72"N	74°54'15.60"E					
			32°51'15.20"N	74°54'15.92"E					
			32°51'13.32"N	74°54'7.81"E					
			32°51'13.87"N	74°54'4.86"E					
			32°51'14.75"N	74°54'3.08"E					
			32°51'16.68"N	74°54'2.04"E					
			32°51'18.94"N	74°54'1.74"E					

(Source: District Mining Officer Jammu)

New e-auctioned blocks with LOI issued date, provided by the district. The site location maps are added in Annexure-VIII. The details of the blocks are given below:

Sl. No.	Block Number	Name of Minor Mineral Block	Area in hectares	Co-ordinates of the Blocks	Particulars of successful bidders (H1)	Remarks
1.	6/J	Tawi River, Village- Chak Rakwakan, District- Jammu, J&K.	4.00	A=32°46'24.58"N 74°54'15.94"E B=32°46'31.87"N 74°54'2.38"E C=32°46'30.87"N 74°53'58.90"E D=32°46'21.29"N 74°54'15.19"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail .co m Mob. No. 9906029191	LOI ISSUED on 19.02.2024
2.	12/J	Nikki Tawi River at Village Chak Ganeshu Distt. Jammu	4.50	A=32°42'7.42"N 74°49'34.17"E B=32°42'17.95"N 74°49'51.38"E C=32°42'15.77"N 74°49'53.87"E D=32°42'8.56"N	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3 rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail. co m Mob. No. 9906029191	LOI ISSUED on 18.07.2023

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				74°49'42.66"E		
3.	13/J	Nikki Tawi River at Village Surya Chak Distt. Jammu	4.40	A=32°41'55.77"N 74°49'19.70"E B=32°41'50.25"N 74°49'25.63"E C=32°41'46.34"N 74°49'19.07"E D=32°41'51.54"N 74°49'14.14"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3 rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail.com Mob. No. 9906029191	LOI ISSUED on 18.07.2023
4.	18/J	Nikki Tawi River (Confluence point of Nikki Tawi Balole Nallah), Village- Top Manhasan, District- Jammu, J&K.	4.10	A=32°38'51.47"N 74°45'10.27"E B=32°38'55.62"N 74°45'10.36"E C=32°38'58.33"N 74°45'13.62"E D=32°39'3.45"N 74°45'17.09"E E=32°39'2.79"N 74°45'20.34"E F=32°38'55.10"N 74°45'16.94"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3 rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail.com Mob. No. 9906029191	LOI ISSUED on 19.02.2024
5.	19/J	Nikki Tawi River at Village Badyal Brahamna Distt. Jammu	4.63	A=32°38'55.03"N 74°44'51.0"E B=32°38'52.75"N 74°44'49.84"E C=32°38'56.45"N 74°44'42.12"E D=32°39'5.93"N 74°44'31.89"E E=32°39'7.49"N 74°44'33.81"E F=32°38'58.65"N 74°44'43.99"E	Sh. Sandeep Singh S/o Sh. Sukhwinder Singh R/o Village Khandwal Tehsil and District Jammu E- aulakhsandeep@gmail.com Mob. No. 9419139391	LOI ISSUED on 18.07.2023

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6.	27/J	Sardan Nallah Downstream	2.55	A=32°46'30.97" N 74°58'11.90" E B=32°46'28.16" N 74°58'11.39" E C=32°46'31.30"N 74°58'1.67"E D=32°4 6'33.25"N 74°58'2.06"E E=32°46'33.77"N 74°58'6.29"E	Sh Naresh Singh Charak S/o Sh Natha Charak Singh R/O Jallo Chack, Tehsil Bhau District Jammu. E Mail.-bhadwal@me.com Mob No 9419129777	LOI ISSUED on 25.05.2023
7.	28/J	Sardan Nallah up stream Railway Bridge Pargolta Area District Jammu	1.58	A=32°46'10.83"N 74°58'36.67"E B=32°46'8.71"N 74°58'35.09"E C=32°46'9.07"N 74°58'38.32"E D=32°46'10.84"N 74°58'40.26"E E=32°46'12.14"N 74°58'44.32"E F=32°46'14.88"N 74°58'44.02"E G=32°46'12.58"N 74°58'39.64"E	Sh Mohit Singh S/o Sh Prem Singh R/O Tridwan, Tehsil & District Kathua. E-Mail mohitrajput7099@gmail.com Mob No 7298110733	LOI ISSUED on 27.05.2023

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8.	29/J	Sardan Nallah up stream Railway Bridge Pargolta Area District Jammu	3.00	A=32°45'48.88"N 74°58'27.85"E B=32°45'47.68"N 74°58'31.64"E C=32°45'41.41"N 74°58'34.71"E D=32°45'40.49"N 74°58'29.94"E E=32°45'44.18"N 74°58'27.48"E	Choudhary Power Project Pvt Ltd R/O Choudhary Towers,3RD Floor,Sector- 1A,Ext,Trikuta Nagar Jammu, Email- choudharypowerprojects@ gmail.com Mob No 9906029191	LOI ISSUED on 27.05.2023
9.	32/J	Jhajjar Nallah at Village Sarmal, District Jammu	3.20	A=32°52'0.01"N 75° 0'11.04"E B=32°51'57.29"N 75° 0'14.35"E C=32°51'54.92"N 75° 0'17.67"E D=32°51'50.97"N 75° 0'21.95"E E=32°51'52.14"N 75° 0'24.25"E F=32°51'55.06"N 75° 0'23.20"E G=32°51'56.62"N 75° 0'21.68"E H=32°51'58.60"N 75° 0'16.24"E I=32°51'59.90"N 75° 0'14.14"E J=32°52'2.81"N 75° 0'12.33"E	Sh Bharat Bhushan S/o Sh Sham Singh R/O Assok Nagar,Bhagwati Nagar Jammu. E- mail, bharatchib1981@gmail.com Mob No 9419171439, 9419171438	LOI ISSUED on 27.05.2023

CHAPTER 4: DETAILS OF ROYALTY OR REVENUE RECEIVED IN LAST THREE YEARS

Table No. 7: Showing Revenue Received in Last Three Years

Financial Year	Royalty (Rs.)	Cess (Rs.)	Total Revenue	Production (in cft)
2020-2021	28,006,346.20	--	--	26,849,430
2021-2022	49,705,784.89	--	--	43,256,729.9
2022-2023	106,858,715.75	--	--	90,109,717.6

(Source: District Mining Office, Jammu)

CHAPTER 5: DETAILS OF PRODUCTION OF SAND OR BAJRI OR MINOR MINERALS IN LAST THREE YEARS

Table No. 8: Production of Jammu District for last 3 years

Name of the mineral	Production for the year 2020-2021 (MTs)	Production for the year 2021-2022(MTs)	Production for the year 2022-2023(MTs)
Ordinary sand	19,615.82	213,759.10	247,975.32
Screened sand	-	-	4,000.00
Nallah Muck/ RBM	127,349.16	934,072.54	2,786,629.31
N/Boulder	11,278.71	11,757.00	34,183.83
N/Bajri	344.79	3,411.00	6,416.38
C/Bajri	402.25	-	-
TOTAL	158,990.73	1,162,999.64	3,079,204.84

(Source: District Mining Office, Jammu)

CHAPTER 6: PROCESS OF DEPOSITION OF SEDIMENTS IN RIVERS OF THE DISTRICT

6.0 INTRODUCTION

Jammu district is the winter capital of UT of J&K. Jammu district falls under sub-mountainous region. This district can be divided in two major units which are. Siwalik ranges (Northern Hilly area) and Southern Outer plains. The Siwalik ranges rise gradually in the north part of the district, behind the Jammu town and merges with the Indo Gangetic plains in the South. Out of the total 3097 sq.km geographical area northern hilly area consists of 1097 sq.km area which is about 35.4% of total district area. Altitude of the area varies between 400 and 700 m above mean sea level. On the other hand, Southern outer plains area located at the foot of the outer most Siwalik hills and it have an altitude which varies between 280m and 400m above mean sea level. Numerous seasonal nallahs travels across the area. The plains can further be divided into two parts, that is Kandi and Sirowal Belts. General altitude of the Kandi belt ranges between 320 to 400 m above the mean sea level. In Kandi area, water levels area quite deep, which is resulted into very less number of ground water structures i.e. dug wells and tube wells. The southern plainest tract of Jammu district is occupied by Sirowal belt, which has an altitude less than 320 m above mean sea level. (*Ground Water Information Booklet Jammu district, www.jammu.nic.in*)

6.1 ANNUAL DEPOSITION FACTOR:

Rivers are important geological agents for erosion, transportation and deposition. Deposition and erosion in river valleys can strongly modulate the downstream delivery of sediment (Fan and Cai, 2005; Malmon et al., 2005). A riverine sediment budget provides an effective conceptual framework within which to quantify sediment mobility, transport, deposition, and storage within a drain-age basin, as well as sediment output from the basin (Walling et al., 2002). It is therefore critical to understand this modulation effect (Walling and Horowitz, 2005). Annual deposition of riverbed materials depends on various factors which are as follows:

Geological erosion and soil erosion are the two basic terms used to describe erosion processes. Geological erosion refers to regular or natural erosion brought on by long-term geological processes that wear down mountains and produce floodplains, coastal plains, and other landforms to develop. Soil erosion happens gradually or at an alarming rate, but it is a continual process. It leads to various negative effects, including ongoing topsoil erosion, ecological harm, soil collapse, and many more.

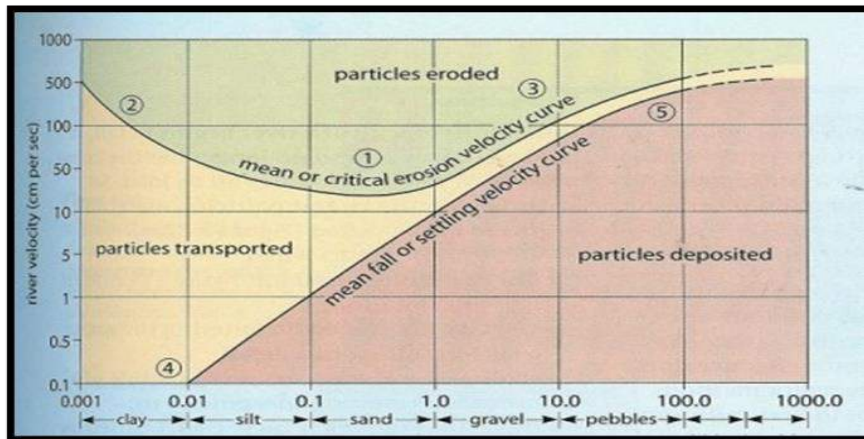
The soil fragments are loosening or being washed away in the valleys, oceans, rivers, streams, or far-off regions throughout this process. Human activities like agriculture and deforestation have contributed to this situation getting worse.

Fluvial erosion is the direct removal of soil particles by moving water. The force of the flowing water and the resistance of the bank material to erosion both affect the pace of fluvial erosion.

6.2 PROCESS OF DEPOSITION:

After erosion, the eroded materials get transported with running water. When the river losses its energy and velocity falls, the eroded material is deposited. A river can lose its energy when rainfall reduces, evaporation increases, friction close to river banks and when enters a shallow area (flood plain) or towards its mouth where it meets another body of water. Hjulström curve showing the relationship between particle size and the tendency to be eroded, transported or deposited at different current velocities.

FIGURE 2: HJULSTRÖM CURVE



Source: Sediment Petrology, Pettijohn

In this diagram, X-axis indicates the grain size in mm and Y-axis indicates the flow velocity of the river in cm. s^{-1} . The lower line of the diagram shows the relationship between flow velocity and particles in motion, with pebbles at 20-30 cm. s^{-1} , medium sand grains at 2-3 cm. s^{-1} , and clay particles at 0 cm s^{-1} . The grain size of particles can indicate the velocity at the time of sediment deposition. The upper line shows the flow velocity required to move a particle from rest, with smaller particles needing higher velocity to move them below coarse silt size due to the properties of clay minerals, which dominate the fine fraction in sediment. Clay minerals are cohesive and stick together, making it difficult to entrain them in a flow. The behavior of fine particles in a flow which has important consequences for deposition in natural depositional environments. Mud can accumulate in any setting where flow stops for long enough for clay particles to be deposited, and resumption of flow does not re-entrain the deposited clay unless the velocity is relatively high. Alterations of mud and sand deposition are seen in intermittent environments, such as tidal settings.

6.2.1. MODE OF SEDIMENT TRANSPORT IN RIVERS

Sediment transport is the transportation of detrital particles via air, water, ice, or gravity. When transported by air and water (fluid transport), grains (which may be sand particles) travel as a bed load (by rolling, sliding, and saltation) or in suspension when the turbulence keeps the grains moving.

The amount and size of sediment moving through a river channel are determined by three fundamental controls: competence, capacity and sediment supply.

The sediment load of a river is transported in various ways although these distinctions are to some extent arbitrary and not always very practical in the sense that not all of the components can be separated in practice:

- i. Dissolved load
- ii. Suspended load
- iii. Saltation load
- iv. Wash load
- v. Bed load

6.2.1.1 DISSOLVED LOAD: The amount of sediment carried in solution by a stream's total sediment load, particularly ions from chemical weathering, is known as the dissolved load. Along with suspended load and bed load, it makes up a significant portion of the overall number of debris removed from a river's drainage basin.

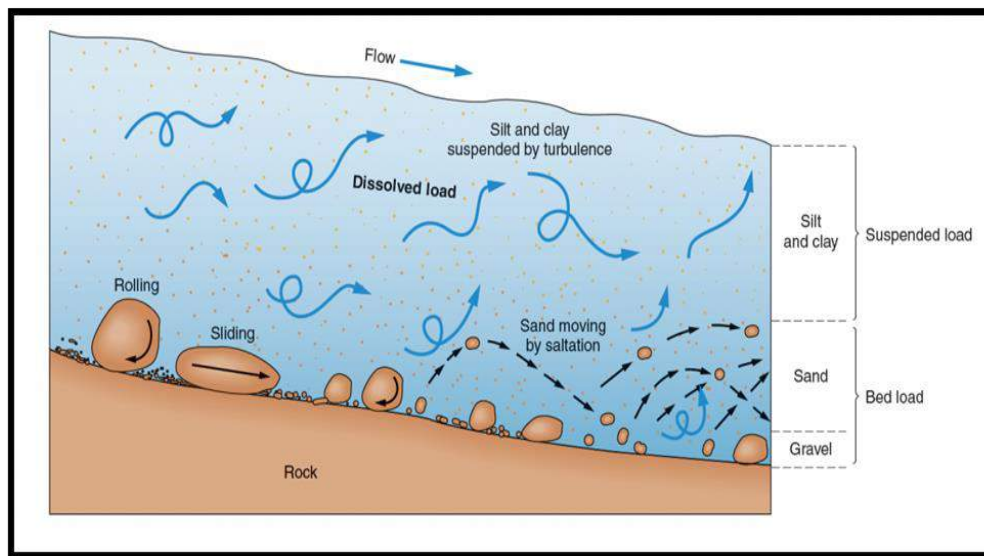
6.2.1.2 SUSPENDED LOAD: The term "suspended load" describes the portion of the total sediment transport that is kept suspended by turbulence in the flowing water for extended periods of time without contact with the stream bottom. Sometimes the particles may float on the surface of the water and thus become the part of the fluid mass. The duration of a particle's suspension is determined by the intensity of turbulence and velocity of the river-flow. It is nearly moving at the same speed as the flowing water.

6.2.1.3 SALTATION LOAD: The portion of the bed load that is moving, either directly or indirectly, as a result of the impact of bouncing, i.e., the intermittent jumping motion of the particles due to presence of eddies, along the stream bed. The smaller particles show higher lift and longer jump.

6.2.1.4 WASH LOAD: Particle sizes smaller than those found in substantial amounts in the bed material make up that portion of the suspended load. It is conveyed through the stream without deposition since it is in almost permanent suspension. The discharge of the wash load through a reach is determined solely by the rate at which these particles become available in the catchment area, not by the flow's transport capacity.

6.2.1.5 BED LOAD: Particles that are too large to be carried as suspended load are bumped and pushed along the stream bed as bed load. The larger particles move close to the surface floor by rolling or sliding and occasional low leap. Bed load sediments do not move continuously. Streams with high velocity and steep gradients do a great deal of down cutting into the stream bed, which is primarily accomplished by movement of particles that make up the bed load.

FIGURE 3: MODE OF SEDIMENT TRANSPORT IN RIVERS



Source: [https://www.bgs.ac.uk/discovering-geology/geological-processes/deposition/#:~:text=Deposition%20is%20the%20laying%20down,sea%20shells\)%20or%20by%20evaporation.](https://www.bgs.ac.uk/discovering-geology/geological-processes/deposition/#:~:text=Deposition%20is%20the%20laying%20down,sea%20shells)%20or%20by%20evaporation.) (British Geological Survey)

6.3 DRAINAGE SYSTEM WITH A DESCRIPTION OF MAIN RIVERS

The major rivers of the district are Chenab, Jammu Tawi, Munwar Tawi and Basantar. These rivers are the major drainage lines of the district. One of the rivers Manwar Tawi which comes from the Rajouri district it drains a very small part in the extreme west of the district and after that it enters Pakistan. Another river Chenab which comes from Udhampur drains the central part of the district and then in the district it divides into many tributaries and then left the district. Lastly Tawi river come from the Doda district drains the Jammu district. Other than these rivers, innumerable seasonal nallas are present in the district traverse the area which are generally boulder laden and have broad shallow channels having water only for short time after rains. All major rivers coming from the hills pass through Outer Plains and enter the Pakistan territory.

River Chenab

This river originates from the Bara & Chota Shigri Glacier in the Lahaul- Spiti part of the Pir Panjal range of Himachal Pradesh. The river Chenab or Chandrabhaga is formed by joining of two rivers the Chandra and the Bhaga at an altitude of 4900 AMSL. The Chandra River comes from the south-west part of Barelacha pass and the Bhaga River comes from the north-west part of Barelacha pass of Lahul and Spiti valley in Himachal Pradesh. The Chandra River flows of about 88 km round base of the mid-Himalayas and joins the Bhaga at Tandi. Before joining with the Chandra River, the Bhaga River flows about 80 km forming a steep slope with an average fall. After forming the Chandra bhaga it flows in a north-westerly way for about 46 km and the first major tributary the Miyar Nalla joins on the right bank. It flows then in northerly direction of about 90 km and crosses the Pangi valley and confluence with Bhuttna river in Padder area of Doda district of Jammu province in Jammu & Kashmir by leaving the Himachal Pradesh. After entering to the Jammu & Kashmir it runs in northwest direction for a distance of 56 km and joined with the biggest tributary, the Marusudar at Bhandalkot at right side. Thirot, the Sohal, the Bhut nallah, the Liddrari and the Marusudar are the main tributaries that joins in Kishtwar district. There are seven tributaries present in the Jammu district which are proposed for grant of Mineral Concession. Those are Kathar wali Khad, Sumah wali Khad, Tande wali Khad, Jamota/ Kodey wali Khad, Jad wali Khad, Khour/Lawakiwali Khad, Chowki Choura wali Khad. The river enters in this district at the latitude 32°1'58.57"N and longitude 74°42'44.51"E. The river takes a southern direction going further downstream. Going upto 34 km up to Thathri Niru Nallah joins the Chenab on its left bank and then going towards northwest direction for another 41 km till it receives a tributary Bichleri on the right bank. After that it turns in westerly direction for a distance of about 50 km. In this way some small streams Chaini, Talsuen and Ans joins in the right bank and Yabu Nallah, Mandial and Painthal Khad on the left bank. After meeting with Ans river it changes its course path and turns southerly of about 45 km up to Akhnoor of Jammu. The river finally enters Pakistan. The total length of this river in India is 504 km.

River Tawi

Tawi river originates from Kailash Kund spring at Seoj hills in Bhaderwath. Tawi passes through Jammu. The stream finally flows into Pakistan and then joins Chenab there. It flows through the Seoj Dhar meadows in Doda district. The river is about 141 km long and it runs through steep hills. It is about 300m wide at the Tawi Bridge in region. The total catchment area of the river up to Indian border (Jammu) is 2168 km². Elevation in the catchment varies between 400 and 4000 m. The river is drained with Jajhar Nalla and Gambhir Khad of Jindrah range. Nagrota block of Jammu range is drained by khads like Simbal Lahir Khad, Pungaliwali khad, Chirua Nala, Balin Nallah. Those all khads and Nallah joined with Tawi River. Sardan Nallah, Surawali Khad, Bainwali Khad and

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Siddrayanwali khad are flowing through the northern part of Bahu-Mahamaya range. South-western part of the range is drained by Bhitindiwali Khad, Tutanwali Khad, Chhatawali khad, baiwal Nallah and Bari khad all joining river Tawi. The river that travels the city and divides it into two parts that is the old town and the new town. The main tributaries of Tawi river which are for grant of Mineral Concession: Tawi River Kisnpur Manwal, Sardhan nallah, Baleniwali Khad, Suketer Nallah, Jagti wala Nallah, Dami Nallah, Simbal Lahar Nallah, and Kheri Dadya Nallah.(Source: District Survey Report, Jammu District, State of India's Rivers for India Rivers Week, 2016, Jammu & Kashmir,)

FIGURE 4: DRAINAGE MAP OF THE DISTRICT

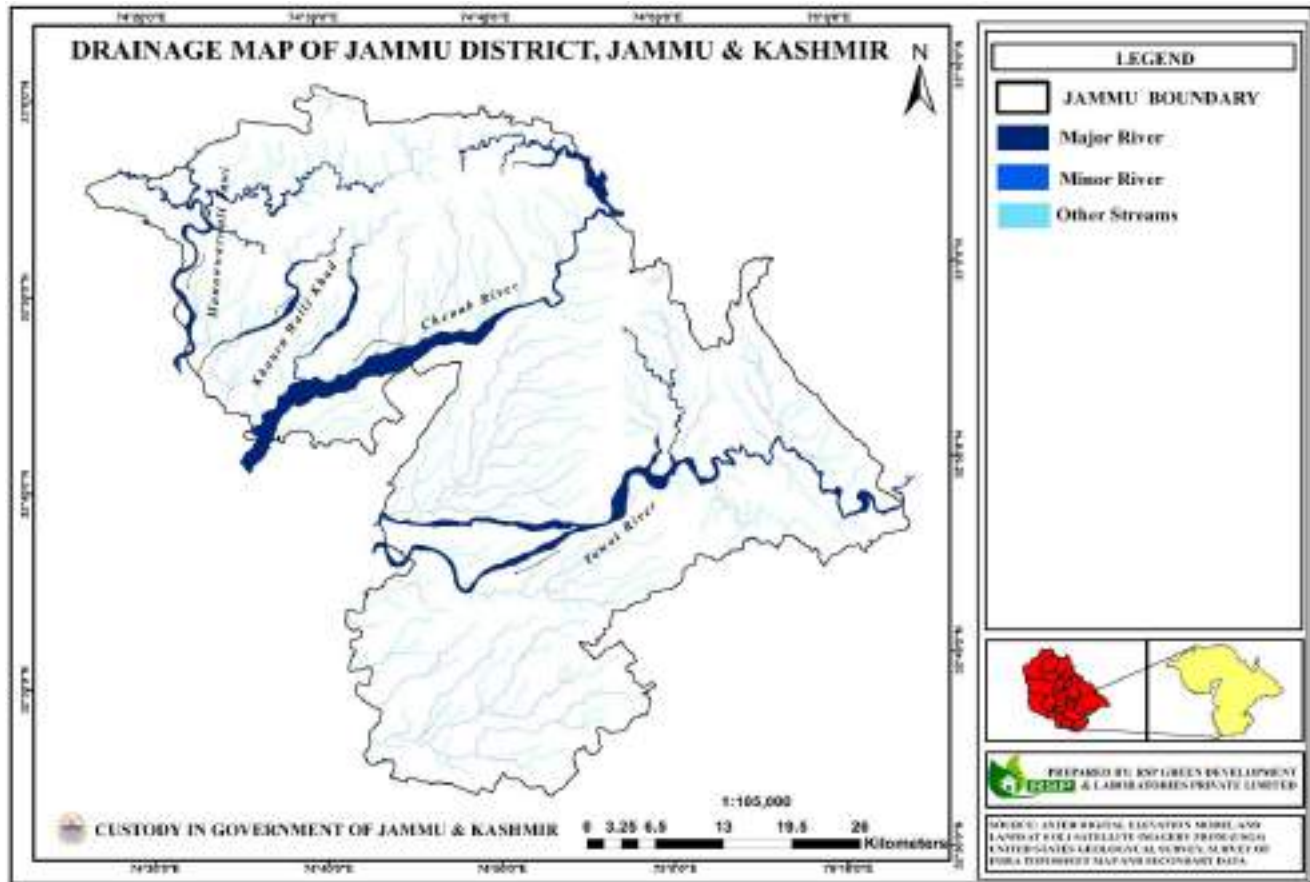
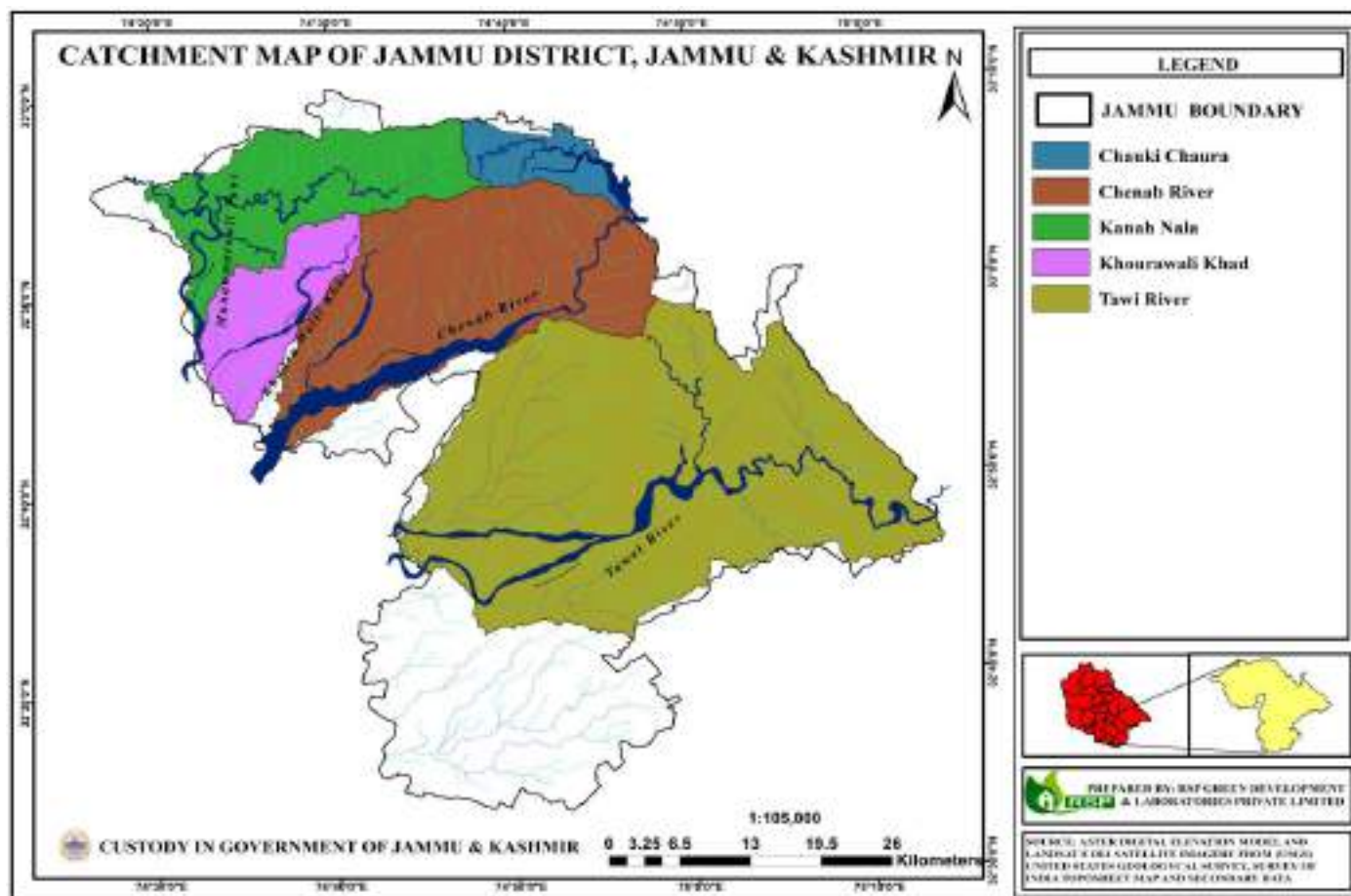


FIGURE 5: CATCHMENT MAP OF THE DISTRICT



Rivers

Some rivers that flow through this region are listed below:

Table No. 9: List of Rivers flowing through the District

Sl. No.	Name of the River/ khad
1	Tawi river
2	Chenab
3	Nala Palkhu
4	Bainwali Khad
5	Surewali Khad
6	Sardan Nalah
7	Siddrayanwali Khad
8	Jagti Nalah
9	Chairua Nallah
10	Dhokwaziran
11	Simbal Lahir Khad

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12	Pungaliwali KHad
13	Balin Nalah
14	Khanpur Khad
15	Sammahwali Khad
16	Mawawali Khad
17	Thindewali Khad
18	Lauki Khad
19	Tanderwali Khad
20	Targual Khad
21	Naryah Khad
22	Kupahi Khad
23	Manoa Tawi
24	Jandiali Khad
25	Ramni Khad

(Source: RMB report 2021-2022 of Jammu & Kashmir)

Table No. 10: Drainage system with description of main rivers

Sl. No.	Name of the river	Area drained (Sq. Km)	% Area drained in the District
1	Chenab	457	14.76
2	Tawi	937	30.26
3	Chowki Choura Khad	66	2.13
4	Khoura wali Khand	132	4.26

(Source: DEM Image and Google Earth)

Table No. 11 (part -1): Salient features of important rivers and streams of Jammu

River	Name of the river or stream	Total length in district (in Km)	Place at which river enter District/Origin of Khad	Altitude of river enter District/Origin of Khad
Chenab River	River Chenab	51.3 Km	Lahul Spite Chamba 33°1'58.57" 74° 42'44.51"	1183ft
	Katharwali Khad	10.82	33° 1'36.43" 74° 40' 1.01"	1605ft
	Chowki Choura wali Khad	10.8 km	33° 1' 16.87" 74°40'1.01"	1701ft
	Jadwali Khad	20.7 km	33° 56' 11.09" 74°35'34.58"	1428 ft
	Khour/Lawakiwali Khand.	19.13	32° 55' 28.52" 74°33'36.33"	1405 ft
	Sumah wali Khad	10 km	32°58' 12.33" 74°39'32.19"	1878 ft

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	Tande wali Khad.	12.80 km	32°56' 51.14" 74°37'17.66"	1657 ft.
River Tawi	River Tawi	72 Km	32°47'2.00" 75°09'21.00"	1510 ft.
	Sardhan Nallah	7.85	32° 44' 42" 75°00'30"	4480 ft.
	Tawi River Kisnpur Manwal.	8.2 km	32° 47'2.00" 75°09'21.00"	1510 ft.
	Beleniwali Khad	16.15 Km	32° 47'2.00" 75°09'21.00"	1650 ft.
	Challni Nallah/Jagti wala Nallah/Dami Nallah	-	-	-
Aik Nallah	Aik Nallah	40.85 Km	32° 32' 19.68" 75°0'46.10" Extraction Point 32°32'2.56" 74°09'33.80"	1198 ft

(Source: District Survey Report, Jammu District)

Table No. 11 (Part-2): Salient Features of Important Rivers and Streams

Boulder (MT)/Bajri (cum)	Sand (cum)	Total Mineral Potential (cum)
4327020	2884680	7211700
Annual Deposition		
2421810	1614540	4036350

(Source: Table No.24)

- The X-Sections at the location of depositions where mining blocks are in operation and where future mining activity shall be prescribed is in **ANNEXURE-IX**.
- Post-Monsoon L-Section, X-Section with RLs of streams at places of deposition in rivers is in **ANNEXURE-IX**.

6.4 PERMANENT BENCH MARKS WITH GEO-COORDINATES

Table No. 12: Permanent Bench Marks with Geo-Coordinates

SL NO.	BENCHMARK CODE	LOCATION NAME	COORDINATES	ELEVATION (m)	NEAREST RBM ZONE CODE
1	BM_CHENAB_01	AKHNOOR BRIDGE, TOP SLAB LEVEL	32°53'56.24"N 74°45'7.47"E	317	JK_JMU_CHN_01 to JK_JMU_CHN_04
2	BM_TAWI_01	TAWI RIVER BRIDGE, TOP SLAB LEVEL	32°46'38.71"N 75° 8'38.41"E	450	JK_JMU_TW_01 to JK_JMU_TW_8
3	BM_JHADKHAD_01	GOVT PRIMARY SCHOOL DHOK KHALSA, GROUND LEVEL	32°52'43.82"N 74°34'41.40"E	373	JK_JMU_JD_01 to JK_JMU_JD_07
4	BM_KHOURA WALLI KHAD_01	DHILERI BRIDGE, TOP SLAB LEVEL	32°52'0.69"N 74°31'50.14"E	309	JK_JMU_KWK_01 to JK_JMU_KWK_05
5	BM_CHHIBBE WALI KHAD_01	MAJRA KOTLI BRIDGE, TOP SLAB LEVEL	32°51'11.12"N 74°54'31.89"E	403	JK_JMU_CW_01
6	BM_CHAUKI CHAURA_01	MONOHA MEDILL SCHOOL, GROUND LEVEL	33° 2'15.96"N 74°45'35.22"E	392	JK_JMU_CKH_01 to JK_JMU_CKH_04 and JK_JMU_KHND_01

(Source: Field survey and DGPS Data)

*The location Map of benchmark is in **ANNEXURE-VIII**.

6.5 ESTIMATION OF DEPOSITS AND REPLENISHMENT STUDIES

Replenishment defines rejuvenation of riverbed sand deposition phenomena. The word replenishment is the fulcrum of riverbed sedimentation under different depositional environmental conditions especially during rainy seasons.

The rate of gross or absolute silt production (erosion) in the watershed and the ability of the stream system to transport the eroded material in a river have a direct relation with the quantity of sediment delivered into a river. The rate of gross erosion is dependent upon many physical factors like climatic conditions, nature of soil, and slope of the area, topography and land use. Hydro-physical conditions of the watershed govern the capability of transporting the eroded material. It has been observed that the average rate of sediment production decreases as the size of drainage area increases. And also, larger the watershed, the lesser is the variation between the rates. The larger watershed presents more opportunity for deposition of silt during its traverse from the point of production. The watershed with maximum land use class of forest, generate very low rate of production unless the forests are degraded or open forest. The cultivated watersheds with unscientific farming produce very high rate of silt production. The total amount of eroded material, which reaches a particular hydraulic control point, is termed as sediment yield. The rotational mining is being adopted to facilitate the replenishment of the excavated pits during rainy season. Thus, the mineable area is to be divided in two blocks i.e., the upstream block and the downstream block. The mining of these blocks is suggested on rotation basis in such a way that pit of previous year mining will act as depository for the monsoon season. Sand is extracted from the said lot during one year; more than the extracted quantity of the same are automatically replenished by rainfall in the monsoon by the river/nallah itself on account of its flow and velocity.

For sustainability of river sand mining, it is necessary that the mine pits formed as a result of sand excavation are refilled with sand by natural process of replenishment in a reasonable period of time so that the area is again available for mining. The rate of excavation should be decided in accordance with the rate of replenishment which is the rate at which sand/gravel is deposited on the river flood plain by the river during monsoon season. However, determination of site- specific rate of replenishment is quite difficult as it is dependent on several factors such as geology and topography of the catchment area of the river, breadth of the flood plain, rainfall in that particular year (which is quite variable and not very much predictable much in advance) etc. Dandy-Bolton formula is generally used to calculate the sediment yield. But it is to be kept in mind that to prepare the mining plans of the mines, the factor of annual replenishment is to be taken into consideration while calculating the mineral reserves. It has also been observed that during flooding, all the pits replenish with sand. Hence, mined out areas in the pre- monsoon season will be completely replenished with sand during monsoon. Therefore, it has been assumed that the pits will be replenished after each monsoon.

Base Flow is influenced by incoming groundwater to aquifers and is closely related to watershed characteristics. Understanding baseflow characteristics is of great importance to river ecosystems and water management. Baseflow is the portion of stream flow that is delayed subsurface flow and generally maintained by groundwater discharge. Regardless of the specific climatic environment, its main features are tightly related to geological catchment properties. Understanding the baseflow process is important to deal with various water resource issues, such as water resources management strategies, low flow conditions assessment, hydrological modeling calibration, and water quality studies. However, no direct approach exists for continuously measuring the variability of streamflow recession under different conditions and the corresponding baseflow, because the baseflow is usually affected by diverse climatological and geological factors, with considerable variations in spatio-temporal watershed characteristics (e.g., geology, land use, soil type, etc.) and climatic conditions

influence baseflow discharge to streams. Addressing such processes requires quantitative estimates of baseflow discharge across a gradient of watershed types. The development of quantitative methods for baseflow estimation is also necessary to understand water budgets (Stewart et al., 2007), estimate groundwater discharge (Arnold and Allen, 1999) and associated effects on stream temperature (Hill et al., 2013), and address questions of the vulnerability and response of the water cycle to natural and human-induced change in environmental conditions, such as stream vulnerability to legacy nutrients (Tesoriero et al., 2013). Given the importance of baseflow, many methods have been used to quantify the baseflow component of stream discharge beginning with Boussinesq (1877). Approaches for baseflow estimation can be grouped into two general categories: graphical hydrograph separation (GHS) methods, which rely on stream discharge data alone, and tracer mass balance (MB) methods, which rely on chemical constituents in the stream, stream discharge, and the streamflow end-member constituent concentrations (runoff and baseflow). Many different approaches for GHS exist, including recession curve methods and digital filter methods. Recession curve methods are generally considered more objective than digital filter methods because they provide an assumed integrated signal of basin hydrologic and geologic characteristics through identification of a linear recession constant based on the falling limb of the hydrograph (Barnes, 1939; Hall, 1968; Gardner et al., 2010).

However, in context of the rivers of district, the volume (weight) of the precipitated sand has been derived during Pre-monsoon and Post-monsoon period along with the thickness of the sand layers deposited in the respective periods. But, to erect hydrograph model which is essential for estimation of depth of base flow, data on daily discharge of water volume (weight) is required. Hence, it can be proposed that if these data are provided from the concerned authority of the state government (secondary data- already requested for providence), depth of base flow as well as the hydrograph model can be estimated. The quantitative estimation of the depth of base flow cannot be done due to absence of data. But a relative comparison between the mining depth and depth of baseflow has been done on the basis of collected data by making pit on the river bed.

Usually, replenishment or sediment deposition / depletion quantities can be estimated in the following ways:

- Direct measurement of the sand bar upliftment;
- Monitoring of the new sand bars created in the monsoons within the channel;
- Elimination of sand bars during the monsoon etc.;

With systematic data acquisition over a period of several years, regression equations can be developed for modeling of the sediment yield and annual replenishment with variable components.

Several theoretical and empirical formulae can be used for the calculation of catchment runoff and sedimentation loads as thumb rules. Sedimentation in riverbeds depends on catchment areas / characteristics, peak flood of the river. Some of the common empirical formulae used for rough estimation of the Catchment runoffs, Peak Discharge, Bed load transportation and sediment yields for replenishment studies are as under:

6.5.1 COMMON METHODS FOR REPLENISHMENT:

- ❖ List of instruments: DGPS, GPS and Hammer.
- ❖ List of software: ARC GIS, Google Earth, Microsoft and Google Maps.

➤ **CATCHMENT YIELD CALCULATION**

The total quantity of surface water that can be expected in a given period from a stream at the outlet of its catchment is known as yield of the catchment in that period. The annual yield from a catchment is the end product of various processes such as precipitation, infiltration and evapotranspiration operating on the catchment. Catchment Yield can be estimated using following formula:

$$\text{Catchment Yield (m3)} = \text{Catchment area (m2)} * \text{Runoff coefficient (\%)} * \text{Rainfall (mts/annum)}$$

The runoff generated from a watershed is estimated using Strange's Tables Method to get obtain approximate yield results. Runoff from a catchment is dependent upon annual rainfall as well as catchment area and characteristics such as soil types and the type of groundcover / land usage. Remote sensing is used for demarcation of catchment boundaries and computation of catchment area relevant to the drainage system. Strange's table is used to determine the Runoff coefficient of the catchment.

➤ **PEAK FLOOD DISCHARGE CALCULATION**

The term "peak discharge" stands for the highest concentration of runoff from the basin area. The accurate estimation of flood discharge remains one of the major challenges as it depends upon physical characteristics of the catchment area and the flood intensity, duration and distribution pattern. There have been many different approaches for determining the peak runoff from an area. As a result, many different models (equations) for peak discharge estimation have been developed. Formulae used for Peak Discharge calculation are as below:

i. As per Dicken's formula, $Q = CA^{3/4}$

Where: **Q** is Maximum flood discharge (m³/sec); **A** is Area of catchment in Sq. Km and **C** is Constant whose value varies widely between 2.8 to 5.6 for catchments in plains and 14 to 28 for catchments in hills

ii. As per Jarvis formula, $Q = CA^{1/2}$

Where: **Q** is Maximum flood discharge (m³/sec); **A** is Area of catchment in Sq. Km and **C** is Constant whose value varies between 1.77 as minimum and 177 as maximum. Limiting or 100 percent chance floods are given by the value of C of 177.

iii. As per Rational formula, $Q = CIA$

Where: **Q** is Maximum flood discharge (m³/sec); **A** is Area of catchment in Sq. Km and **C** is the Runoff coefficient (ratio of runoff to total rainfall) which depends on the characteristics of the catchment area.

I is Intensity of rainfall (in m/sec).

➤ **BED LOAD TRANSPORT CALCULATION**

The most difficult problem in river engineering is to accurately predict bed load transport rates in torrential floods flowing from mountainous streams. Three modes of transport namely; rolling, sliding and saltation may occur simultaneously in bed load transport. The different modes of transportation are closely related, and it is difficult, if not impossible, to separate them completely. There are a number of equations to compute the total sediment load. Most of these equations have some theoretical and empirical bases.

i. Ackers and White Equation:

Ackers and White (1973) used dimensional analysis based on flow power concept and their proposed formula is as follows.

$$Ct = Cs Gs (d50/h) (V/U^*) n' [(Fgr/A1) - 1] m$$

The dimensionless particle dgr is calculated by:

$$Dgr = d50 (g(Gs-1)/v^2)^{1/3}$$

The particle mobility factor Fgr is calculated by:

$$Fgr = (U^* n' / (Gs-1) g d50)^{1/2} * (V / (5.66 \log (10h / d50)))^{1-n'}$$

Where,

$A1$ = Critical particle mobility factor

Cs = Concentration coefficient in the sediment transport function

Ct = Total sediment concentration

$d50$ = Median grain size

dgr = Dimensionless particle diameter

Fgr = Particle mobility parameter

g = Acceleration of gravity

Ds, Sg = Specific gravity

h = Water depth

m = Exponent in the sediment transport function

n' = Manning roughness coefficient

U = Shear velocity

V = Mean flow velocity

v = Kinematic viscosity

ii. Meyer – Peter’s equation:

Meyer-Peter’s equation is based on experimental work carried out at Federal Institute of Technology, Zurich. Mayer-Peter gave a dimensionless equation based, for the first time, on rational laws. Mayer-Peter equations giving an empirical correlation of bed load transport rates in flumes and natural rivers. The simplified Meyer-Peter’s equation is given below:

$$gb = 0.417[\tau_0 (\eta' / \eta)^{1.5} - \tau_c]^{1.5}$$

Where,

gb = Rate of bed load transport (by weight) in N per m width of channel per second. η' = Manning's coefficient pertaining to grain size on an unrippled bed and Strickler formula i.e., $\eta' = (1/24) \times d^{1/6}$ where d is the median size (d₅₀) of the bed sediment in m.

η = the actual observed value of the rugosity coefficient on rippled channels. Its value is generally taken as 0.020 for discharges of more than 11 cumecs, and 0.0225 for lower discharges.

τ_c = Critical shear stress required to move the grain in N/m² and given by equation $\tau_c = 0.687 d \rho g$, where d is mean or average size of the sediment in mm. This arithmetic average size is usually found to vary between d₅₀ and d₆₀.

τ_0 = Unit tractive force produced by flowing water i.e., $\gamma_w R S$. Truly speaking, its value should be taken as the unit tractive force produced by the flowing water on bed = $0.97 \gamma_w R S$. R is the hydraulic mean depth of the channel (depth of flow for wider channel) and S is the bed slope.

➤ **SEDIMENT YIELD ESTIMATION**

Sedimentation occurs as the stream velocity decreases thus reducing its ability to carry sediment. Coarse sediments deposit first, which may then interfere with the channel conveyance and may cause rivers to meander and form distributaries. As the area of the flowing water increases, the depth decreases, the velocity is reduced, and eventually even fine sediments begin to get deposited. As a result, deltas may be formed in the upper portion of reservoirs. The deposited material may later be moved to deeper portions of the reservoir by hydraulic processes within the water body.

There are many sediment transport equations which are suitable for use in the prediction of the rate of replenishment of rivers. Some of the common equations used to estimate sediment yields are:

- Dandy – Bolton Equation
- Modified Universal Soil Loss Equation (MUSLE) developed by Williams and Berndt (1977)

Dandy – Bolton Equation:

The formula uses catchment area and mean annual runoff as the key variables. It does not differentiate between the characteristics of basins and streams.

Dandy and Bolton equation estimates all types of sediment yield i.e., through Sheet and rill Erosion, gully Erosion, Channel Bed and bank erosion and mass movement etc. Dandy- Bolton determined the combined influence of runoff and drainage area to compute the sediment yield. They developed two equations i.e., for run off less than 2 inches and for run off more than 2 inches, which are given below:

For run off less than 2 inches:

$$(Q < 2 \text{ in}) \quad S = 1289 * (Q)^{0.46} * [1.43 - 0.26 \text{ Log } (A)]$$

For run off more than 2 inches:

$$(Q > 2 \text{ in}): \quad S = 1958 * (e^{-0.055 * Q}) * [1.43 - 0.26 \text{ Log } (A)]$$

Where: S = Sediment yield (tons/sq miles/yr) Q = Mean Annual runoff (inch) A = Net drainage area in sq mile

Modified Universal Soil Loss Equation (MUSLE):

Modified universal soil loss equation (MUSLE) for estimation of sediment yield is also used widely. MUSLE is a modification of the Universal Soil Loss Equation (USLE). USLE is an estimate of sheet and rill soil movement down a uniform slope using rain- fall energy as the erosive force acting on the soil (Wischmeier and Smith 1978). Depending on soil characteristics (texture, structure, organic matter, and permeability), some soils erode easily while others are inherently more resistant to the erosive action of rain- fall.

MUSLE is similar to USLE except for the energy component. USLE depends strictly upon rainfall as the source of erosive energy. MUSLE uses storm-based runoff volumes (weight) and runoff peak flows to simulate erosion and sediment yield (Williams 1995). The use of runoff variables rather than rainfall erosivity as the driving force enables MUSLE to estimate sediment yields for individual storm events. The generalized formula of MUSLE is as below:

$$Y=11.8*(Q*qP).56 *K*Ls*C*P$$

Where, Y = sediment yield of stream (t/yr/km²), Q = average annual runoff (m³), K = soil erodibility factor, qP = Highest discharge recorded (m³/s), Ls = gradient/slope length, C = cover management factor, P = erosion control practice.

6.5.2 REPLENISHMENT STUDY BASED ON SATELLITE IMAGERY

To delineate replenishment percentage in the river bed of the district, below mentioned steps have been followed.

➤ Satellite imagery studies

Satellite imagery study involves demarcation of sand/ RBM zones on riverbed of the district. Both pre and post monsoon images need to be analysed to established potential sand/ RBM zones.

➤ Field data collation

Field data collation was carried out during May- June for all the sand/ RBM zones on continuous basis for pre monsoon period and November – December for all the sand/ RBM zones on continuous basis for post monsoon period. In both the cases, relative elevation levels were captured through GPS/DGPS/ Electronic Total Station. Thickness of the sand/ RBM zones was measured through sectional profiles. The field survey for collect post-monsoon data has been conducted November- December time period in 2023 while preparing the District Survey Report of Jammu district.

➤ Selection of study profiles

Study profiles are selected based on the occurrence of the sand / RBM zones in the channel profiles. Aerial extents of each of the profiles are mapped from satellite imageries. Frequency distribution did while selection of the ground truthing of the zones.

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➤ **Data compilation:**

Following data were compiled for generation of this annual replenishment report:

- Elevation levels of the different sand/ RBM zones as measured at site.
- Extents of the sand/ RBM zones are measured from the pre monsoon satellite imageries.
- Sand/ RBM zones production data of the district.

All these data were compiled while estimation of the replenished sand/ RBM zones in the district.

➤ **Assessment of sediment load in the river:**

Assessment of sediment load in a river is subjective to study of the whole catchment area, weathering index of the various rock types which acts as a source of sediments in the specific river bed, rainfall data over a period not less than 20 years, and finally the detail monitoring of the river bed upliftment with time axis. Again, the sediment load estimation is not a dependent variable of the imaginary district boundary, but it largely depends upon the aerial extents of the catchment areas, which crossed the district and state boundaries.



Picture of DGPS Survey in Sand / RBM zones.

6.5.3 METHODOLOGY FOR CALCULATING THE TOTAL POTENTIAL OF MINOR MINERAL IN THE RIVER BED ANNUAL DEPOSITION

For estimating the reserve of River Bed Material [Sand/Gravel (Minor Mineral)], the following parameters were considered:

- a) The volumes of the reserves are calculated on the basis of the established width, thickness and length of the deposit as per actual field data.
- b) The tonnage of the reserve quantity is obtained by multiplying the above volume with the bulk density of mineral to arrive at tonnes per cum (as per lab report).
- c) The depth of the reserves has been estimated considering the available deposit thickness and the water level/red line.

The same procedure shall be followed for acquiring post monsoon data, its reserve estimation and then correlating between pre and post monsoon volumes as per table given below:

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Table No.13: Estimation of Sand/ RBM zones Reserves in Pre & Post Monsoon periods in sand/ RBM zones

Estimation of Sand Reserves in Pre & Post Monsoon periods in sand bars										
Sl. NO.	Deposit zone code	Area in Sq. m.	Ave. Thickness (m)	Quantity (CUM)	Sl. NO.	Deposit zone code	Area in Sq. m.	Ave. Thickness (m)	Quantity (CUM)	Difference (cum) 'YY'
PRE-MONSOON					POST-MONSOON					
1	JK_JMU_TW_01	50900	1.7	86530	1	JK_JMU_TW_01	50900	3.04	154736	68206
2	JK_JMU_TW_02	92000	1.3	119600	2	JK_JMU_TW_02	92000	3.01	276920	157320
3	JK_JMU_TW_03	69000	1.1	75900	3	JK_JMU_TW_03	69000	3.05	210450	134550
4	JK_JMU_TW_04	98000	1.5	147000	4	JK_JMU_TW_04	98000	3.06	299880	152880
5	JK_JMU_TW_05	99000	1.5	148500	5	JK_JMU_TW_05	99000	3.07	303930	155430
6	JK_JMU_TW_06	77000	1.4	107800	6	JK_JMU_TW_06	77000	3.02	232540	124740
7	JK_JMU_TW_07	64000	1.8	115200	7	JK_JMU_TW_07	64000	3.03	193920	78720
8	JK_JMU_TW_08	82000	1.3	106600	8	JK_JMU_TW_08	82000	3	246000	139400
Total				907130	Total				1918376	1011246
1	JK_JMU_CHN_01	96000	1.4	134400	1	JK_JMU_CHN_01	96000	3	288000	153600
2	JK_JMU_CHN_02	92000	1.3	119600	2	JK_JMU_CHN_02	92000	3	276000	156400
3	JK_JMU_CHN_03	99000	1.9	188100	3	JK_JMU_CHN_03	99000	3.1	306900	118800
4	JK_JMU_CHN_04	93000	2.2	204600		JK_JMU_CHN_04	93000	3.07	285510	80910
Total				646700	Total				1156410	509710
1	JK_JMU_CKH_01	95000	1.3	123500	1	JK_JMU_CKH_01	95000	3.11	295450	171950
2	JK_JMU_CKH_02	86000	1.2	103200	2	JK_JMU_CKH_02	86000	3.1	266600	163400
3	JK_JMU_CKH_03	87000	1	87000	3	JK_JMU_CKH_03	87000	3.09	268830	181830
4	JK_JMU_CKH_04	53000	1.3	68900	4	JK_JMU_CKH_04	53000	3.05	161650	92750
Total				382600	Total				992530	609930
1	JK_JMU_KHND_01	63000	1.1	69300	1	JK_JMU_KHND_01	63000	3	189000	119700
Total				69300	Total				189000	119700
1	JK_JMU_JD_01	46000	1.2	55200	1	JK_JMU_JD_01	46000	3.01	138460	83260
2	JK_JMU_JD_02	80000	1.05	84000	2	JK_JMU_JD_02	80000	3.02	241600	157600
3	JK_JMU_JD_03	94000	0.98	92120	3	JK_JMU_JD_03	94000	3.03	284820	192700

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4	JK_JMU_JD_04	62000	1	62000	4	JK_JMU_JD_04	62000	3	186000	124000
5	JK_JMU_JD_05	94000	1.2	112800	5	JK_JMU_JD_05	94000	3.04	285760	172960
6	JK_JMU_JD_06	87000	1.1	95700	6	JK_JMU_JD_06	87000	3.02	262740	167040
7	JK_JMU_JD_07	100000	1.1	110000	7	JK_JMU_JD_07	100000	3.03	303000	193000
Total				611820	Total				1702380	1090560
1	JK_JMU_KWK_01	99000	1.5	148500	1	JK_JMU_KWK_01	99000	3.12	308880	160380
2	JK_JMU_KWK_02	96000	1.2	115200	2	JK_JMU_KWK_02	96000	3.08	295680	180480
3	JK_JMU_KWK_03	66000	1.3	85800	3	JK_JMU_KWK_03	66000	3.02	199320	113520
4	JK_JMU_KWK_04	75000	1.1	82500	4	JK_JMU_KWK_04	75000	3.03	227250	144750
5	JK_JMU_KWK_05	97000	1	97000	5	JK_JMU_KWK_05	97000	3.01	291970	194970
Total				529000	Total				1323100	794100
1	JK_JMU_CW_01	12000	2.4	28800	1	JK_JMU_CW_01	12000	3.01	36120	7320
Total				28800	Total				36120	7320

Source: Field Survey and DGPS data

* The premonsoon data collected from the District Mining Office.

** The negative sign in difference (CUM) column indicates the washout of material from that particular block

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Table No.14: Sediment Load Comparison Pre & Post monsoon period for different rivers of Jammu District

River Name	Pre-monsoon No of Ghats	Post-monsoon No of Ghats	Pre-monsoon Sediment Load (CUM)	Post-monsoon Sediment Load (CUM)	Difference (CUM) 'YY'	Percentage Variance (%) (Postmosoon - Premosoon / Postmonsoon *100)
TAWI RIVER	8	8	907130	1918376	1011246	53
CHENAB RIVER	4	4	646700	1156410	509710	44
CHAUKI CHAURA	4	4	382600	992530	609930	61
KHARANDRA KHAD	1	1	69300	189000	119700	63
JAD KHAD	7	7	611820	1702380	1090560	64
KHOURA WALLI KHAD	5	5	529000	1323100	794100	60
CHHIBBE WALI KHAD	1	1	28800	36120	7320	20
			3175350	7317916	4142566	

Source: Field Survey and DGPS data

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• **No mining Zone**

Mining of river bed materials is prohibited in some places on the river channel due to presence of notable landmarks like, sanctuary or national parks, forests, bridge/public civil structure or highways.

A definition of a protected area was established by IUCN in 1994, which is described as

“An area of land and /or sea especially dedicated to the protection and maintenance of biological diversity, and of natural and associated cultural resources, and managed through legal or other effective means.”

As per the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020 the restricted zone for mining is a distance from the bank is ¼th of river width and not be less than 7.5 meters. Also, there is a no mining zone up to a distance of 1 kilometre (1 km) from major bridges and highways on both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on upstream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.

No mining zone has been marked for an area up to a width of 100 meters from the active edge of embankments. Also, the concave side of the river is marked as no mining zone, as mining in this area will affect the course of river in future and will erode the river bank.

Mining has a range of environmental consequences for protected areas, whether operations are undertaken within them or nearby. The types of impact may be listed as follows:

- Direct land take and loss of vegetation cover in the mined area and other parts directly affected by associated activities such as deposition of tailings, or consequences such as subsidence;
- Pollution affects, especially on water supplies, aggravated by accidents (e.g., to tailing dams);
- Impacts due to access associated with mining (roads, railways, pipelines, power lines etc.), which permit illegal hunting, habitat fragmentation and alien invasions;
- Secondary effects of human immigration in association with real or perceived livelihood opportunities (e.g., on water supplies, illegal hunting, harvesting of vegetation, alien invasions, illegal land settlements);
- Impacts on other protected area values from noise and visual intrusion, arising from both mining and secondary activities, including transportation.

The 2020 guidelines for sand mining stress on protecting rivers and habitats of species including turtles and calls for such sensitive areas to be declared as no-mining zones. It also called for using the latest technology for surveillance of illegal mining as well as estimating minable reserves.

A United Nations Environment report has said that, led by China and India, the world is mining sand at unsustainable levels exceeding the replenishment rate and that can have far-reaching social and environmental implications. Unsustainable sand mining practices are rampant in India. Despite a set of guidelines in 2016 to curb the practice, illegal and unsustainable sand mining has continued to be common, spurring the Indian government to take another step toward enforcing rules. The environment

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ministry has now come out with, Enforcement & Monitoring Guidelines for Sand Mining 2020“ to regulate sand mining and check illegal mining.

This comes four years after the Government’s Sustainable Sand Management Guidelines 2016, which was unsuccessful in putting an end to rampant illegal sand mining across the country. The latest guidelines suggest the use of technologies like drones with night vision for surveillance of sand mining sites, steps to identify sources of sand, procedures for replenishment of sand, post environmental clearance monitoring of sand mining sites, a procedure for environmental audit of such areas and steps to control the instances of illegal mining.

Among these, the focus on monitoring of sand mines after environment clearance is considerable given that so far it has been an area where the performance of authorities, central or state, is considered very poor.

The need for the latest version of the guidelines was felt after illegal and unsustainable sand mining continued despite the 2016 guidelines and many court cases. Since 2016, the National Green Tribunal, in many of the cases, stressed on the need of regulating sand mining and passed several orders. The court in some cases even expressed concern over the death of officials who tried to stop illegal mining and noted that on the ground level, illegal mining is still going on. The guidelines are thus a result of many such orders by the NGT wherein the tribunal passed directions to control it.

The new guidelines also laid special emphasis on the protection of rivers and species from sand mining as it called for surveys for identifying the stretches with freshwater turtles or turtle nesting zones. “Similarly, stretches shall be identified for other species of significant importance to the river ecosystem. Such stretches with adequate buffer distance shall be declared as no-mining zone and no mining shall be permitted,” the guidelines said.

It also called for a survey report in every district for identifying the sand bearing area but also the “mining and no mining zones” considering various environmental and social factors like the distance of the mining area from the protected area, forest, bridges, important structures and habitation. According to the Sand Mining Framework 2018 of the central Government’s Ministry of Mines, in India, there is a shortage of sand in the country, similar to the situation in other developed and developing countries. It estimated that the demand of sand in the country is around 700 million tons (in the financial year 2017) and it is increasing at the rate of 6-7 percent annually even as the quantity of natural generation of sand is static.

Due to uncertainties and inadequateness in supply, the selling rate of the material varies significantly leading to black marketing and illegal mining of the mineral. It noted that illegal and uncontrolled extraction of sand has an adverse environmental impact.

Protect the rivers from illegal sand mining

The main sources of sand in India are considered to be rivers (riverbed and flood plain), lakes and reservoirs, agricultural fields, coastal/marine sand and manufactured sand.

The guidelines focus on identifying sand mining sources, its quantification and feasibility for mining considering various environmental factors like proximity of protected area, wetlands, creeks, forest etc. and presence of important structures, places of archaeological importance, habitation, prohibited area

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etc.

To protect the rivers from illegal sand mining, the guidelines said that abandoned stream channels on the floodplains should be preferred rather than active channels and their deltas and floodplains.

A kml file has been made to represent “No-mining-Zone” in the district.

6.5.4 TOTAL POTENTIAL OF MINOR MINERAL IN THE RIVER BED ANNUAL DEPOSITION

According to Sustainable Sand Mining Guidelines, 2016 and Enforcement & Monitoring guidelines, for Sand Mining, 2020 mining depth of the mining zones are 1 meter for hilly area.

The annual deposition of riverbed minerals is shown in the Table given below.

Table No. 15: Annual deposition

River Name	Zone	Type of Material	Quantity in CUM (as per YY)	60% of quantity in CUM
TAWI RIVER	8	RBM	1011246	606747.6
CHENAB RIVER	4	RBM	509710	305826
CHAUKI CHAURA	4	RBM	609930	365958
KHARANDRA KHAD	1	RBM	119700	71820
JAD KHAD	7	RBM	1090560	654336
KHOURA WALLI KHAD	5	RBM	794100	476460
CHHIBBE WALI KHAD	1	RBM	7320	4392
			4142566	2485539.6

1. Riverbed minerals zone area recommended for mineral concession in the above table has been calculated as per the Enforcement & Monitoring Guidelines for Sand Mining (EMGSM) 2020.
2. As per guidelines, mining depth has been restricted to 3 meters depth and distance from the bank is ¼th of river width and not be less than 7.5 meters.
3. Also, mining is prohibited up to a distance of 1 kilometer (1 km) from major bridges and highways on

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both sides, or five times (5x) of the span (x) of a bridge/public civil structure (including water intake points) on up-stream side and ten times (10x) the span of such bridge on down-stream side, subjected to a minimum of 250 meters on the upstream side and 500 meters on the downstream side.

4. Riverbed minerals zone deposits acting as potential sites for sand mining along with other aspects as mentioned above are illustrated in Satellite images in **Annexure VIII**.

6.5.5 DETAILS OF POTENTIAL SOURCES / SITES OF RIVER BED MATERIAL

Potential sensitive sites for mining near forests, protected areas, habitation, bridges etc., shall be avoided. For this, a sub-divisional committee may be formed which after the site visit shall decide its suitability for mining. The list of mining leases as per the recommendation of the Committee needs to be defined in the following format given in as **Annexure –V**.

The Sub-Divisional Committee shall make recommendations regarding the suitability of all potential mining sites and also record the reason for approving the specific mining leases on the basis of its field inspections. The details regarding cluster and contiguous cluster formation will be provided as in **Annexure-VI**.

CHAPTER 7: GENERAL PROFILE OF THE DISTRICT

7.0 PROFILE OF THE DISTRICT

Jammu district is bound by Udhampur district in the north and north-east, Samba district in the east and southeast, Pakistan (Sialkote) in west and Rajauri district and POK (Bhimber) in the northwest. It is situated on a hillock, on the bank of river Tawi. This district is located 74°24' and 75°18', East longitude and 32°50' and 33°30' North latitude. District has a total geographical area of 3097 sq. km out of which 1097 sq. km is covered by hilly terrain and outer plains cover 2000 sq. km which comprises of Kandi and Sirowal belts. Shivalik Range, on the northern plains. District falls under sub- mountainous region. The city was originally founded the district with headquarter at Jammu town, lies between 32°33'07" & 33° 07'30" North latitudes and 74°27'00" & 77°21'00" East longitudes. It is approximately 600 Kms away from National Capital, New Delhi. The district is covered by Survey of India Degree Sheet No. 43K, L & P and Toposheet no. 43 L/5, 9, 10, 11, 13, 14 &15 and 43 P/1 & P/2.

Apart from knowing as 'winter capital of Jammu & Kashmir', it is also known as "City of Temples". It is believed that the city was originally founded by Raja Jamboo Lochan who lived in fourteenth century B.C. It is said that, the Raja had gone out one day for hunting when he happened to witness a tiger and a goat drinking water from the same pond. This extraordinary phenomenon set him thinking and he decided to build a city at this site so that the strong and weak could live together in peace and mutual tolerance. Eventually, he founded the city which came to be known as "Jamboo" after his own name. Jammu district derives its name from Raja Jambo lochan, "the founder of Jammu city". Due to its frequent use the pronunciation of the name got slightly distorted and by the time the city named as "Jammu" as it is now. (Source: Ground Water Information Booklet Jammu district, <https://jammu.nic.in>)

7.1 ADMINISTRATIVE SET UP OF THE DISTRICT

Administratively, the Jammu district is divided into twenty-one tehsils, eight Urban Local bodies and twenty blocks. This district has 805 villages and according to 2011 census data, Jammu district had population of 1,529,958 people in which 813,821 are males and 716,137 are female. The city has numerous shrines for Muslims, Sikhs & Christians. Jammu also serves as base camp for the holy shrine of Vaishno Devi.

Jammu district is divided into 7 sub-divisions, 21 tehsils, 20 blocks and 8 Urban Local Bodies. And 11 assembly Constituencies. 805 villages and the total number of Panchayats of the district is 305. It is believed that the city was originally founded The district with its headquarter at Jammu town, lies between 32°33'07" & 33° 07'30" North latitudes and 74°27'00" & 77°21'00" East longitudes. The people of Jammu district is mixed with Gujjars, Bakerwal, Paharis, Punjabis, Kashmiri etc. Most of Jammu & Kashmir's hindus live in the area can speak Dogri. Hindu are majority in Jammu. Total population of Jammu district is 1,529,958 as per census 2011. Hinduism constitutes 84.27% of Jammu population. According to the 2011 census Jammu district has population of 15.30 lacs. Where male population is 8.14 Lacs, and female population is 7.16 Lacs. Population density of the district is 653 persons /Sq. km. Population growth rate is 12.74%. The district has sex ratio of 880 females per every 1000 males and Literacy rate is 83.45%. (Source: <https://jammu.nic.in>)

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Table No. 16: Administrative units of the Jammu District

Administrative Units	Year	Unit	Statistics
No. of Urban Local Bodies	2011	Nos	2
No. of villages	2011	Nos.	805
Sub-Division	2011	Nos.	7
Tehsils	2011	Nos.	21
Blocks	2011	Nos.	20
No. of Gram Panchayats	2011	Nos.	305

Source: <https://.jammu.nic.in>

7.1.1 DETAILS OF BLOCKS OF JAMMU

The details of Blocks of the Jammu District are furnished in **Table No.10** below:

Table No. 17: List of blocks in Jammu District

Sl. No.	Name of the Blocks	No. of Panchayats	No. of Villages	Area (Sq. Km.)
1	Dansal	15	54	433.665
2	Khour	20	44	129.250
3	Kharah Bali	7	15	169.840
4	Pargwal	6	20	63.970
5	Mathwar	10	19	525.00
6	Chowki Choura	10	25	154.734
7	Maria Mandrian	8	28	90.447
8	Akhnoor	20	34	195.890
9	Miran Sahib	23	42	53.750
10	Marh	26	84	105.710
11	Ranbir Singh Pura	20	48	81.698
12	Arnia	10	49	47.407
13	Suchetgarh	21	72	65.00
14	Bishah	29	76	105.783
15	Bhalwal	24	32	177.999
16	Bhalwal Brahmana	14	35	106.360
17	Mandhal Phallian	10	54	69.270
18	Nagrota	18	48	143.070

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19	Samwan	4	8	140.900
20	Satwari	10	18	58.873
Total		305	805	2918.616
Area of Jammu District as per 2011 census				2342.0
<i>Source: Jammu District Mining & Geology Dept., J & K</i>				

FIGURE 6: BLOCK MAP OF THE DISTRICT

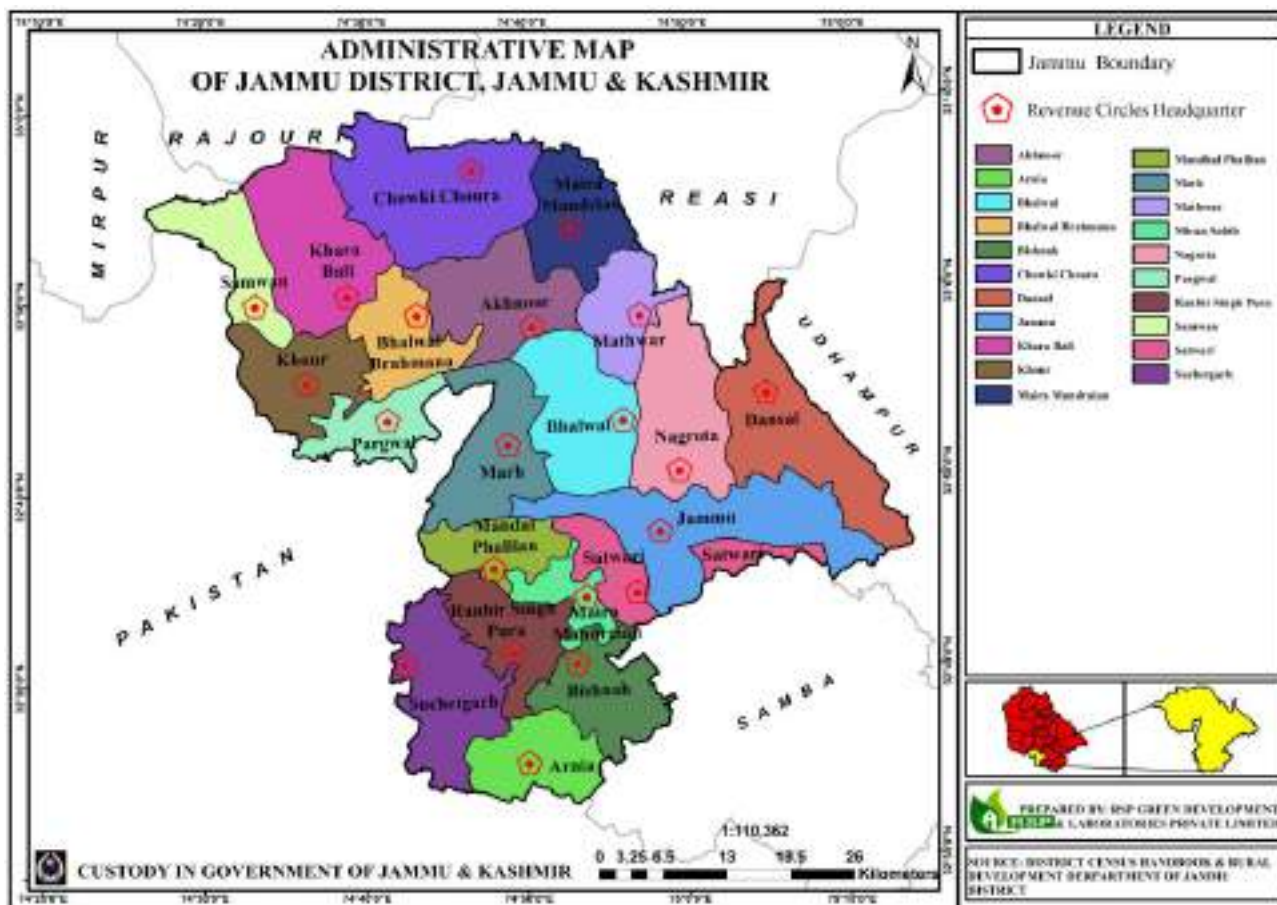
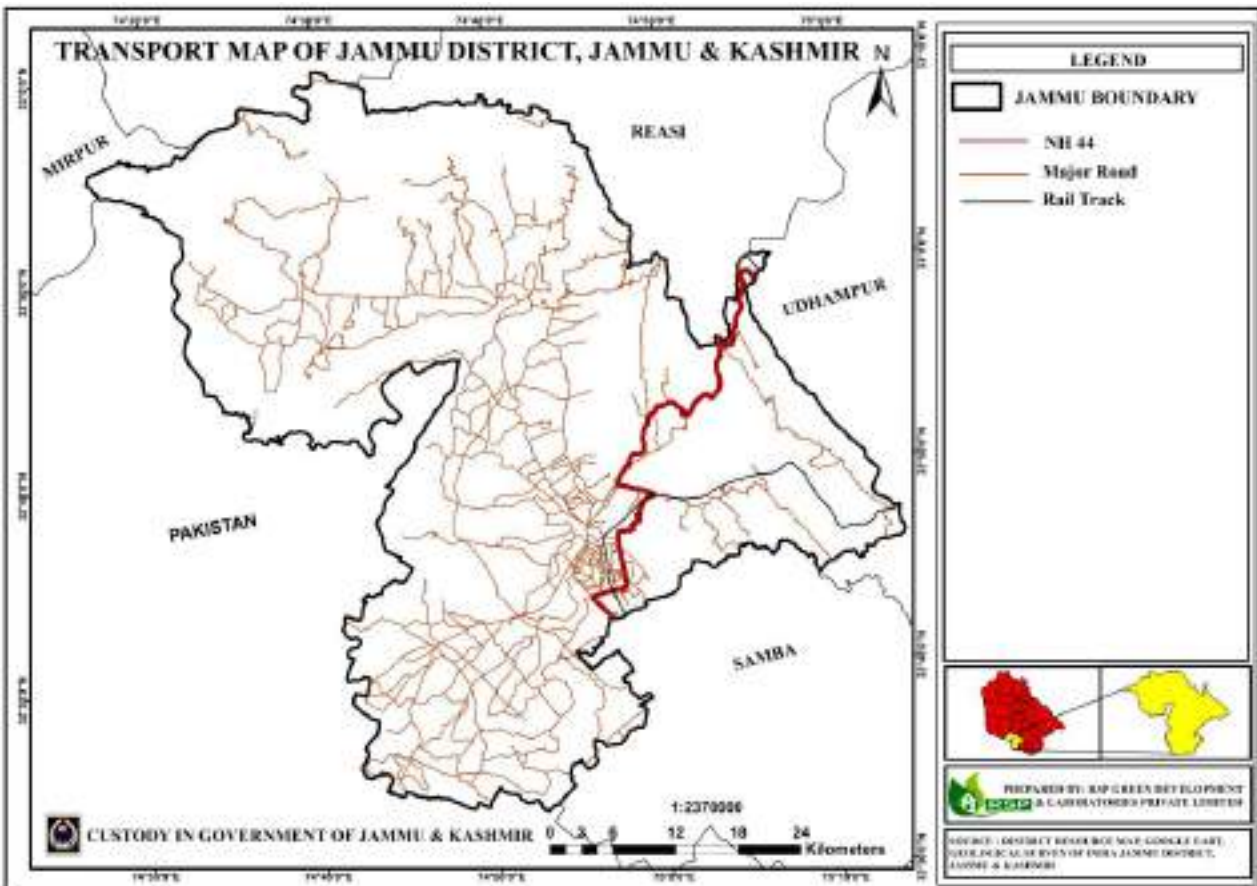


FIGURE 7: TRANSPORT MAP OF THE DISTRICT

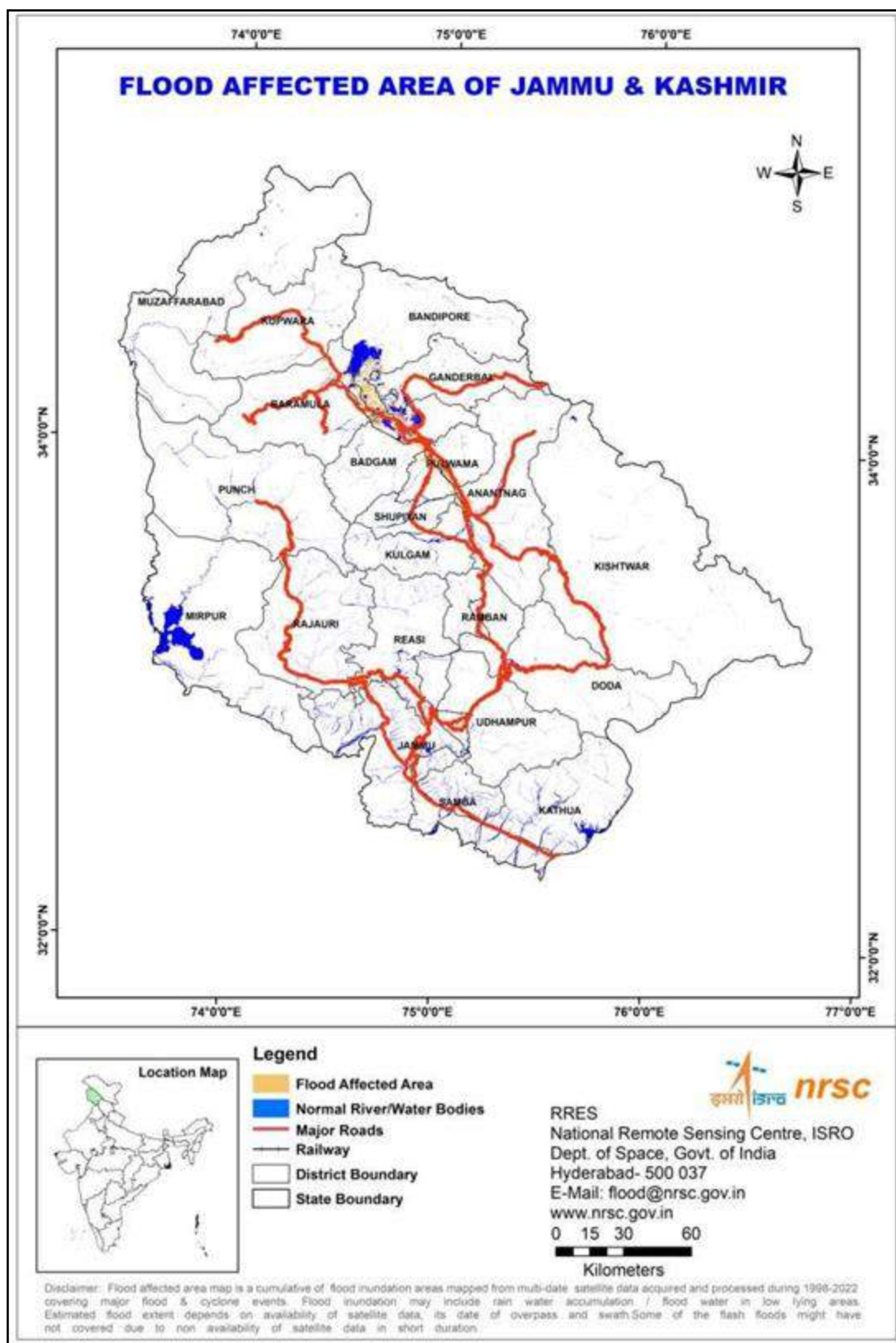


7.2 FLOODS IN JAMMU & KASHMIR:

All low-lying regions of the Kashmir valley and parts of the Jammu region are prone to floods. The main rivers of this district like the Jhelum, Indus, Chenab and Tawi and all of their tributaries are prone to flash floods. In the Kashmir valley, the flood has been a recurrent problem mainly due to the overflowing of embankments, breaching of channels, horizontal erosion, and flash flood in the river Jhelum and its tributaries. The violation of river water channels and siltation in water bodies due to erosion has further aggravated the exposure of flood hazards in the valley. In the Jammu region, flood hazards are mainly due to spilling of 41 banks and embankment erosion by river Chenab and river Ravi. From last 10 decades, during 20 and 21 century, the intensity of floods in the erstwhile state has been more recurrent and devastating. The recent floods are, 2010 in Ladakh and 2014 in Kashmir. On 6 August 2010, the Ladakh region experienced one of its worst natural disasters in the form of a flash flood mainly caused due to cloudburst. The rainfall only lasted for half an hour but the devastation caused was massive. About 248 people were reported dead and 76 were missing. Around 1200 houses and 1400 hectares of agricultural land were damaged. Choglamsar, a new settlement was severely affected in terms of life and property. (Source: Kashmir Flood Report)

➤ **Flood affected area of Jammu and Kashmir:** The Jammu district is less affected during the flood time with respect to the other district present in the UT of J&K. Last flash flood was occurred in Jammu and Kashmir region in 2024. The district Jammu was affected in this flood. Heavy rainfall triggered the flood to cause catastrophic damage to school building and hospitals. Here is the map where the flood affected area of Jammu and Kashmir is shown:

FIGURE 8: FLOOD AFFECTED AREA OF JAMMU AND KASHMIR



7.3 DEMOGRAPHY:

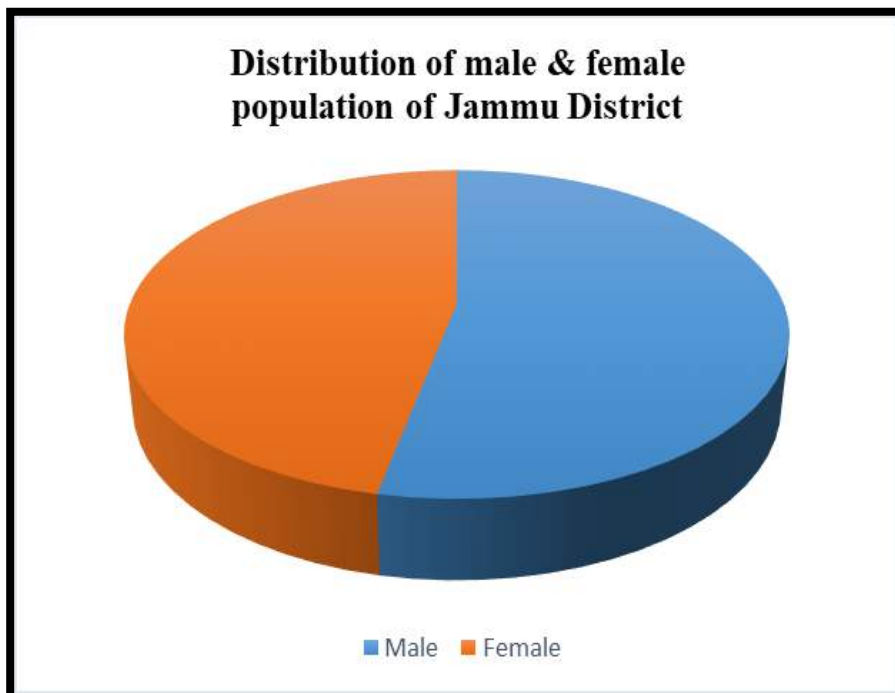
In 2011, district Jammu had population of 1,529,958 of which male and female were 813,821 and 716,137 respectively. In 2001 census, Jammu had a population of 1,357,077 of which males were 727,738 and remaining 629,339 were females. In 2001 census data Jammu District population constituted 0.13 percent of total population of India that was 1,028,737,436. With regards to Sex Ratio in Jammu, it stood at 865 per 1000 male compared to 2001 census. The average national sex ratio in Jammu district is 880 per 1000 male as per latest reports of Census 2011 Directorate. In 2011 census, child sex ratio is 795 per 1000 boys compared to figure of girls per 1000 boys of 2001 census data. The most widely spoken language of Jammu is Dogri. Other languages spoken are Punjabi, Urdu, Hindi, Kashmiri, Gojri and English. (Source: <https://jammu.nic.in>)

Table No. 18: Jammu District Census Data of 2011 and 2001

Description	2011	2001
Actual Population	1,529,958	1,357,077
Male	813,821	727,738
Female	716,137	629,339
Population Growth	12.74%	29.01%
Area Sq. Km	2,342	2,342
Density/km ²	653	528
Proportion to Jammu and Kashmir Population	12.20%	13.38%
Sex Ratio (Per 1000)	880	865
Child Sex Ratio (0-6 Age)	795	795
Average Literacy	83.45	77.56
Male Literacy	89.08	84.80
Female Literacy	77.13	69.26
Total Child Population (0-6 Age)	167,363	167,363
Male Population (0-6 Age)	93,242	93,242
Female Population (0-6 Age)	74,121	74,121
Literates	1,137,135	0
Male Literates	641,916	0
Female Literates	495,219	0
Child Proportion (0-6 Age)	10.94%	12.33%
Boys Proportion (0-6 Age)	11.46%	12.81%
Girls Proportion (0-6 Age)	10.35%	11.78%

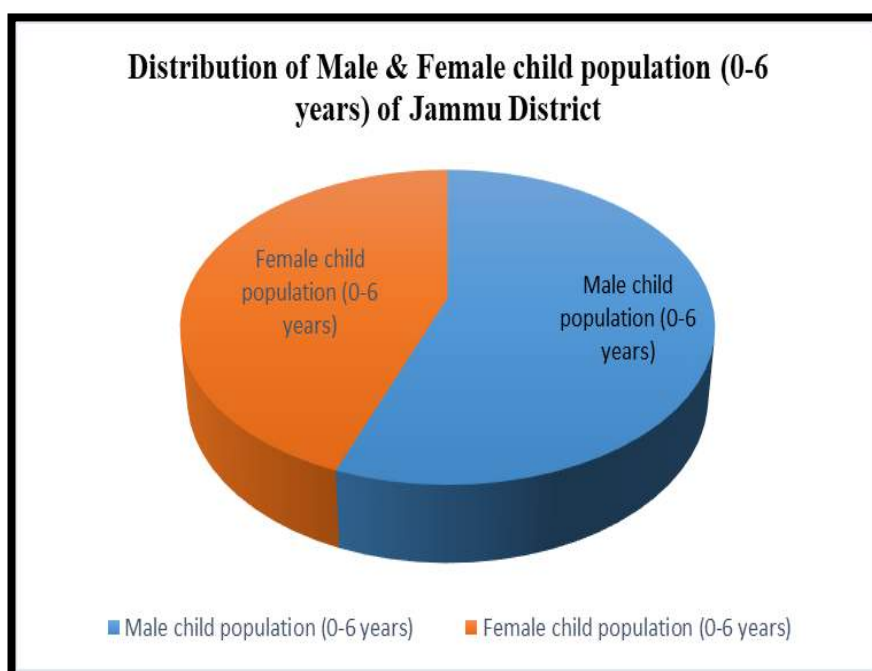
(Source: Census 2011 and 2001 of Jammu district)

Chart 1: Distribution of male & female population of Jammu District



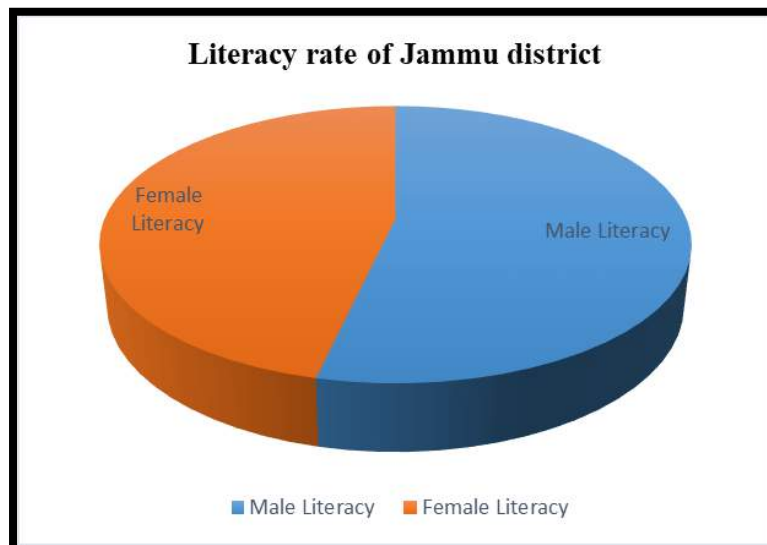
(Source: <https://jammu.nic.in> & Table No. 15)

Chart 2: Distribution of male & female child population (0-6 years) of Jammu district



(Source: <https://jammu.nic.in> & Table No. 15)

Chart 3: Literacy rate of Jammu district



(Source: <https://jammu.nic.in> & Table No. 15)

7.4 Cropping pattern:

Most of the area in Jammu district is rain-fed, very less are of the district is having assured irrigation. Rice, Maize, Wheat being a staple food of the district is cultivated more in the district. During Kharif season Rice, Maize, Wheat is cultivated. In Rabi seasons alongside with Rice, Maize, Wheat, Millets and pulses area also cultivated in the rain-fed area of the district. (Source: <https://jammu.nic.in>)

Table No. 19: Crop wise area usage in Jammu district

Major field crops cultivated	Kharif		Rabi	
	Irrigated (Ha)	Rain-fed (Ha)	Irrigated (Ha)	Rain-fed (Ha)
Rice	33.33	-	-	22.22
Maize	3.44	-	-	10.01
Wheat	52.51	-	-	35.10
Millets	-	-	-	10.88
Pulses	-	-	-	4.679

(Source: <https://jammu.nic.in>)

Table No. 20: Production and Productivity of major crops

Sl. No.	Name of Crop	Kharif	
		Production (tonnes)	Productivity (q/ha)
1	Rice	1085.28	19.53
2	Maize	1738.53	20.99
3	Wheat	303.35	19.86
4	Millets	21.41	-
5	Pulses	113.00	-

(Source: <https://jammu.nic.in>)

7.5 Land form and seismicity:

The erstwhile UT of Jammu and Kashmir is the western most extension of the Himalayan Mountain range in India. The Himalayan Mountain ranges are the youngest and tallest mountain range which is still growing, due to the ongoing movements of the tectonic plates hence, uplifting along active faults making it very vulnerable to earthquakes. About 15.3% of the area of the erstwhile state falls under Seismic Zone V, which is mostly considered as a very high damaged risk zone. Some parts of the Kashmir and Jammu division falls under this zone which poses a serious risk, as 50% of the total population lies in this part. The rest of the area falls under seismic zone IV, which is considered as a high damaged risk zone. (Source: Kashmir Flood Report)

Bureau of Indian Standards, based on the past seismic history, grouped the country into four seismic zones, viz. Zone - II, Zone -III, Zone - IV and Zone - V. Of these, Zone V is the most seismically active region, while zone II is the least. The Modified Mercalli (MM) intensity, which measures the impact of the earthquakes on the surface of the earth, broadly associated with various zones, is as given in Table: No. 18

FIGURE 9: Seismic map of UT of J&K

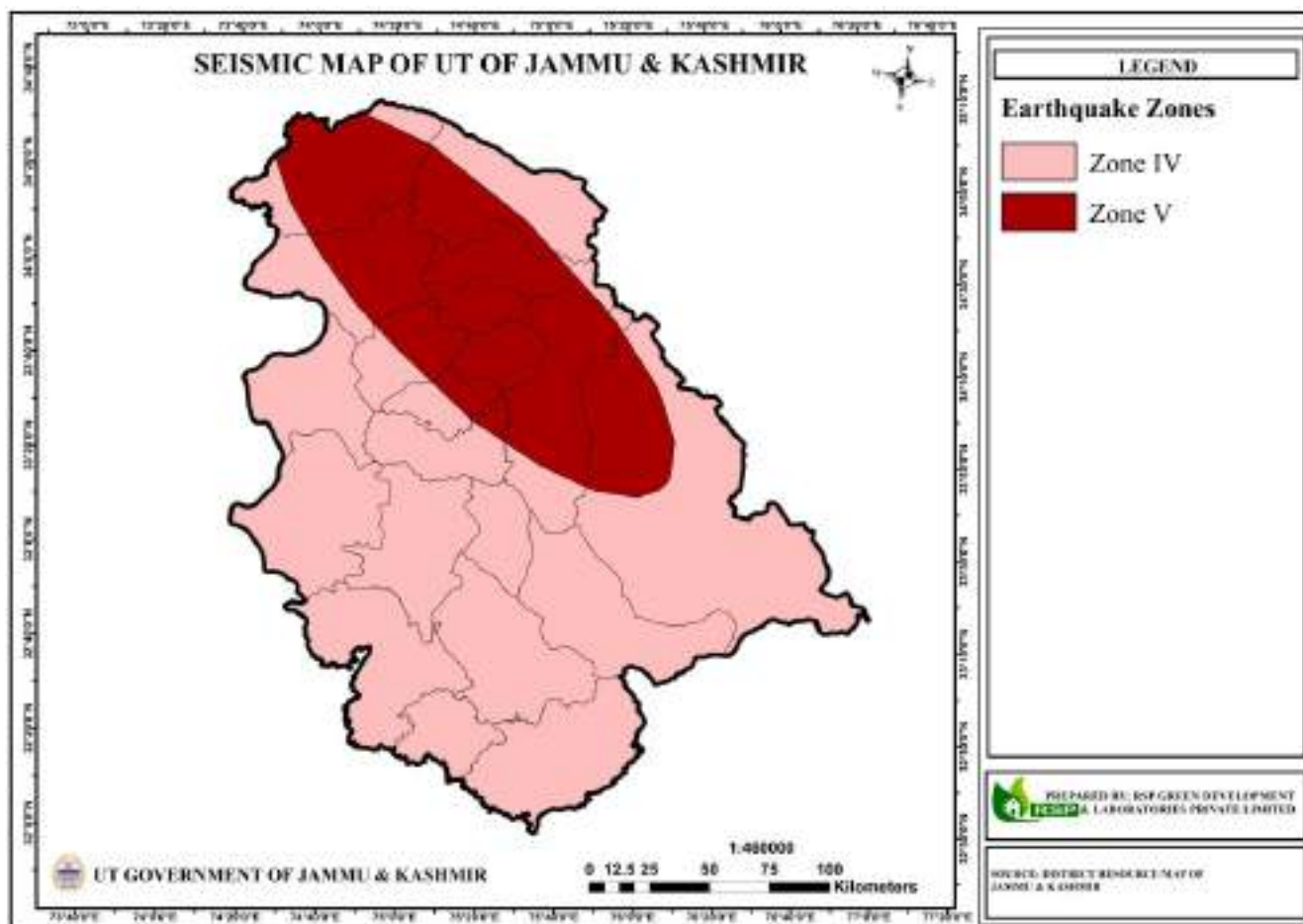


Table No. 21: Seismic Zone Intensity on MM scale

SEISMIC ZONE	INTENSITY ON MM SCALE
II	Low intensity zone
III	Moderate intensity zone
IV	Severe intensity zone
V	Very severe intensity zone
<i>Source: Ministry of Earth Science, Seismic Mapping Posted On: 30 JUL 2021 2:27PM by PIB Delhi</i>	

Jammu district falls under the seismic zone V (very high damage risk zone). As the Himalayan mountain is formed by the collision between Eurasian and Indian plate but the Indian plate is still moving towards the northward and collided with the boundary of Eurasian Plate. So, there is always a chance to experience earthquake such active tectonic zone.

7.6 FLORA AND FAUNA

7.6.1 MAJOR FLORA OF JAMMU DISTRICT

Jammu and Kashmir is a region which not only consists of beautiful and stunning landscapes, but also it has a diverse and unique range of flora and fauna which makes the place dreamland for nature lovers. The forests, grasslands, wetlands and alpine meadows are home to a wide range of plants and animal species which could not be found anywhere in the whole world. The whole Jammu region divided into a lot of forests which are- Temperate Forest, Alpine forests, Subtropical forests etc. They consist of Conifers, Deciduous trees, Medicinal plants etc. Flora in Ramnagar wildlife Sanctuary one can see some rare plants, herbs and shrubs at this Sanctuary.

Table No. 22: Some citable flora in Jammu district

TREE SPECIES		
VERNACULAR NAME	BOTANICAL NAME	FAMILY
Aam	<i>Mangifera indica</i>	Anacardiaceae
Amla	<i>Emblica officinalis</i>	Euphorbiaceae
Arjun	<i>Terminalia arjuna</i>	Combretaceae
Badh or Pipal	<i>Ficus religiosa</i>	Moraceae
Bahera	<i>Terminalia bellerica</i>	Combretaceae
Bans or bamboo	<i>Dendrocalamus strictus</i>	Poaceae
Ber	<i>Ziziphus jujube</i>	Rhamnaceae
Bohar	<i>Ficus bengalensis</i>	Moraceae
Chir	<i>Pinus roxburghii</i>	Pinaceae
Dhaman	<i>Grewia optiva</i>	Tiliaceae
Drek	<i>Melia azedarach</i>	Meliaceae
Fagora	<i>Ficus palmata</i>	Moraceae
Harar	<i>Terminalia chebula</i>	Combretaceae
Imli	<i>Tamarindus indica</i>	Leguminosae (Caesalpiniaceae)

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Indian coral tree	<i>Erythrina indica</i>	Leguminosae (Papilionaceae)
Jamun	<i>Syzygium cumini</i>	Myrtaceae
Kaam	<i>Mitragyna parvifolia</i>	Rubiaceae
Kachnar	<i>Bauhinia variegata</i>	Leguminosae (Caesalpiniaceae)
Kakoa	<i>Flacourtia indica</i>	Flacourtiaceae
Kala Siris	<i>Albizia lebbeck</i>	Leguminosae (Mimosaceae)
Kamila	<i>Mallotus philippensis</i>	Euphorbiaceae
Kembal	<i>Lannea coromandelica</i>	Anacardiaceae
Khair	<i>Acacia catechu</i>	Leguminosae (Mimosaceae)
Khajoor	<i>Phoenix sylvestris</i>	Palmae
Kikar	<i>Acacia nilotica</i>	Leguminosae (Mimosaceae)
Krangal	<i>Cassia fistula</i>	Leguminosae (Caesalpiniaceae)
Kua	<i>Olea cuspidata</i>	Oleaceae
Phulai or Fly	<i>Acacia modesta</i>	Leguminosae (Mimosaceae)
Pulah	<i>Butea monosperma</i>	Leguminosae (Papilionaceae)
Reetha	<i>Sapindus mukorossi</i>	Sapindaceae
Rumble	<i>Ficus recemosa</i>	Moraceae
Safed siris	<i>Albizia procera</i>	Leguminosae (Mimosaceae)
Safeda	<i>Eucalyptus citrodora (Introduced)</i>	Myrtaceae
Simbal	<i>Bombax ceiba</i>	Bombacaceae
Tali	<i>Dalbergia sissoo</i>	Leguminosae (Papilionaceae)
Thor	<i>Euphorbia royleana</i>	Euphorbiaceae
Toot	<i>Morus alba</i>	Maraceae
Trimbal	<i>Ficus auriculata</i>	Moraceae
SHRUBS AND HERBS SPECIES		
VERNACULAR NAME	BOTANICAL NAME	FAMILY
Aakh	<i>Ipomaea carnea</i>	Convolvulaceae
Anar	<i>Punica granatum</i>	Punicaceae
Arnid	<i>Ricinus communis</i>	Euphorbiaceae
Ban tobacco	<i>Solanum erianthum</i>	Solanaceae
Bana	<i>Vitex negundo</i>	Verbenaceae
Bhang	<i>Cannabis sativa</i>	Cannabinaceae
Brenker	<i>Adhatoda vasica</i>	Acanthaceae
Chaleri Saag	<i>Amaranthus viridis</i>	Amaranthaceae
Chhitter	<i>Opuntia elatior</i>	Cactaceae
Congress Grass or Jari	<i>Parthenium hysterophorus</i>	Asteraceae
Deela	<i>Cyperus rotundus</i>	Cyperaceae
Dhain	<i>Woodfordia floribunda</i>	Lythraceae
Dhain	<i>Woodfordia fruticosa</i>	Lythraceae
Dhatura	<i>Datura metel</i>	Solanaceae

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Drenkeri	<i>Murraya koenigii</i>	Rutaceae
Duranta	<i>Duranta plumeri</i>	Verbenaceae
Gandila	<i>Nerium indicum</i>	Apocynaceae
Garna	<i>Carissa spinarum</i>	Apocynaceae
Jojera	<i>Xanthium strumarium</i>	Asteraceae
Joira	<i>Pupalia lappacea</i>	Amaranthaceae
Kayan Kothi	<i>Solanum nigrum</i>	Solanaceae
Kuad Gandal	<i>Aloe barbadensis</i>	Liliaceae
Pakhra	<i>Tribulus terrestris</i>	Zygophyllaceae
Panjphuli	<i>Lantana camara</i>	Verbenaceae
Pansar	<i>Wendlandia heynei</i>	Rubiaceae
Parkanda	<i>Achyranthes aspera</i>	Amaranthaceae
Ramban	<i>Agave americana</i>	Agavaceae
Sanali or Dussa	<i>Colebrookia oppositifolia</i>	Lamiaceae
Santha	<i>Dodonaea viscosa</i>	Sapindaceae
Seski	<i>Artemisia parviflora</i>	Asteraceae
Thor	<i>Euphorbia royleana</i>	Euphorbiaceae
Timbru	<i>Zanthoxylum armatum</i>	Rutaceae

GROUND FLORA, GRASSES AND CLIMBERS SPICIES

VERNACULAR NAME	BOTANICAL NAME	FAMILY
Aajan Grass	<i>Cenchrus ciliaris</i>	Poaceae
Amar Bel	<i>Cuscuta reflexa (Parasite)</i>	Cuscutaceae
Baloonger	<i>Bauhinia vahlii</i>	Leguminosae (Caesalpiniaceae)
Bubbeain	<i>Eulaliopsis binata</i>	Poaceae
Chameli	<i>Jasminum officinale</i>	Oleaceae
Deena nath grass	<i>Pennisetum pedicellatum</i>	Poaceae
Dheela	<i>Cyperus rotundus</i>	Cyperaceae
Doab Grass	<i>Cyanadon dactylon</i>	Poaceae
Giloe	<i>Tinospora cordifolia</i>	Menispermaceae
Junglee Palak	<i>Rumex hastatus</i>	Polygonaceae
Kai	<i>Saccharum spontaneum</i>	Poaceae
Kezun grass	<i>Setaria sphacelata</i>	Poaceae
Khar	<i>Saccharum munja</i>	Poaceae
Kharpoway	<i>Ipomea purpurea</i>	Convolvulaceae
Khas Khas	<i>Vetiveria zizanioides</i>	Poaceae
Lambagha	<i>Heteropogan contortus</i>	Poaceae
Nad	<i>Arundo donax</i>	Poaceae
Napier grass	<i>Pennisetum purpureum</i>	Poaceae
Palain	<i>Dichanthium annulatum</i>	Poaceae
Rati	<i>Abrus Precatorius</i>	Leguminosae (Papilionaceae)
Sadhun	<i>Dioscorea melanophyma</i>	Dioscoreaceae

(Source: Working Plan for Jammu Forest Division J&K)

7.6.2 FAUNA

Jammu is rich in avifauna and mammalian fauna. A good number of mammalian species are found here, some of which are highly endangered and need immediate protection. Some of the commonly found mammal species in this region include Asiatic black bear, Himalayan brown bear, snow leopard, Tibetan wolf, musk deer etc.

Table No. 23: Some Common Mammalian fauna of the Jammu region

Sl. No.	Common Name	Scientific Name
1	Chitra (Leopard or Panther)	<i>Panthera Pardus</i>
2	Jackal	<i>Canis aureus</i>
3	Jungle Cat	<i>Felis Chaus</i>
4	Lombri	<i>Vulpes bengalensis</i>
5	Bhaaloo (Himalayan Black Bear)	<i>Selenaractos thibetanus</i>
Rodents species		
1	Five striped Palm squirrel	<i>Funambulus pennantii</i>
2	Sahi (Indian Porcupine)	<i>Hystrix indica</i>
3	Kharghosh (Common Indian Hare)	<i>Lepus negricollis</i>
4	Mouse (Indian Field Mouse)	<i>Mus booduga</i>
Goat Group		
1	Pijjar (Grey Himalayan Goral)	<i>Nemorhaedus goral</i>
Deer Group		
1	Kakar (Barking Deer)	<i>Muntiacus muntjak</i>
2	Para (Hog Deer)	<i>Axis porcinus</i>
Pig Group		
1	Junglee Suar (Indian Wild Boar)	<i>Sus scrofa</i>
Primates		
1	Langur (Indian Langur)	<i>Presbytis entellus</i>
2	Bandar (Rhesus Macacue)	<i>Macaca mulatta</i>

(Source: Working Plan for Jammu Forest Division J&K)

The reptiles or any poisonous animals, present in the hilly regions or bushes. Among poisonous snakes, Indian Cobra, Vipers and Kraits are generally found. Pythons are also spotted occasionally. A variety of lizards are commonly found in the tract.

Jammu and Kashmir is popular for its wide and unique range of Avifauna, which is one of the main attraction for the tourists, so it not only eye shooting experience but also it provides income to local communities through ecotourism. The region is home to several bird species, including Himalayan monal, Koklass pheasant, Western tragopan, Snow partridge, Himalayan snow cock and others.

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Table No. 24: Some common Avifauna of Jammu region

Sl. No.	Common Name	Scientific Name
Pheasants and Fowl Group		
1	Red Jungle Fowl	<i>Gallus gallus</i>
2	Common Peafowl	<i>Pavo cristatus</i>
Partridge and Quail Group		
1	Black Partridge	<i>Francolinus francolines</i>
2	Chakore	<i>Alectoris chukor</i>
3	Grey Quail	<i>Coturnix pectoralis</i>
The Dove and Pigeon Group		
1	Blue Rock Pigeon	<i>Columba livia</i>
2	Spotted Dove	<i>Streptopelia orientalis</i>
3	Ring Dove	<i>Streptopelia decaocto</i>
Vultures		
1	White Beaked Bengal Vulture	<i>Pseudogyps bengalensis</i>
2	Rose Ringed Parakeet	<i>Psittacula krameri</i>
3	Indian Mynah	<i>Acridotheres tristis</i>
4	Jungle Crow	<i>Corvus macrorhynchos</i>
5	House Crow	<i>Corvus splendens</i>
5	Koel	<i>Eudynams scolopacea</i>
6	Rose Ringed Parakeet	<i>Psittacula krameri</i>
7	Golden backed Wood-pecker	<i>Dinopium benghalense</i>
8	Indian Robin	<i>Saxicoloides fulicata</i>
9	Tailor Bird	<i>Orthotonus sustoriosis</i>
10	Paradise Fly Catcher	<i>Terpsiphone paradisi</i>

(Source: Working Plan for Jammu Forest Division J&K)

Table No. 25: Some Common Ichthyofaunal in the Jammu District

Sr.No	Scientific Name	Sr. No	Scientific Name
1	<i>Tor Putitora</i>	46	<i>G. lamta (Ham.-Buch.)</i>
2	<i>Labeo Sps.</i>	47	<i>N. corica (Ham-Buch.)</i>
3	<i>Glypto Throax Sps.</i>	48	<i>A. botin (Ham.-Buch.)</i>
4	<i>Tor Tor(Ham.Buch)</i>	49	<i>S. Drashadi (Hora)</i>
5	<i>Chela (Chela) cachius (Ham.)</i>	50	<i>S. prashari (Hora)</i>
6	<i>S. bacaila (Ham. - Buch.)</i>	51	<i>S. puniabensis (Hora)</i>
7	<i>S. puniabensis, (Day)</i>	52	<i>L. guntea (Ham.-Buch.)</i>
8	<i>S. gora (Ham. - Buch.)</i>	53	<i>R,rita (Ham. Buch.)</i>
9	<i>A. morar (Ham. - Buch.)</i>	54	<i>M. bleekeri (Day)</i>
10	<i>B.,vagra, vagra (Ham. - Buch.)</i>	55	<i>M. cavasius (Ham.-Buch.)</i>

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11	<i>B. shacra</i> (Ham.-Buch.)	56	<i>M. vittatus</i> (Bloch.)
12	<i>Bbarila</i> (Ham.-Buch.)	57	<i>A. seenghala</i> (Sykes)
13	<i>B. modestus</i> Day	58	<i>O. bimaculatus</i> (Bloch.)
14	<i>B..bendelisis</i> (Ham.-Buch.)	59	<i>W. attu</i> (Schn.)
15	<i>Chela cachius</i> (Ham.-Buch.)	60	<i>P. atherinoides</i> (Bloch.)
16	<i>Chela laubuca</i> (Ham.-Buch.)	61	<i>C. garua</i> , (Ham.-Buch.)
17	<i>Esomus danricus</i> (Ham.-Buch.)	62	<i>E. murius</i> , (Ham.-Buch.
18	<i>D. devario</i> (Ham.-Buch.)	63	<i>E. murius</i> , (Ham.-Buch.)
19	<i>B. rerio</i> (Ham.-Buch.)	64	<i>E. vacha</i> , (Ham-Buch.)
20	<i>A.,mola</i> , (Ham.-Buch.)	65	<i>A. mangois</i> (Ham.-Buch..)
21	<i>C. carpio communis</i> Linn.	66	<i>B. bagarius</i> (Ham-Buch.)
22	<i>C..carpio specularis</i> Linn.	67	<i>G. cenia</i> (Ham.-Buch.)
23	<i>T. tor</i> (Ham.-Buch.)	68	<i>G. cavia</i> (Ham.-Buch.)
24	<i>T. utitora</i> , (Ham.-Buch.)	69	<i>G. garhwali</i> Tilak
25	<i>O. cotio cotio</i> (Ham.- Buch.)	70	<i>G. puniabensis</i> Mirza and Kashmiri
26	<i>P. sarana sarana</i> (Ham.-Buch.)	71	<i>G. stoliczkae</i> (Steind)
27	<i>P. conchoniis</i> (Ham.-Buch.)	72	<i>G. telchitta telchitta</i> (Ham.- Buch)
28	<i>P. terio</i> (Ham.-Buch.)	73	<i>H. fossilis</i> (Bloch.)
29	<i>P. ticto</i> (Ham-Buch.)	74	<i>X. cancila</i> , (Harn.-Buch.)
30	<i>Pchola</i> (Ham-Buch.)	75	<i>G. affinis</i> (Baird and Girard)
31	<i>P..sophore</i> (Ham.-Buch.)	76	<i>Monopterus cuchia</i> (Ham.- Buch.)
32	<i>C. mrigala</i> (Ham.-Buch.)	77	<i>M. aral</i> (Bloch and Schn.)
33	<i>C. reba</i> (Ham-Buch.)	78	<i>M. pancalus</i> (Ham.-Buch.)
34	<i>L. bata</i> (Ham.-Buch.)	79	<i>M. armatus</i> (Lac.)
35	<i>L. boga</i> , (Ham.-Buch.)	80	<i>C. nama</i> (Ham.-Buch.)
36	<i>L. boggut</i> , (Sykes)	81	<i>P. ranga</i> (Ham.-Buch.)
37	<i>L. calbasu</i> , (Ham.-Buch.)	82	<i>B. badis</i> (Ham-Buch.)
38	<i>L. dero</i> , (Ham.-Buch.)	83	<i>N. nandus</i> (Ham-Buch.)
39	<i>L. dyocheilus</i> (Me. CII.)	84	<i>G. giuris</i> (Ham-Buch.)
40	<i>L. gonius</i> (Ham.-Buch.)	85	<i>Colisa fasciatus</i> (Schn.)
41	<i>L. microphthalmus</i> Day	86	<i>C.,marulius</i> , (Harn.-Buch.)
42	<i>L. pangusia</i> (Ham.-Buch.)	87	<i>C. orientalis</i> Bloch: and Schn.
43	<i>L. rohita</i> (Ham.-Buch.)	88	<i>C. punctatus</i> (Bloch.)

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44	<i>S. richardsonii (Gray)</i>	89	<i>C. striatus (Bloch.)</i>
45	<i>G. gotyla gotyla (Gray)</i>		

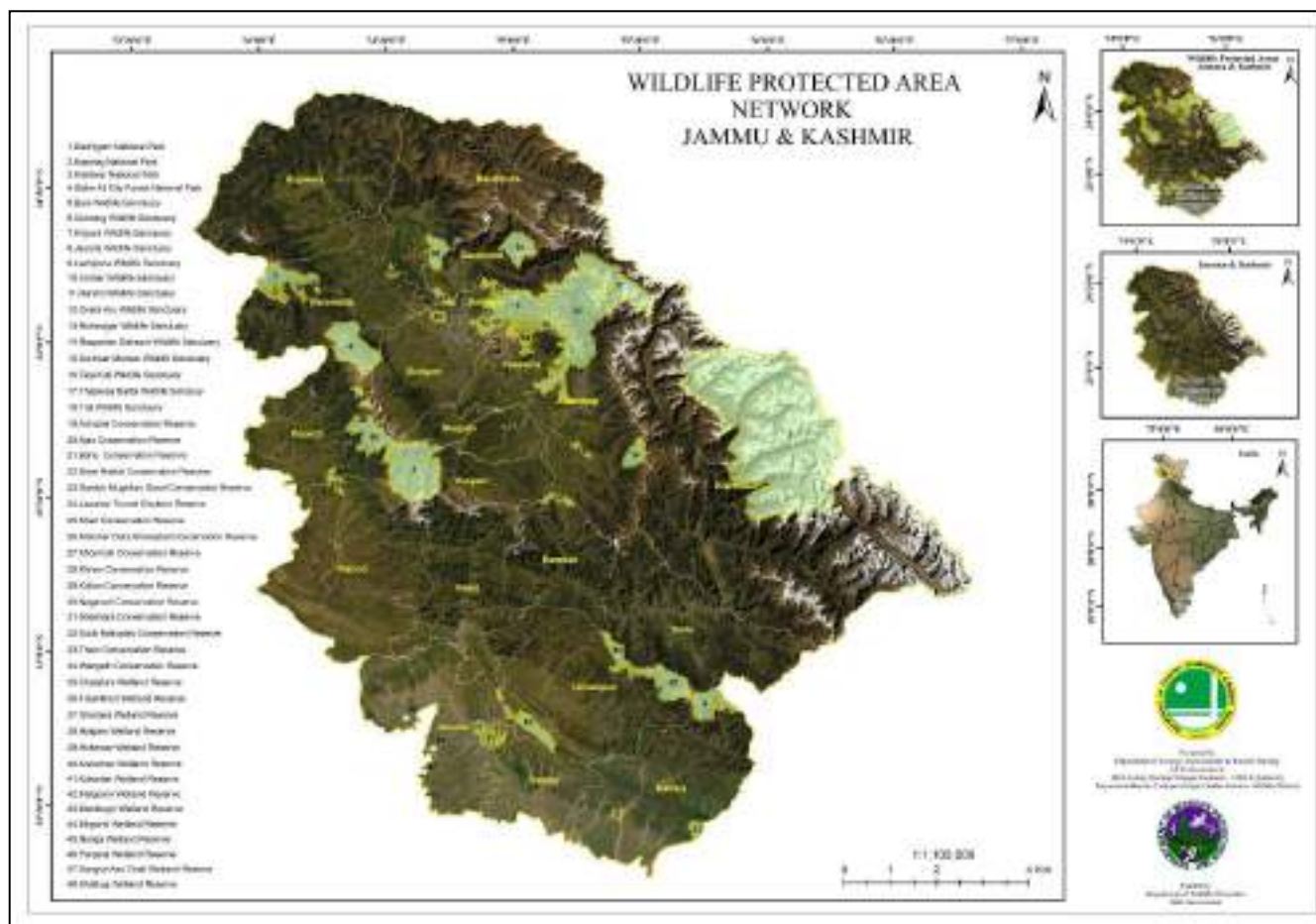
Source: Department of Fisheries, Jammu

7.7 WILDLIFE SANCUTARIES, COSERVATION RESERVES & WETLAND RESERVES IN JAMMU:

There are three wildlife sanctuaries, one conservation reserve & four wetland reserves present in the district. The Wildlife Sanctuaries are Nandini Wildlife Sanctuary, Ramnagar Wildlife Sanctuary & Surinsar Mansar Wildlife Sanctuary. Bahu Conservation Reserve is the only conservation reserve situated in the district. The four Wetland Reserves are Gharana Wetland Reserve, Kukarian Wetland Reserve, Pargwal Wetland Reserve and Sangral Asa Chak Wetland Reserve.

There are 5 National Parks in Jammu & Kashmir: Dachigam National Park, Kishtwar National Park, Kazinag National Park, City Forest (Salim Ali) National Park, Hemis National Park. But no National Park is situated in the Jammu district.

FIGURE 10: WILDLIFE PROTECTED AREA MAP OF JAMMU & KASHMIR



(Source: WILDLIFE PROTECTED AREA NETWORK ATLAS OF J&K, 2021, Department of Ecology, Environment & Remote Sensing Government of Jammu and Kashmir)

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- **Nandini Wildlife Sanctuary:** This sanctuary was named after the Nandini village which is located at a distance of 28 Km from Jammu. The area of this sanctuary is 33.34 km². Sanctuary is located in between 32° 47.707' N - 32° 54.107' N, 74° 55.501' E - 75° 0.101' E. The major animals found here are Nilgai (*Boselaphus tragocamelus*), Indian Crested Porcupine (*Hystrix indica*), Common Leopard (*Panthera pardus*), Barking Deer (*Muntiacus muntjak*), Chital (*Axis axis*), Himalayan goral (*Nemorhaedus goral*). Red Jungle Fowl (*Gallus gallus*), Common peafowl (*Pavo cristatus*), Grey Francolin (*Francolinus pondicerianus*), Blue Rock Pigeon (*Columba livia*), Eurasian collared dove (*Streptopelia decaocto*) are the common birds found here. Cutch tree (*Senegalia catechu*), Fig (*Ficus carica*), Chir pine (*Pinus roxburghi*), Wood Apple (*Aegle marmelos*), Siris tree (*Albizia lebeck*), Indian jujube (*Ziziphus jujuba*), Neem tree (*Azadirachta indica*), Indian thorny bamboo (*Bambusa bambos*) are among important floral diversity.
- **Ramnagar Wildlife Sanctuary:** The Sanctuary is located on the Northern side of Jammu city. The geo coordinates of this area are 32° 44.480' N - 32° 47.576' N, 74° 50.699' E - 74° 53.452' E. It is famous for the habitat of large number of herbivores and rich biodiversity of birds. The area of this sanctuary is 31.50 km². The important flora of this sanctuary are Cutch tree (*Acacia catechu*), Fig (*Ficus carica*), Babool (*Acacia arabica*), chir pine (*Pinus roxburghi*), Wood Apple (*Aegle marmelos*), Siris tree (*Albizia lebbek*), Indian jujube (*Zyzyphus jujuba*), Neem tree (*Azardirachta indica*), Indian thorny bamboo (*Bambusa bambos*), Indian rosewood (*Dalbergia sissoo*). Birds like Red Jungle Fowl (*Gallus*), Common peafowl (*Pavo cristatus*), Grey Francolus (*Francolinus ponicerianus*), Blue Rock Pigeon (*Columba livia*), Eurasian Collared dove (*Streptopelia decaocto*), Golden Eagle (*Aquila chrysaetos*), Golden Oriole (*Oriolus kundo*), Griffon Vulture (*Gyps fulvus*) are found here. Important animals like Himalayan goral (*Nemorhaedus goral*), Nilgai (*Boselaphus tragocamelus*), Barking Deer (*Muntiacus muntjak*), Wild Boar (*Sus scrofa cristatus*), Indian Crested Porcupine (*Hystrix indica*), Common Leopard (*Panthera pardus*), Barking Deer (*Muntiacus muntjak*), Chital (*Axis axis*), Grey Langur (*Semnopithecus entellus*), Indian Jackal (*Canis aureus*), jungle Cat (*Felis chaus*) are found here.
- **Surinsar Mansar Wildlife Sanctuary:** The Surinsar Mansar Wildlife Sanctuary is located in the union territory of Jammu and Kashmir, India. The Sanctuary spreads over three districts which are Jammu, Udhampur and Samba. The major part of the sanctuary falls in the Jammu District. The geo coordinates of this area are 32° 41.403' N - 32° 49.437' N, 74° 59.423' E - 75° 9.876' E. The area of this sanctuary is approx. 97.82 km². The sanctuary derives its nomenclature from the distinctive twin lakes, Surinsar and Mansar, which hold pivotal positions within the sanctuary's boundaries. These two lakes, strategically located at opposite corners of the sanctuary separated by 16 km distance from each other. The important flora of this sanctuary are Indian jujube (*Ziziphus jujuba*), Chir pine (*Pinus roxburghii*), Indian thorny bamboo (*Bambura bamboos*), Siris tree (*Albizia lebeck*), Neem tree (*Azadirachta indica*), Hemp (*Cannabis sativa*), Common Nut Sedge (*Cyperus rotundus*), Munj sugarcane grass (*Saccharum spontaneum*). The Surinsar Mansar Wildlife Sanctuary is home to a diverse species of mammals, birds, reptiles, and other animals. Some significant fauna involves birds like Common peafowl (*Pavo cristatus*), Blue Rock Pigeon (*Columba livia*), Eurasian collared dove (*Streptopelia decaocto*), Golden Eagle (*Aquila chrysaetos*), Grey Francolin (*Francolinus ponicerianus*), Golden Oriole (*Oriolus kundoo*), Griffon Vulture (*Gyps fulvus*) and some important animals like Nilgai (*Boselaphus tragocamelus*), Chital (*Axis axis*), Barking Deer (*Muntiacus muntjak*), Rhesus Monkey (*Macaca mulatta*), Himalayan goral (*Nemorhaedus goral*), Wild Boar (*Sus scrofa cristatus*), Hare (*Lepus nigricollis*), Indian Crested Porcupine (*Hystrix indica*), Leopard Cat (*Prionailurus bengalensis*), Grey Langur (*Semnopithecus entellus*), Indian Jackal (*Canis aureus*), jungle Cat (*Felis chaus*) are found here.

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- **Bahu Conservation Reserve:** This conservation reserve is situated on the outskirts of Jammu city along the left bank of Tawi river. The geo coordinates of this area are E 32° 41.869' N - 32° 46.393' N, 74° 52.514' E - 74° 58.378' E. The area of this conservation reserve is around 19.75 km². This conservation reserve have some significant Flora and Fauna. Some important Flora of the conservation are Cutch tree (*Senegalia catechu*), Fig (*Ficus carica*), Chir pine (*Pinus roxburghi*), Wood Apple (*Aegle marmelos*), Siris tree (*Albizia lebbek*), Indian jujube (*Ziziphus jujuba*), Neem tree (*Azadirachta indica*), Indian thorny bamboo (*Bambusa bambos*), Lantana (*Lantana camara*), Carrisse (*Carissa spinarum*), Hopseed bush (*Dodonaea viscosa*). Birds like Red Jungle Fowl (*Gallus gallus*), Common peafowl (*Pavo cristatus*), Grey francolin (*Francolinus pondicerianus*), Blue Rock Pigeon (*Columba livia*), Eurasian collard dove (*Streptopelia decaocto*), Golden Eagle (*Aquila chrysaetos*), Golden Oriole (*Oriolus kundoo*), Griffon Vulture (*Gyps fulvus*) and animals like Barking Deer (*Muntiacus muntjak*), Chital (*Axis axis*), Himalayan goral (*Nemorhaedus goral*), Grey Langur (*Semnopithecus entellus*), Indian Jackal (*Canis aureus*), jungle Cat (*Felis chaus*), Nilgai (*Boselaphus tragocamelus*), Indian Crested Porcupine (*Hystrix indica*), Common Leopard (*Panthera pardus*). Are found here.
- **Gharana Wetland Reserve:** This wetland conservation reserve is situated in Jammu region close to Indo-Pak Border. It is located at 35 km distance from Jammu city. The geo co-ordinates of this area are 32° 32.362' N - 32° 32.632' N, 74° 41.134' E - 74° 41.678' E. The area of this wetland reserve is around 0.75 km². Gharana Wetlands is one of the most important habitats for migratory birds. The reserve supports a population of 20000 to 25000 of birds of different species during winters. The important flora of this sanctuary is consist of tall grasses such as moonj grass (*Saccharum munja*), Nitella hyaline, (*Acacia nilotica*), Dalbergia sisso, (*Terminalia chebula*), *Najas indica*, *Carex fedia*, *Equisetum diffusum*, *Polygonum barbatum*, *Alternanthera sessilis*, *Potamogeton crispus*, *Vallisneria spiralis*, *Chara vulgaris*, *Polygonum barbatum*, *Polygonum hydropiper*, *Colocasia esculenta* and others. Some significant birds of this area are Common Myna (*Acridotheres tristis*), Golden oriole (*Oriolus oriolus*), Red vented Bulbul (*Pycnonotus cafer*), Grey tits (*Parus afer*), The place is heaven to migratory birds. Some significant migratory birds are Ruddy Shelduck (*Tadorna ferruginea*), Eurasian Wigeon (*Anas penelope*), Grey heron (*Ardea cinerea*), Purple heron (*Ardea purpurea*), Greylag goose (*Anser anser*), Gadwall (*Anas strepera*), Northern Pintail (*Anas acuta*), Common Teal (*Anas crecca*), Rock pigeon (*Columba livia*), Eurasian Collared Dove (*Streptopelia decaocto*), Asian Koel (*Eudynamis solopacea*), Greater Coucal (*Centropus sinensis*), Common Kingfisher (*Alcedo atthis*), White throated kingfisher (*Halcyon smyrnensis*), Pied Kingfisher (*Caryle rudis*), Indian Roller (*Coracias benghalensis*) Bay backed Shrike (*Lanius vittatus*), Long tailed Shrike (*Lanius schach*), Little Grebe (*Tachybaptus ruficollis*), Great Comorant (*Phalacrocorax carbo*), Cattle Egret (*Bubulus ibis*), Great egret (*Casmerodius albus*) and others.
- **Kukarian Wetland Reserve:** This wetland conservation reserve is situated in Jammu district and it was notified by Forest Department in 1981. Kukrian wetland reserve is spread over Batore, Bangore, Kukrian, Sandun and Makwal villages. The Geo co-ordinates of the reserve are 74° 41.584' E & 32° 41.977' N with the area of 24.25 km². The wetland is consist of diverse species of the birds from different corners of the world on the pattern of Gharana wetland in R S Pura. Some residential birds of the area are Indian Cuckoo (*Cuculus micropterus*), Common Myna (*Acridotheres tristis*), Golden oriole (*Oriolus oriolus*), Red vented Bulbul (*Pycnonotus cafer*), Flower peckers (Dicaeidae), Grey tits (*Parus afer*), Starlings (Sturnidae), Babblers (Timaliidae), Barbets (Megalaimidae), Finches (Fringillidae), Fantails (Rhipidura), Fly catchers (Tyrannidae), Kingfishers (Alcedinidae), Thrushes (Turdidae), Hoopoes (Upupidae), Wagtails (Motacilla), Warblers (Parulidae), kites (Accipitridae), Griffon Vulture (*Gyps fulvus*), Pheasants (*Phasianus colchicus*). There have some significant migratory birds they are Grey heron (*Ardea cinerea*), Purple heron (*Ardea purpurea*), Greylag goose

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(*Anser anser*), Gadwall (*Anas strepera*), Northern Pintail (*Anas acuta*), Common Teal (*Anas crecca*), Rock pigeon (*Columba livia*), Eurasian Collared Dove (*Streptopelia decaocto*), Asian Koel (*Eudynamis solopacea*), Greater Coucal (*Centropus sinensis*), Common Kingfisher (*Alcedo atthis*), White throated kingfisher (*Halcyon smyrnensis*), Pied Kingfisher (*Ceryle rudis*), Indian Roller (*Coracias benghalensis*), Bay backed Shrike (*Lanius vittatus*), Long tailed Shrike (*Lanius schach*), Little Grebe (*Tachybaptus ruficollis*) and others. The wetland is covered with tall grasses such as moonj grass (*Saccharum munja*) in marshy areas. Other common species are Ipomia, *Ziziphus jujuba* in bushes and *Vitex negundo* and Shisham (*Dalbergia sissoo*) and others.

- **Pargwal Wetland Reserve:** This wetland conservation reserve is situated on the island of Chenab River. Pargwal wetland reserve is named after the village Pargwal. The Geo co-ordinates of the reserve are 32° 47.878' N & 74° 35.346' E with the area of 49. 25 km².The wetland reserve is abode to diverse species of the birds from different corners of the world. The reserve is also covered by open Scrub with moonj grass (*Saccharum munja*) and Shisham (*Dalber gia sissoo*) in scattered location. The other common species are *Mangifera indica*, *Bombax inalambrica*, *Ziziphus jujuba* and others. Some common residential bird species of the area is Purple Sunbird (*Cinnyris asiaticus*), Brown Rock Chat (*Cercomela fusca*), Red wattled Lapwing (*Vanellus indicus*), Indian Cuckoo (*Cuculus micropterus*), Common Myna (*Acridotheres tristis*), Golden oriole (*Oriolus oriolus*), Red vented Bulbul (*Pycnonotus cafer*), Grey tits (*Parus afer*) etc. Some significant migratory birds of the area are Bar-headed goose (*Anser indicus*), Grey heron (*Ardea cinerea*), Purple heron (*Ardea purpurea*), Greylag goose (*Anser anser*), Gadwall (*Anas strepera*), Northern Pintail (*Anas acuta*), Common Teal (*Anas crecca*), Rock pigeon (*Columba livia*), Oriental turtle Dove (*Streptopelia orientalis*), Eurasian Collared Dove (*Streptopelia decaocto*), Asian Koel (*Eudynamis solopacea*), Greater Coucal (*Centropus sinensis*), Common Kingfisher (*Alcedo atthis*) and others.
- **Sangral Asa Chak Wetland Reserve:** This reserve situated in the east of Pakistan border and west of Kulian Tunkerwali and Raipur Salydan and Chandu Chak village. This wetland was notified in 1981. The Geo co-ordinates of the reserve are 32° 37.475' N & 74° 39.627' E with the area 7 km². Some significant flora of the district consists of moonj grass (*Saccharum munja*) in scattered location. The other common species are Shisham (*Dalbergia sissoo*), *Ziziphus jujuba* etc. Some common residential bird species of the area is Purple Sunbird (*Cinnyris asiaticus*), Brown Rock Chat (*Cercomela fusca*), Red wattled Lapwing (*Vanellus indicus*), Indian Cuckoo (*Cuculus micropterus*), Common Myna (*Acridotheres tristis*), Golden oriole (*Oriolus oriolus*), Red vented Bulbul (*Pycnonotus cafer*). Some significant migratory birds of the area are Grey patridge (*Perdix perdix*), Bar-headed goose (*Anser indicus*), Grey heron (*Ardea cinerea*), Purple heron (*Ardea purpurea*), Greylag goose (*Anser anser*), Gadwall (*Anas strepera*), Northern Pintail (*Anas acuta*), Common Teal (*Anas crecca*), Rock pigeon (*Columba livia*) and others.

(**Source:** All the above-mentioned data are estimated from WILDLIFE PROTECTED AREA NETWORK ATLAS OF J&K, 2021, Department of Ecology, Environment & Remote Sensing Government of Jammu and Kashmir)

CHAPTER 8: LAND UTILIZATION PATTERN OF THE DISTRICT

8.1 Introduction

- **Land cover** is the physical material at the surface of the earth. Land covers include grass, asphalt, trees, bare ground water, etc. Land cover data documents how much of a region is covered by forests, wetlands, impervious surfaces, agriculture, and other land and water types. Water types include wetlands or open water.
- **Land use** not only shows how people use the landscape but also the utilization of land resources naturally. Therefore, the land of a particular region can be used for the purpose of infrastructural development, settlements, amusement & recreation, conservation of wildlife and wildlife habitat, agriculture & farming, or mixed uses and can be defined as “land use”. Land use applications involve both baseline mapping and subsequent monitoring, since timely information is required to know what current quantity of land is in what type of use and to identify the land use changes from year to year.
- **Deciduous forest:** Deciduous Forest is mainly dominated by woody vegetation cover, i.e., >60% along within average plant height of more than 2 meters. The floral communities are dominated by the trees which hold broad leaves with an inimitable feature of the annual cycle of leaf-on and leaf-off periods means the trees shed their leaves at a particular season of each year, mainly in late winter.
- **Cropland:** Temporarily cropped area followed by harvest and a bare soil period (e.g., single and multiple cropping systems). Different types of crop cultivation and cropping arrangement are specified according to the seasons. Cropland includes areas that are used for common crop production and are also used for the adapted crops for harvest.
- **Built-up land:** The urbanized area, i.e., any land on which buildings and/or non-building structures are present, normally as part of a larger developed environment such as: a developed land lot, rural area, or urban area. The land is covered by buildings and other anthropogenic infrastructures.
- **Mixed forest:** In mixed forests, the vegetation composition principally displays the presence of trees and also includes shrubs and bushes. The mixed type of forest is neither predominated by broad-leaved trees nor by coniferous floral species.
- **Fallow land:** Fallow land is farmland without crops and usually needs a year to recover its fertility to grow crops. Such kinds of land are acquired for cultivation temporarily and are kept uncultivated for one or more seasons for its reclamation.
- **Waste land:** Sparsely vegetated land with signs of erosion and land deformation that could be attributed to lack of appropriate water and soil management, or natural causes. These are land identified as currently underutilized and could be reclaimed to productive uses with reasonable effort. Degraded forest (<10% tree cover) with signs of erosion is classified under wasteland. An empty area of land, especially in or near a city, which is not used to grow crops or built on, or used in any way and/or a place, time, or situation containing nothing positive or productive, or completely without a particular quality or activity.

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

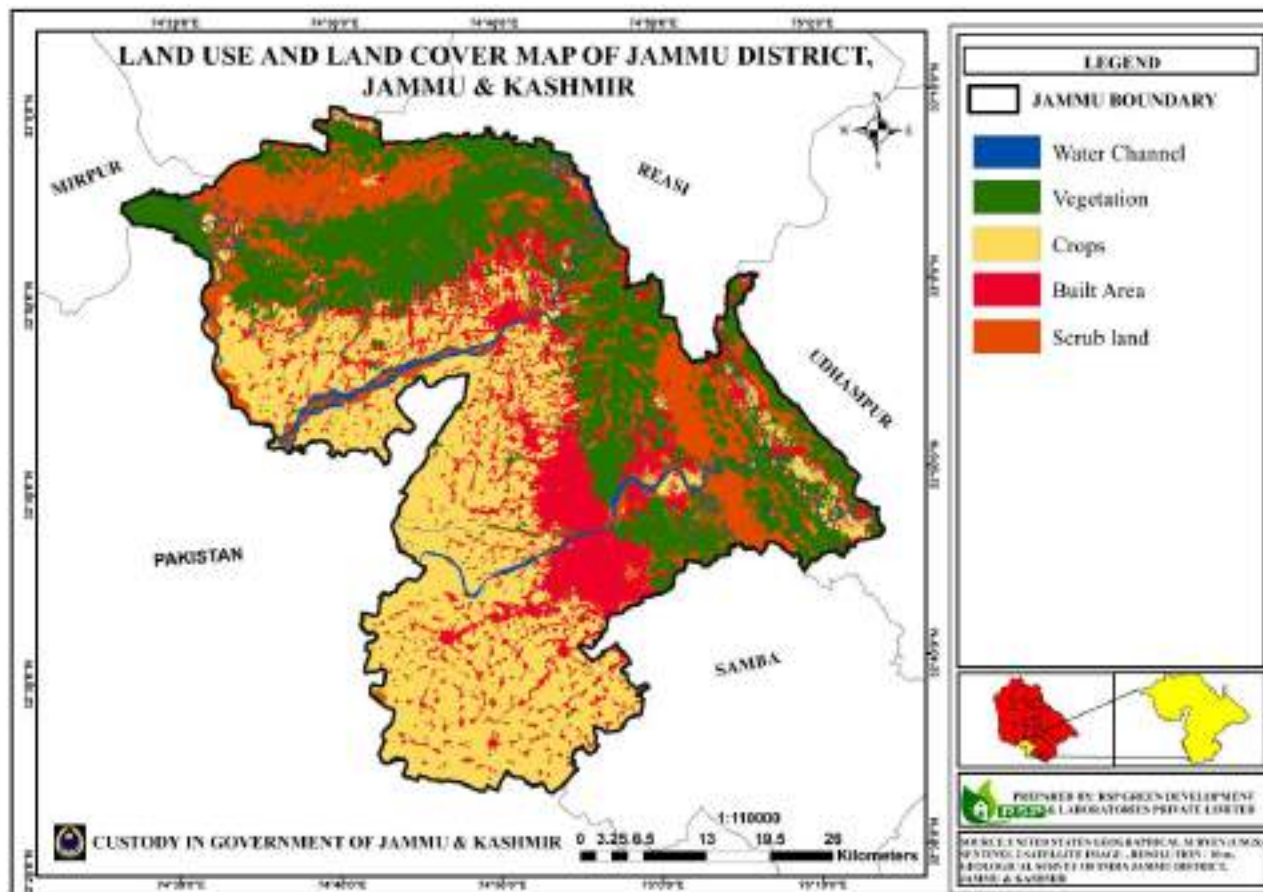
The table showing land use pattern of the district derived from Land use and Land cover map data.

Table No. 26: Land use and Land cover data

Sl. No.	Name	Area (Ha)
1	Geographical Area	309700 (3097 sq.km.)
2	Land under non-agricultural use	327.48
3	Permanent pastures	152.84
4	Cultivable wasteland	371.71
5	Land under Misc. tree crops and groves	24.96
6	Barren and uncultivable land	625.51
7	Current fallows	108.20
8	Fallow land More than Once	48.70
9	Net area sown	1139.41

Source: Digest of Statistics 2009-10

FIGURE 11: LAND USE AND LAND COVER MAP OF THE DISTRICT



8.2 Forest

As per the Indian State of Forest Report (ISFR) 2011, the Forest and Tree Cover of the country is 23.81% of the geographical area of the country. The forest cover of the country has registered a marginal decline of 0.05% as compared to the previous assessment published in ISFR 2009. In India State of Forest Report, the different categories of forests are defined for assessment of forest cover on the basis of tree canopy density which are in the followings:

According to district wise forest cover assessment (2011) Jammu & Kashmir, Geographic area of the Jammu district is 3097 Sq. Km in which 210 Sq.km is moderately dense forest and 672 Sq. Km is Open forest which means the proportion of Forest cover to district Geographic Area is 28.48% and Proportion of Forest Cover to state geographic area is 0.40%. In a report that came out at 2018-19 by Jammu & Kashmir Forest department, Jammu district has moderately dense forest area which is about 241.41 square kilometer and Open forest is about 526.22 square kilometer. (*Source: J & K Forest Department at a Glance 2018-2019*)

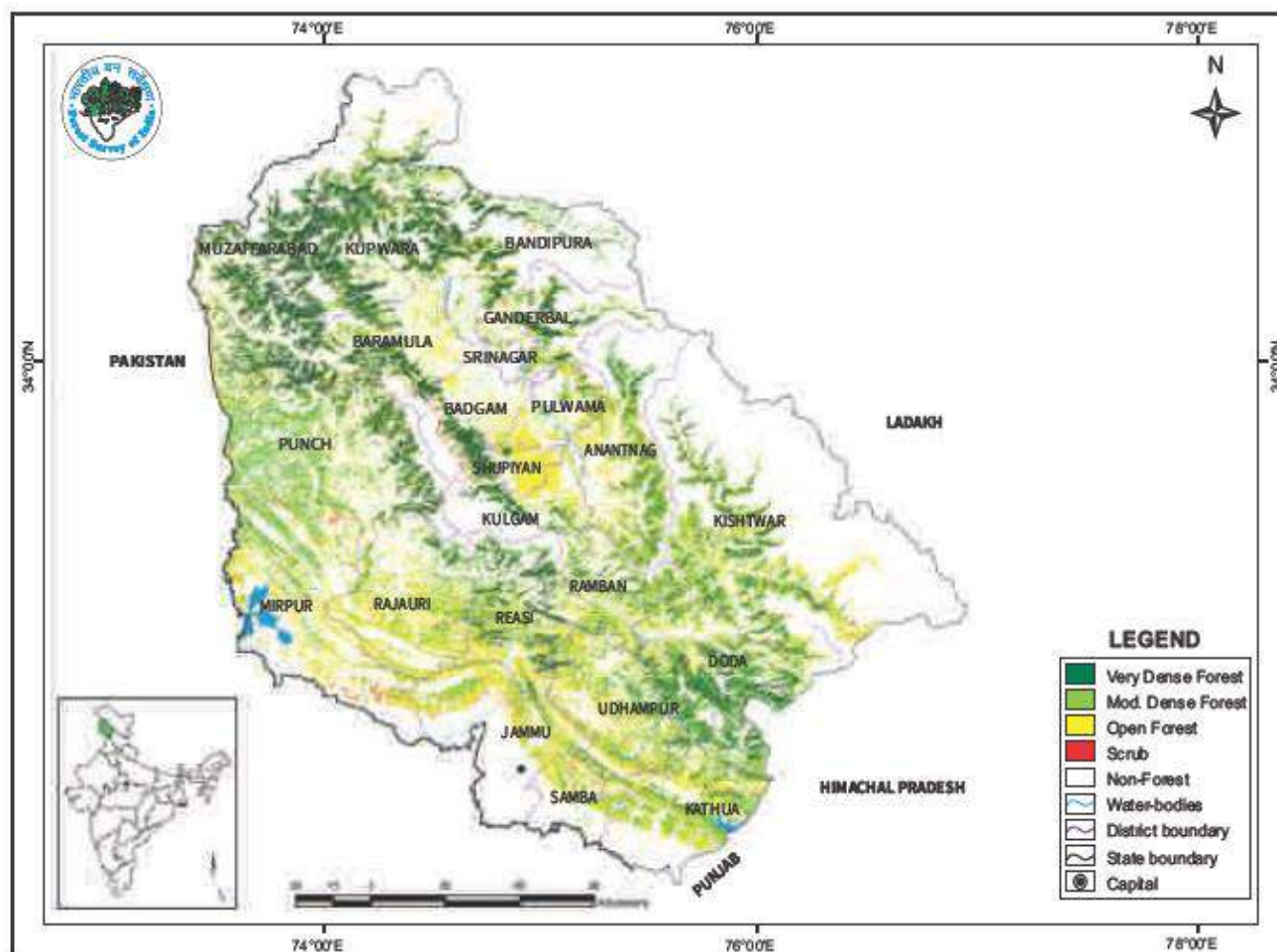
Table No. 27: Details of forest area in the district Jammu

Area	2011	2019
Total Geographical area of the district	3097 Sq. Km	2407 Sq. Km
Moderately Dense Forest Area	210 Sq.km	241.41 Sq. Km
Open Forest	672 Sq. Km	526.22 Sq. Km
Total Forest Area	882 Sq. Km	767.63 Sq. Km
Percentage of forest area with respect to geographical area of the district	28.48%	31.89%

(*Source: J & K Forest Department at a Glance 2018-2019*)

There is one forest range present in the district Jammu district. The area and coordinated is described below:

FIGURE 12: FOREST COVER MAP OF UT OF J&K



Source: Forest Dept. of Jammu & Kashmir

8.3 Agriculture and Irrigation

Agriculture as we know plays a very prominent role for development of economy of UT of J&K. Around 70% of the population in the State get livelihood directly or indirectly from Agriculture. Rice is the predominant crop followed by wheat, maize, pulses, vegetables and other crops.

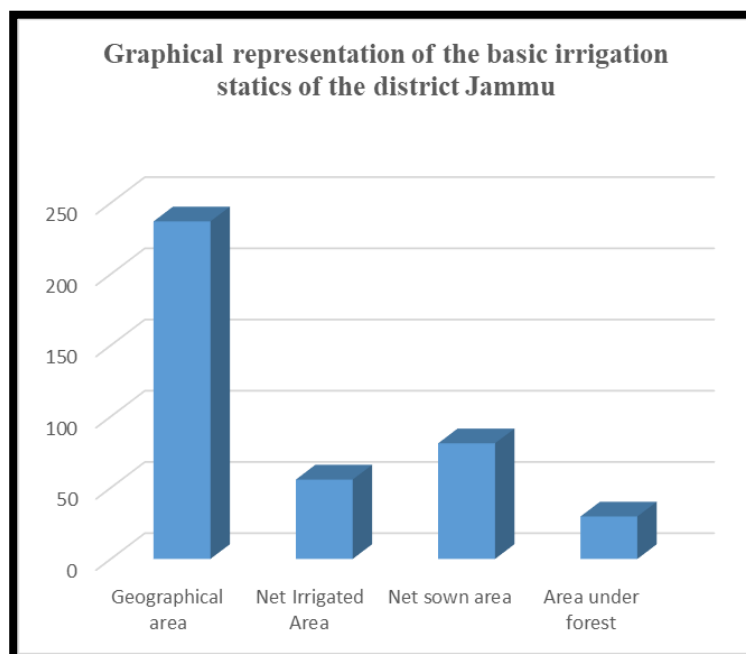
Irrigation is a crucial input for the development of agriculture in the state. State does not receive rain throughout the year and sometimes it is quite insufficient and it is neither uniform nor certain. Rainy season provides sufficient water from July to September. In winter also this region receives several showers of rain. The remaining months of the year are dry.

Table No. 28: Irrigation Pattern of the Jammu district

Sl. No.	Irrigation	Area ('000ha)
1	Net Irrigated Area	55.748 Ha.
2	Gross Irrigated area	-
3	Net sown area	81.192 Ha.
4	Irrigation by Canals	49.810
5	Irrigation by Tanks	1.624
6	Irrigation by Open wells	2.400
7	Other sources	1914

(Source: Agriculture Contingency Plan for district Jammu)

Chart 4: Graphical representation of the basic irrigation statics of the district Jammu



Source: Table No.: 13

8.4 Horticulture

Jammu division of the Jammu & Kashmir has variety of agro climatic zones which make the atmosphere favourable for production of diversified fruit crops. Horticulture is the backbone of the union Territory of Jammu & Kashmir. Fruit cultivation area under Jammu Province is about 1.19 Lakh ha. with annual production of 2.47 lakh M.T (2019-20). (Source: <https://jammu.nic.in>)

Table No. 29: Land use pattern in respect of Horticulture Department of District Jammu

Horticulture Fruits	Area ('000 ha)	
	Irrigated	Rainfed
Peach	-	18.46 ha
Citrus	-	2143.90 ha
Mango	-	2990.00 ha
Ber	-	2783.54 ha
Guava	-	647 ha
Horticulture crops	-	-

(Source: Agriculture Contingency Plan for district Jammu)

8.5 Mining

The minerals that found in this district are Bentonite, Kaolinite (China Clay), Sand and Bajri. Bentonite mainly found in between Bhimber and Kathua in the Jammu Division. It is used in drilling mud and as a binder, purifier, absorbent and carrier for fertilizer and pesticide. Kaolinite is found in association with bauxite deposits of Jammu. It is the natural (unwashed) china clay. It is used for white-washing purposes. In the river Chenab and Tawi some quantities of sand, pebbles and shingles which is used in building materials.

CHAPTER 9: PHYSIOGRAPHY OF THE DISTRICT

9.0 INTRODUCTION

General Land Form

Physiography of the UT of Jammu & Kashmir is highly varied with highest mountain ranges of the world. The Jammu district is located in sub-mountainous region at the foothills of the Himalayas. Jammu district can be divided in two major units viz. Siwalik ranges (Hilly area) and outer plains. The Siwalik range is rising from the outer plain to hilly areas. Outer plain areas are also divided into Kandi and Sirowal belts.

i) **Northern Hill Area:** This area occupies near about 35.4% of the total geographical area of i.e. 1097 sq. km area. This area is surrounded with strike valleys and dissected ridge slopes. The altitude is ranging from 400 and 700 m above mean sea level and slope is in southwest direction. All Nalas of this area can be seen after rainy season, so all nalas carried flash flood at that time.

ii) **Southern Outer Plains:** The altitude of this area is ranging from 280 and 400 m above mean sea level. This area is normally foot hill of Siwalik hills and covering with seasonal nalas. The plains can be divided into two parts, the 'Kandi' in the north and the 'Sirowal' in the south and towards international border.

a) Kandi belt is ranging from 320 to 400 m above mean sea level. This region is merging with the *Sirowal* belt in southwards. Groundwater of this region is very low.

b) Sirowal belt is stars from the southern plainest tract to 320 m above mean seas level. This area is mostly swampy and flow of ground water along the spring line marking the contact between the *Kandi* in north and the *Sirowal* in the south. (*Ground Water Information Booklet Jammu district*)

Soil and Rock Pattern

Various types of soils are formed in different regions of UT of Jammu and Kashmir owing to marked physiographic and climatological variations. Different types of soil groups present in the area are i) Alluvial soil, ii) Clay loam, iii) Sandy loam, iv) Brown, Red hill soil. Soil found in Jammu district is gravelly loamy to gravelly silty loamy. They are called lithosols. The pH of this type of soil is neutral in nature, this type of soil also has a good water holding capacity. Alluvial soils could be also found in the district mainly in the flood plains of Ravi, Chenab, Jhelum and Sind rivers and their tributaries. This soil has been divided into two groups viz. Old alluvial and new alluvial. The old alluvial soils are calcareous and neutrals to alkaline in their reaction with the pH of 7.6-8.4 and low to medium in organic carbon and nitrogen. The new alluvial soil is calcareous with low in organic carbon and nitrogen. The pH range of the new alluvial soil ranges between 7.0-7.7. from ground water point of view. Siwalik rocks has been found in this district ranging from Upper, Middle and Lower Siwalik rocks. (*Source: Ground Water Information Booklet Jammu District*)

FIGURE 13: PHYSIOGRAPHIC MAP OF UT OF J&K

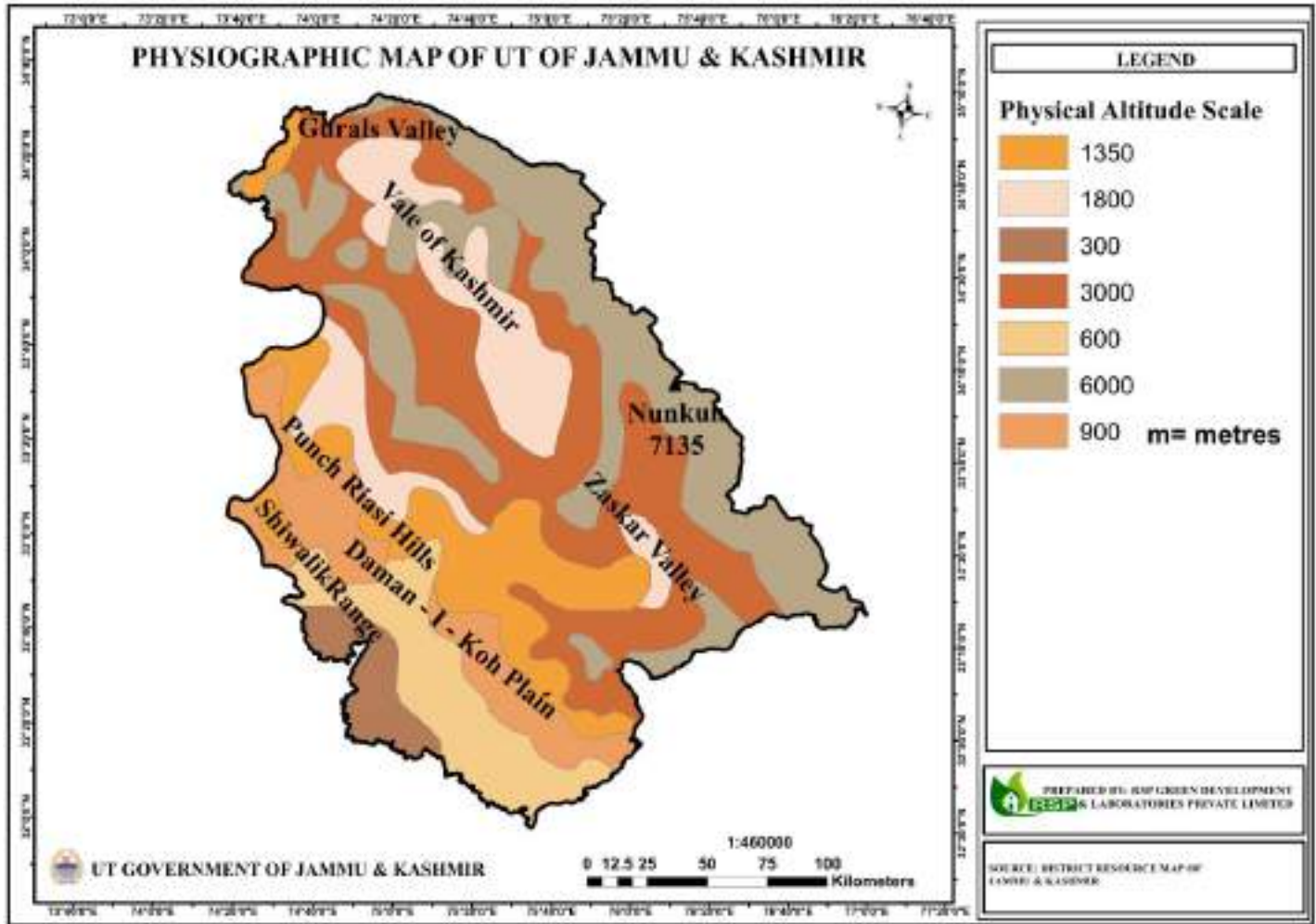
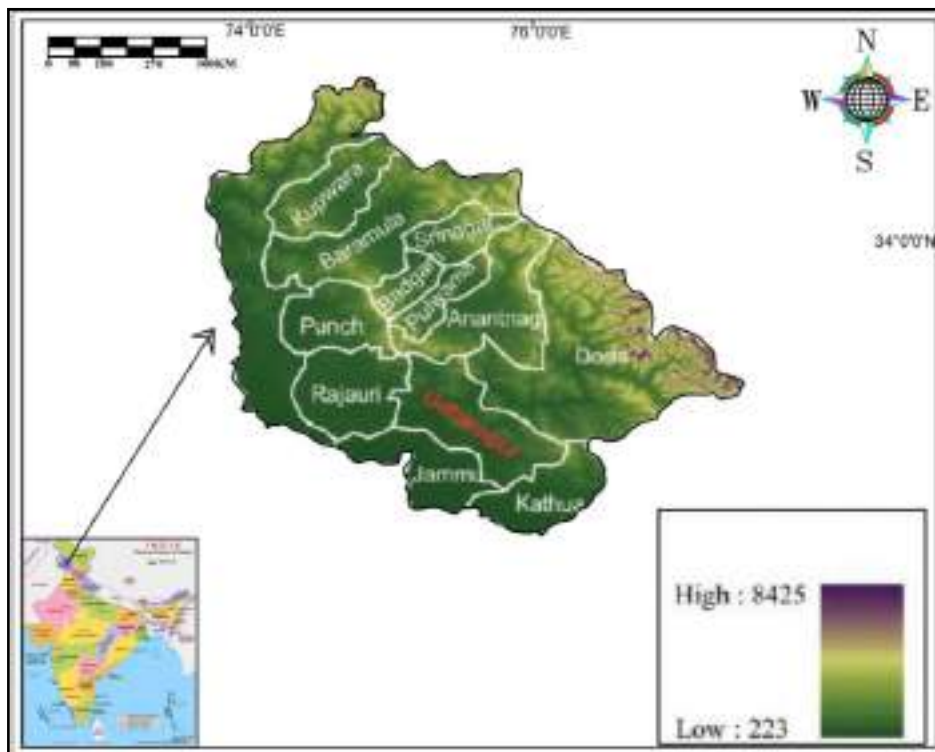


FIGURE 14: SLOPE MAP OF UT OF J&K



(Source: Department of Geology & Mining of Jammu)

9.1 CLIMATIC CONDITIONS

The climate of the district is sub-humid to sub-tropical. The summer season starts from April and lasts till June. June is the hottest month of the year, temperature ranges between 24.9°C and 41.7°C and reached up-to 47°C. After that monsoon season spreads over the months of July August and September. January is the coldest month of the district and temperature comes as low as 4.0°C. (Source: Ground Water Information Booklet Jammu District)

9.2 HYDROGEOLOGY

The hydrogeology of UT of Jammu & Kashmir is very complicated and have various geological settings and ground water conditions. The three regions of UT of Jammu & Kashmir have totally different ground water systems. The area of the state can be divided into two broad hydrogeological units based on the nature of geology and aquifer- Porous and Fissured formations.

Porous formation can be described in region wise:

- Jammu Region
- Kashmir Region
- Ladakh Region

Jammu Region: The districts of Jammu region are extending between River Ravi in the east to Munawar Tawi in the west, the ground water occurs in piedmont deposits belonging to upper Pleistocene to Recent age. The sediments of boulder of various size to gravel that mixed with clay matrix are found with alternating bands of clay of varying thickness. Kanker is also found these sediments at different intervals and in variable quantity. The deposition of finer sediments are found

from north to south. Sediments of sand and clay in alternate bands can be found along with gravels and pebbles.

Jammu region is further divided into three parts- Kandi Formation, Sirowal Formation, and Isolated Valley Fills in Middle Himalayas.

Kashmir Region: In Kashmir region alternate band of sand, silt and clay is seen combined by glacial boulder beds like in Karewas. The sand of this region is very fine here. Ground water in the Karewas of Kashmir valley occurs under both limited as well as unlimited conditions. The Kashmir valley covers an area of 5600 km.

Ladakh Region: The Ladakh Region is comprise with the Leh plains. The Leh plains cover an area of about 100 Sq.km. from Phayang Nala in the west to Sabu Nala in the east. The sediments are found here are morainic and fluvio-glacial boulders, cobbles underlain by lacustrine deposits containing of clay and silt.

Fissured Formation

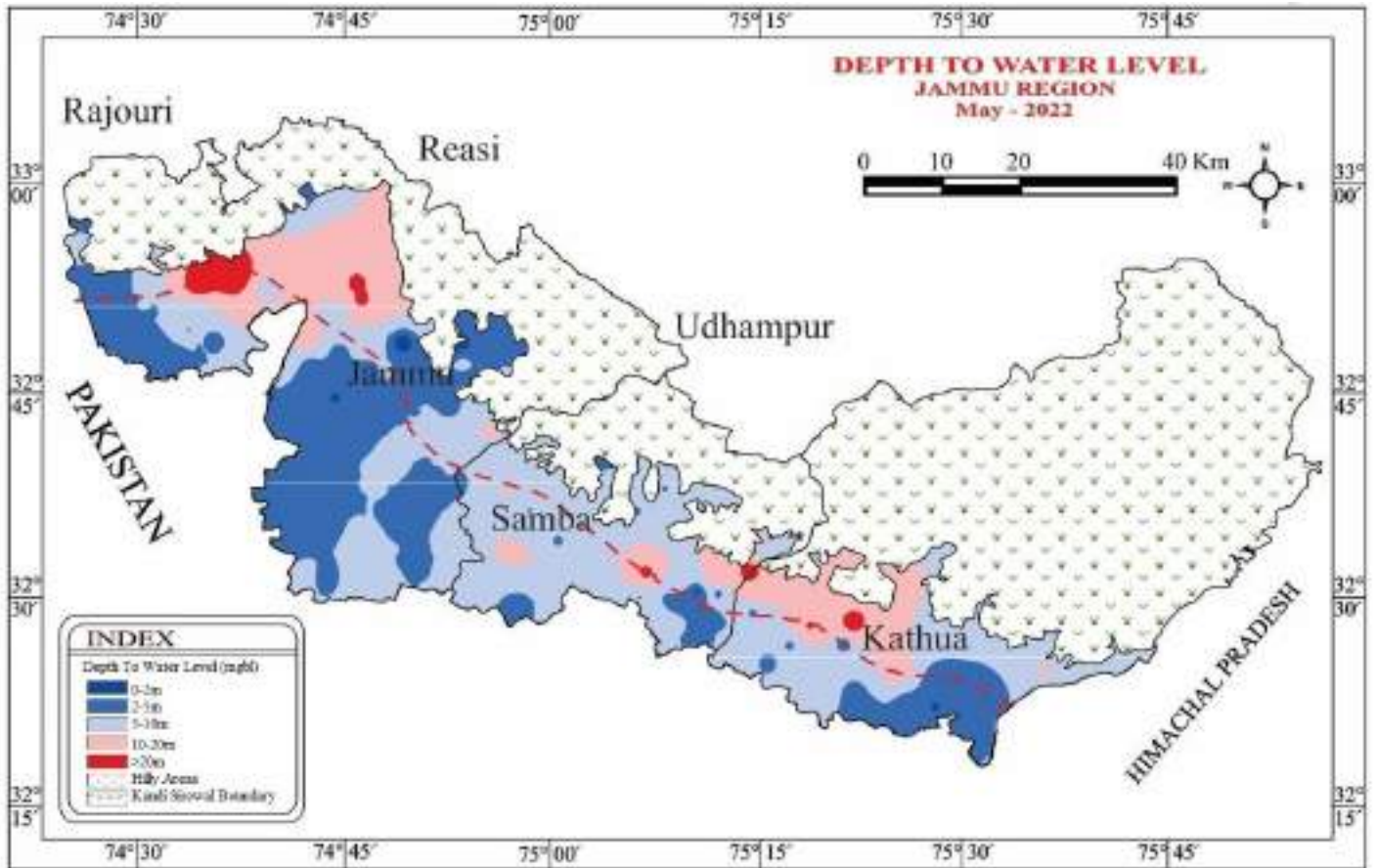
This type of formation is found in Jammu Region of about 15000 sq. km. area of the hilly terrain. It consists of rocks ranging in age from Precambrian (Salkhala series) to Miocene or even Pliocene (Murees and upper-middle Siwaliks). The rocks found here are from soft or friable sandstones, Clays, Shales, Conglomerates to hard traps and metamorphics such as quartzite and crystalline limestone. The groundwater is tapped, in the Siwalik terrain, comes mainly either from the weathered mantle or from the joints or cracks of these rocks. (*Source: Ground water year book 2015-2016, 2021-2022, Jammu & Kashmir*)

The Jammu district is normally hilly area with underlain by the Siwalik rocks. The southern outer plain area and sediments of Recent Sub-Recent times laid down by the present day stream area.

Ground water development

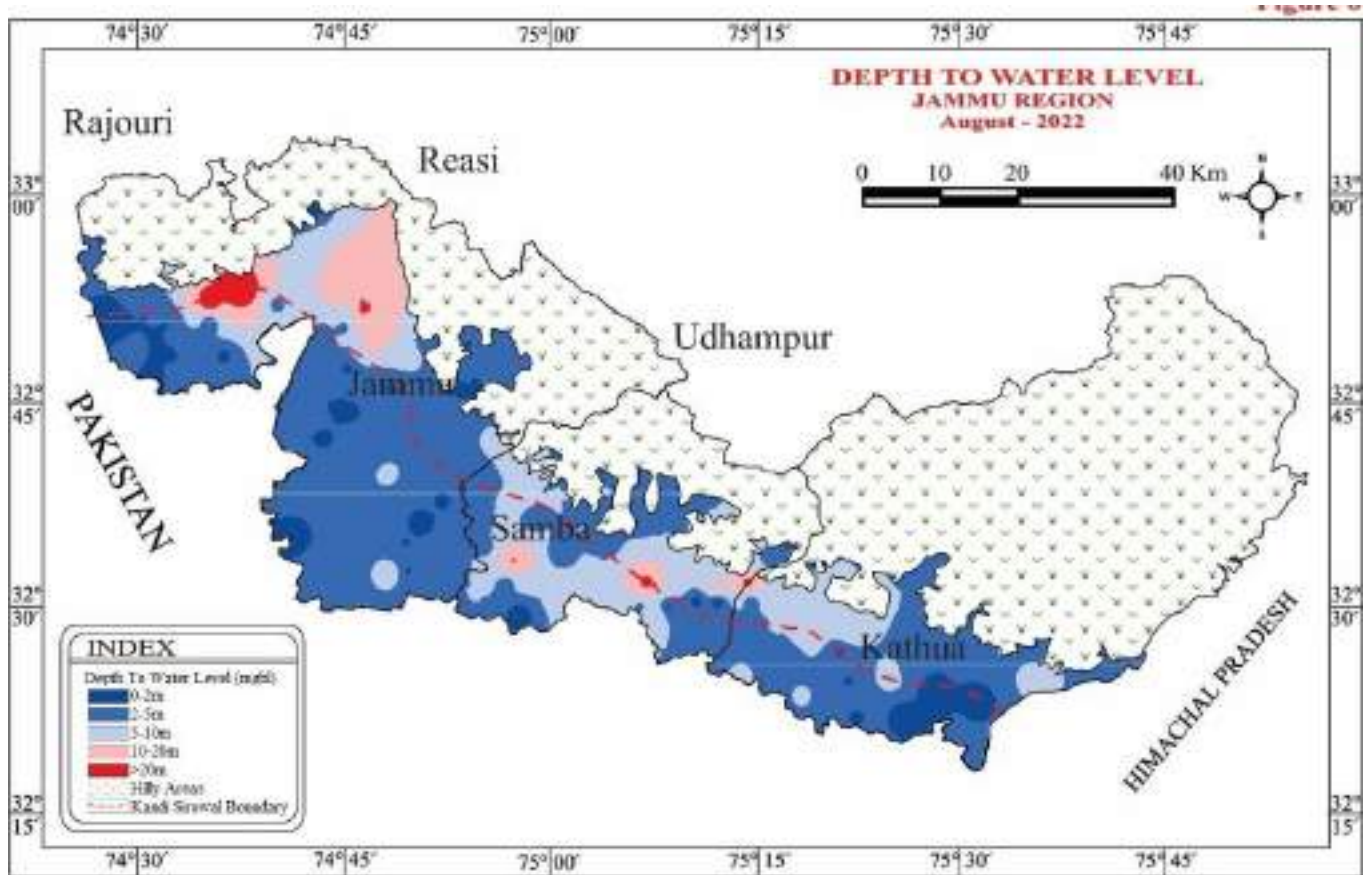
Jammu district is mainly situated under plain and hilly terrain. For this the traditional sources of ground water are mainly dug wells and tube wells. This provides assured irrigation and water supply since past. In some areas ground water structures used to be the only source for water supply for irrigation, domestic and industrial use. In recent years tapping the ground water have been emphasized. During last 15-20 years, irrigation and Public Health department have constructed number of bore wells fitted with pump in the area to meet the water requirement especially in peak summer. Apart from development of resources, conjunctive use etc. is a very important factor in management of ground water resources. Public awareness about this depleted source is required. A management plan is recommended to mitigate water supply problems in the district. PHED and I&FC department being a nodal agency in the State concerned with domestic and irrigation water supply, have drilled number of shallow and deep tube wells. Yielding discharge of this wells are between 8 to 21 lps. State departments have also drilled hand pumps in the district with the depth ranging from 30 to 45 m depending upon lithology of the area with a discharge varying from 0.5 to 2 lps. Few of them have submersible pumps fitted in them. (*Source: Ground Water Information Booklet Jammu district 2013*)

FIGURE 15: DEPTH TO WATER LEVEL MAP OF JAMMU REGION (MAY-2022)



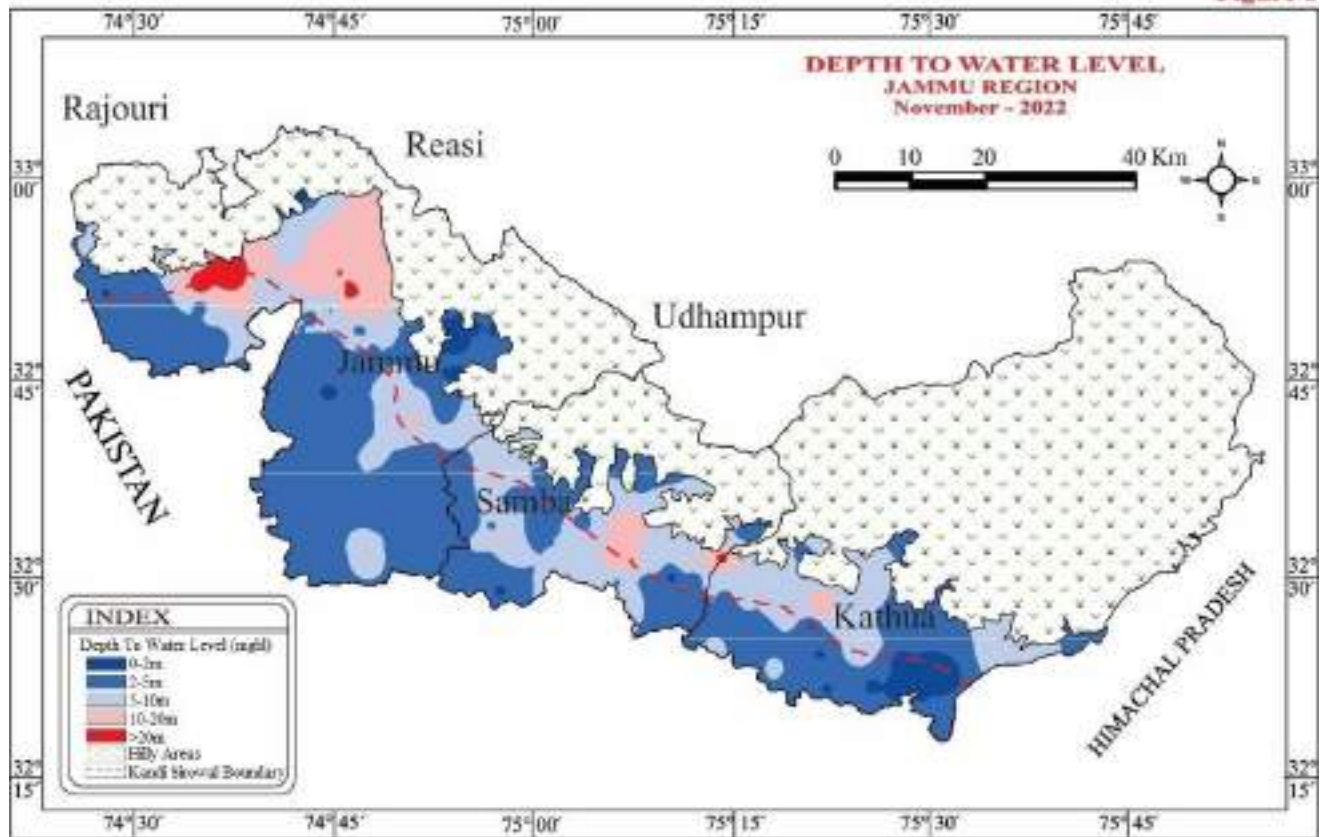
Source: Ground water year book 2022-2023, Jammu & Kashmir

FIGURE 16: DEPTH TO WATER LEVEL MAP OF JAMMU REGION (AUGUST-2022)



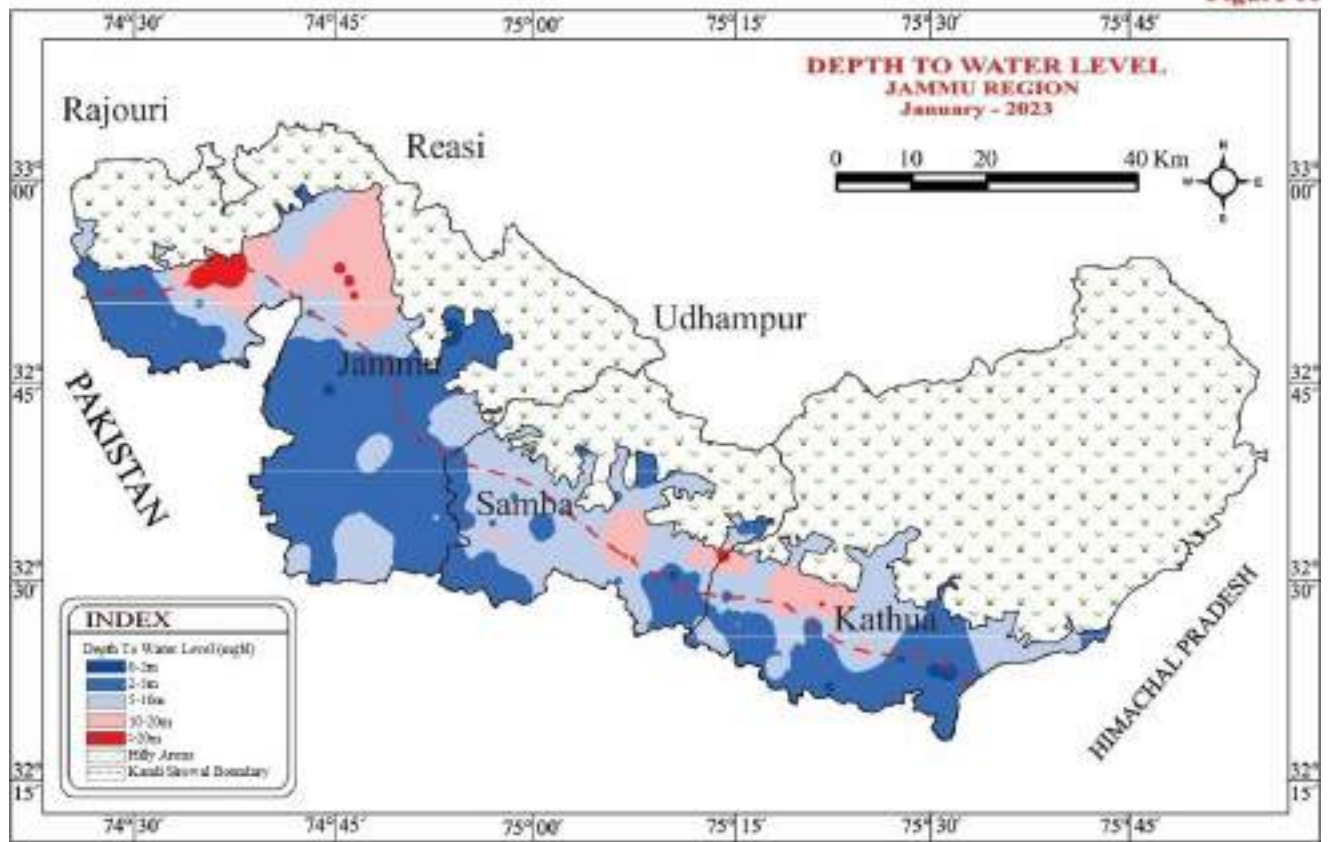
Source: Ground water year book 2022-2023, Jammu & Kashmir

FIGURE 17: DEPTH TO WATER LEVEL MAP OF JAMMU REGION (NOVEMBER-2022)



Source: Ground water year book 2022-2023, Jammu & Kashmir

FIGURE 18: DEPTH TO WATER LEVEL MAP OF JAMMU REGION (JANUARY-2023)



Source: Ground water year book 2022-2023, Jammu & Kashmir

CHAPTER 10: RAINFALL: MONTHWISE

10.0 RAINFALL: MONTHWISE

District has sub-humid to Sub-tropical type of climate. Summer seasons starts from April and lasts till June. The maximum rainfall of the district spread over the months of July, August and September. The post monsoon season (October and November) and (December-February) also experiences some rainfall. For sub-humid to sub-tropical climate district receives normal rainfall of 1246 mm. Most rainfall occurs in the district from the last week of June to end of September through the southwest monsoon. According to ground water booklet of Jammu district. The lowest humidity percentage of the district is 26% in May and highest humidity percentage of the district is 89% in December and January. (*Source: Ground Water Information Booklet Jammu District*)

Table No. 30: Rainfall Data of Jammu District from 2019-2022

Sl. No.	Year	Jan	Feb	March	April	May	June	July	Aug	Sept	Oct	Nov	Dec	Total (mm)
1.	2019	79.9	161.6	39.5	37.8	10.6	10.8	337.9	334.8	187.1	52.4	83.3	115.5	1451.2
2.	2020	97.2	33.5	199.3	54.6	49.2	95.0	245.6	401.8	59.6	0.0	33.6	43.4	1312.8
3.	2021	118.6	8.0	21.2	40.7	61.2	84.7	587.6	243.9	194.2	108.4	0.0	0.6	1469.1
4.	2022	201.8	45.8	2.1	1.2	59.1	98.3	535.0	398.4	250.7	21.8	35.9	10.4	1660.5

Source: India Metrological Department

CHAPTER 11: GEOLOGY AND MINERAL WEALTH

11.0 GEOLOGY

Regional Geology:

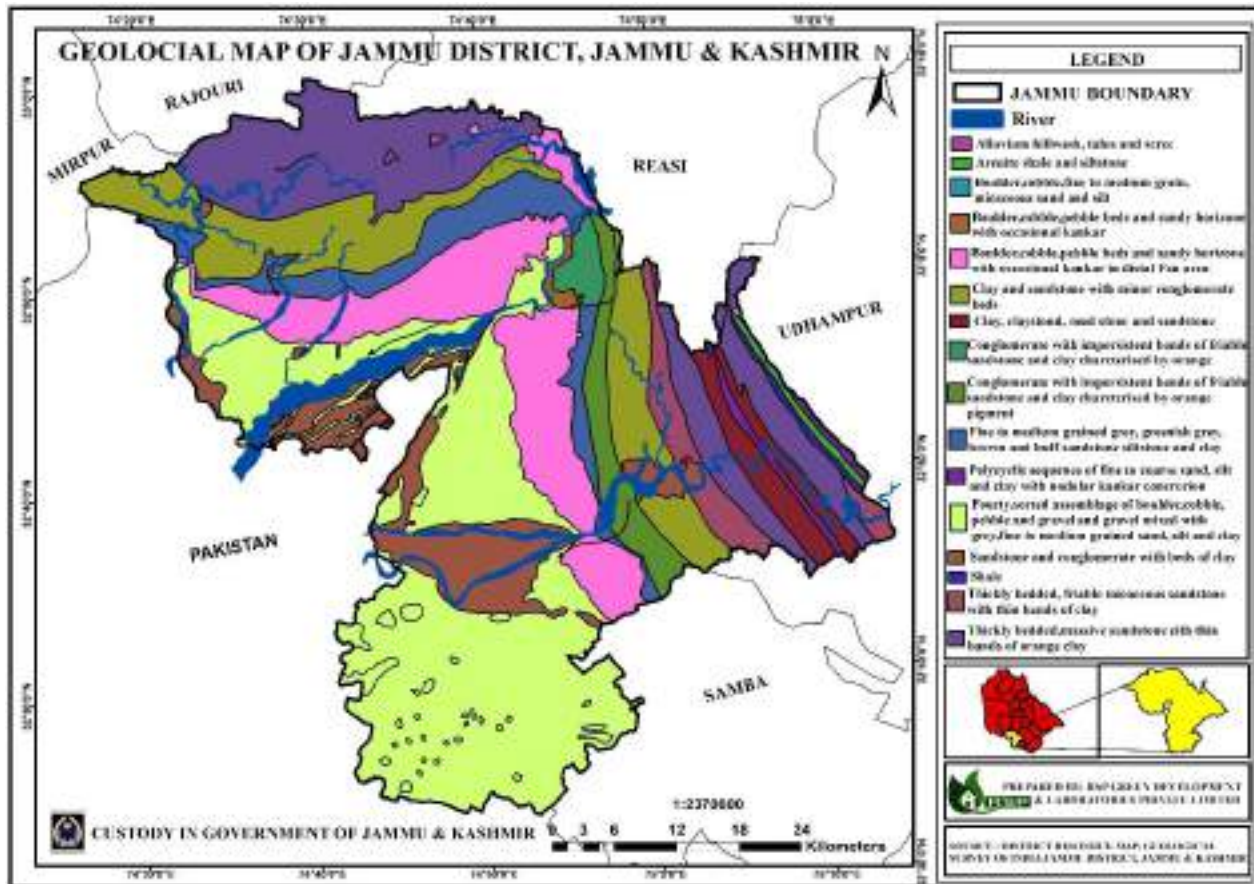
The overall geological set up of India is divided into three parts i.e., Extra-peninsula, Peninsula and Indo-Gangetic Plain. UT of Jammu & Kashmir belongs to Extra-peninsular region which is also divided into three sub-division. Those are as follows:

- 1.Outer-Himalayan Zone or Siwalik Zone.
- 2.Lesser Himalayan Zone and
- 3.Central Himalayan Zone.

The Jammu region falls in partially all of these three regions. According to Singh (1971) the geology of Jammu and Kashmir covers the record of sedimentation, tectonics, volcanism that occurs in Himalayan orogeny. The rocks of this area generally belong to all ages i.e., from the beginning of Archean which formed the floor of Himalayan geo-syncline upto the recent alluvium. The region also exhibits some remnants of glacial deposits at lower altitude as a testimony of climate change that have occurred throughout the course of geological history. Structural feature like fold, fault, thrust and also huge igneous intrusion observed in this area. The inner-tertiary of sub-Himalayan zone which is formed from both Subathu Formation and Murree Group exposed in north-western Himalaya, ranging from Palaeocene to Early Miocene in age. Subathu Formation, comprising of shale and limestone on the other hand Murree Group contains mudstone, siltstone and sandstone. Khan et al. (1971) reported marine as well as non- marine fauna from Murree Group. Major geological fault planes are observed in UT of Jammu and Kashmir. The boundary of Siwalik belt with Indo-Gangetic plain is separated by Main Boundary Thrust (MBT) trending towards NW-SE. It is also known as Murree Thrust in UT of Jammu & Kashmir. The boundary of Central Himalayan Region and Lesser Himalayan region is separated by Main Central Thrust (MCT) trending in NW-SE direction. It is also known as Panjal Thrust in Jammu.

The geological set up of Jammu region characterizes two linear zones of rocks formation with age varying from Proterozoic to Recent. The rocks of the Autochthonous zone ranging from Upper Palaeocene to Lower Pleistocene exposing mainly Tertiary sediments with the inliers of Sirban Limestone (Late Precambrian to Early Cambrian). The Para autochthonous zone lying between two thrust namely Murree and Panjal exposing the Palaeozoic Panjal Trap and Younger and older Eocene rocks.

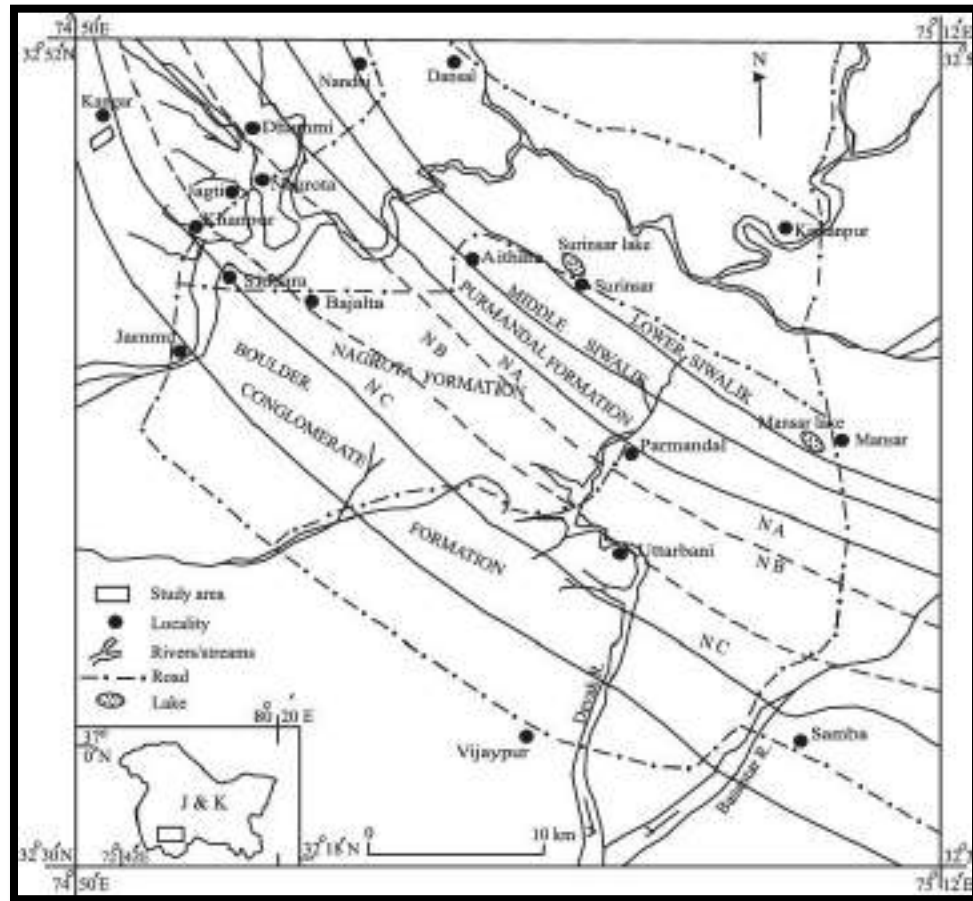
FIGURE 19: GEOLOGICAL MAP OF THE DISTRICT



Local Geology:

The geological formations of the area mainly comprises of Siwalik rocks, exposed in uplifted thrust sheets which record mid Miocene to Pleistocene synorogenic foreland basin sedimentation. However on the basis of lithology the area can be divided in Upper Muree, Loer, Middle and Upper Siwalik Supergroups and Alluvium of Jammu Formation. Geologically, the area can be explained as the northern hilly area underlain by the Siwalik rocks and the southern outer plain area underlain by the sediments of Recent Sub-Recent times laid down by the present day stream area. The study area is a part of Himalayan foothills and merges into the plains in the south. The altitude of this district generally decreases towards southern part. This district is generally covered by three formations. Siwalik, Kandi and Sirowal. The northern part of Siwalik Group of hilly tracts and the unit extending in the southern part which is a plain tract i.e., the outer part. The Siwalik Group comprises of cemented sandstone, clay boulders, gravels, pebbles. The outer part is further sub-divided into Kandi and Sirowal belt which are equivalent to Bhabar and Terai Formation of Indo-Gangetic plains. Kandi belt comprises of boulders, cobbles, pebbles & coarse sand associated with clays. Sirowal belts composed of clay with lesser amounts of coarse material. Both of these sediments are of Recent to Sub-recent in age. The Geological succession of the Jammu district is given below:

FIGURE 20: GEOLOGICAL MAP OF THE JAMMU AREA DEPICTING FORMATIONAL BOUNDARIES



(Source: S.K Pandita, S.K Bhat & SS Kotwal, Himalayan Geology, Vol. 32, 2011)

Table No. 31: Stratigraphic succession of Jammu District

		GEOLOGICAL HORIZON	LITHOLOGY	AGE
Younger and Older Alluvium		Alluvium fan, terrace deposits	Heterogeneous clastic sediments. Fine to coarse grained sand silt and clay. Fine to medium grained micaceous sand silt and clay. Coarse grained (Cobble, Boulder) Silt and clay in valley fill deposit.	Recent to Pleistocene (?)
		(Kandi and Sirowals)		
-----Unconformity -----				
Siwalik Group	Upper Siwaliks	Boulder bed stage	Conglomerates sandstones with intercalations of red clays	Lower to Middle Pleistocene
		Pinjor Stage	Coarse sandstone, sand rock and massive sandstone beds.	Lower Pleistocene
		Tatrot Stage	Sandstone drab clays alternative beds.	Upper Pliocene
	Middle Siwaliks	Dhokpathan Stage	Sandstone & shale with isolated sand nodules	Lower Pliocene
		Nagri Stage	Sandstones & Shale, Hard & compact	Upper Miocene
	Lower Siwaliks	Chingi Stage	Bright red shale and sandstones	Upper Miocene
		Kamlial Stage	Hard red sandstones & shale with pseudo conglomerates	Middle to lower Miocene
	Muree Group	Upper Muree	Monotonous grey sandstone and grey brown to yellowish subordinate siltstone and clay	

(Source: DSR, Jammu & CGWB Report of Jammu District, 2013)

Lithologic Description:

Younger Alluvium

Broadly Post -Siwalik of Jammu region is classified into two sub-divisions. It consists of fine to medium grained micaceous sand, silt and clay, which indicates active flood plain deposits of major tributaries of river basins, and deposits are restricted to present day channel courses and adjoining the land areas.

Older Alluvium

This unit covers the major part of alluvial plains in the area. It is composed of fine to coarse grained sand, silt, silty clay and clay of pale reddish-brown colors with sporadic occurrences of bedded and

nodular kanker and ferruginous pisolitic concretions. And also within clay bed occasionally pebble/gravels are present. The argillious units often exhibit pale yellowish surficial colors due to oxidation. The quantity of sand in the clay decreases as the distance from the Siwalik Hills increases. The silts of older alluvium are more or less kanker disseminated at places which form relatively higher ground.

SIWALIK GROUP: The Siwalik group is composed 5000 to 6000 m thick succession of sedimentary rocks of fluvial and lacustrine in nature. The chief rock types are loosely consolidated and poorly bedded conglomerate, grits, sandstone, silts and clays. These are neither graded or sorted. In general, the coarseness of rocks increases from the lower to upper part of the succession. The sediments were derived from rising of Himalayan Mountain in the north and they are deposited in the alluvial plains of a river system called the 'Indo-Brahm' river. (Pascoe,1919) The Siwalik rocks are involved in the Himalayan Orogeny. They are folded, faulted and even overturned and thrust. The Siwalik Group are divided into three sub-groups i.e., Lower, Middle and Upper Siwalik.

The Lower Siwalik contains brown sandstone with thick beds of red and purple clay. The characteristics of Middle Siwalik rocks are the massive coarse sandstone whereas the chief rocks of the Upper Siwalik are conglomerate and massive beds of grits and sandstone.

Upper Siwalik: This part is mainly consisting of conglomerate facies in upper part and alterations of sandstone, clay and conglomerate facies in the lower part. The basal part of this group also shows predominantly of stratified conglomerate, sandstone and massive mudstone. This group can be divided into three sub-groups i.e.,

- a. Tatrot Formation:** This formation rests unconformably over the Dhokpathan rocks. It is composed of soft massive sandstone, silts, clays and conglomerates. The age of Tatrot formation is about Upper Pliocene.
- b. Pinjor Formation:** This formation comprises of conglomerate, coarse grits and sandstone with some clays at about Lower Pleistocene.
- c. Boulder Conglomerate:** As the name implies, this formation is made up mainly of boulder conglomerate containing pebbles and cobbles of granites, quartzites, slates and limestone. The age of boulder conglomerate is about Lower to Middle Pleistocene.

Middle Siwalik: The rocks represent a multi stoney sandstone complex, underlain by major erosional surface extending for hundreds of meters. The Middle Siwalik is conformably overlain by the Upper Siwalik Sub-groups. The middle Siwalik groups can be divided into two sub-groups i.e.,

- a. Nagri Formation:** It is composed mainly of massive grey sandstone with some shales of Upper Miocene age. This formation is rather than poor in fossil.
- b. Dhokpathan Formation:** It is most important fossil bearing of Siwalik group. This formation is made brown sandstone gravel bed, shales and clays.

Lower Siwalik: This sub-group is the base of the Siwalik group and is the stratigraphically beginning of the coarsening upward megacycle, characterized by facies of alternate sandstone and mudstone.

This group can be classified into two sub-group i.e.,

- a. Kamli Formation:** The formation rest over the Murree group of Lower Miocene in age. It is composed of red sandstone with nodules of clay (pseudo-conglomerate) and purple shale.
- b. Chinji Formation:** The formation composed of 400 to 1800meters of thick beds of red, nodular shales and clays with some sandstone and conglomerate at about Middle Miocene in age. These beds

have yielded a rich assemblage of mammalian fossil.

Geomorphology of the study area

District Jammu falls in sub-mountainous region at the foothills of Himalayas. Siwalik ranges rises gradually in the northern part of the district and merges with the Indo-Gangetic plains in the south. Physiographically, the overall region is divided into two distinct zones viz. Siwalik hills in the northern part and outer plain in the southern part.

1.Northern Hill Area: About 35.4% i.e., about 1165sq.km of the total area is covered by hilly regions. The terrain is rugged and comprises with strike valleys and dissected ridges slopes. Altitude of the area varies roughly between 400m and 700m above msl. Major physiographic slopes towards southwest direction i.e., towards the outer plain area.

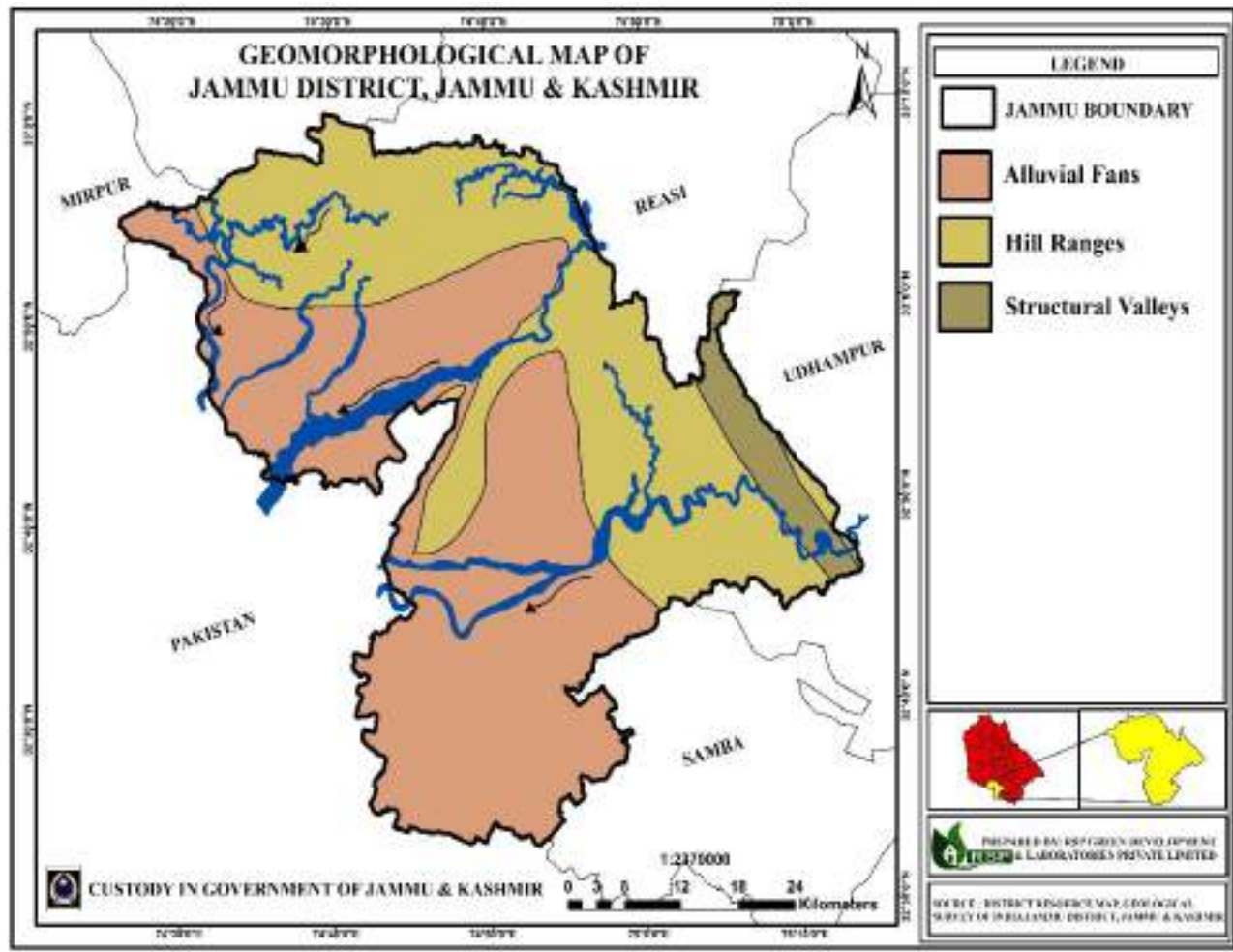
2.Southern Outer Plains: These are located at the foot of the outer most Siwalik hills and have an altitude varying between 248 and 400m above msl. The streams are boulder dominated and have broad shallow channels having water only for short time after rains. The plains can be sub-divided into two parts, the 'Kandi' in the northern direction and 'Sirowal' in the south and towards international border.

a) **Kandi Belt:** It derives its origin from the dogri word 'Kanda'(Kinara) that means the border or the periphery. According to the English geologist Fredrick Drew, it has named such because of its location at the 'edging of the great plain'. It is a steeply sloping sub-ordinate belt, made up of boulder mass in the Himalayas fringing the Siwalik hills. It is equivalent of Bhabhar Formation. This belt has undulating topography, steep and irregular slopes, erodible and low water retentive soils, extending from Digiana to Purkhu on northern side of Jammu-Pathankote highway and stretches upwards to Nagrota. General altitude of the Kandi ranges between 320 to 400m above mean sea level. The width of the formation varies between 4 km in the south-east to 10 km at the central region. The surface gradient is towards south-west and varies between 37 m per km near the foothills to 9 m per km away from it. The lithology of Kandi Belt comprises of boulder, pebbles, cobbles and coarse sand associated with clay. The clay portion increases towards south-east. Water levels are deep resulting into very a smaller number of ground water structures i.e., dug wells and tube wells. The Kandi imperceptibly merges with the Sirowal belt southwards.

b) **Sirowal Belt:** The Kandi formation coalesce into Sirowal Formation in the south which are formed by outwash of the materials of alluvial fans. The altitude of Sirowal belt is less than 320m above mean sea level. It is generally composed of finer particles. It covers of area about 1000sq. km. southern part of Jammu & Kashmir. It is equivalent of Terai Formation. The junction between Kandi Belt and Sirowal Belt is generally characterized by springs. This is why swampy condition prevails along the contact zone between Kandi in the north and Sirowal in the south. The number of the springs is decreasing due to the decreasing of water table over the years.

The Upper and Middle Siwalik of Jammu hills show a more or less close lithological analogy with those of the adjacent Salt range and Potwar areas. The lower division, exhibits of marked variation which relate nearly to the Murree than to the typical Kamliyal or Chinji facies. The rocks exposed in north belong to Murree formation. It comprises a distinct suite of red and purple shale-clay, grey-greenish sandstone-siltstone, lenticular-conglomerate etc. To the south of Siwalik, exposed quaternary sediments occupying the gently sloping to the flat plain areas. The older alluvium deposited south of Jammu formation, comprises fine to coarse grained sand, silt and clay. The newer alluvium is deposited between the distributaries of various rivers which is flowing in the plains and also along smaller nallahs and khads. Barring such local variation, the Siwalik system in particular and the tertiaries in general are developed in almost all along the foot of the Himalayas.

FIGURE 21: GEOMORPHOLOGICAL MAP OF THE DISTRICT



11.1 MINERAL WEALTH

Overview of mineral resources (covering all minerals)

The principal minerals found in the district is bentonite. However there are occurrences of other smaller deposits also. A small brief of the deposits are as follows:

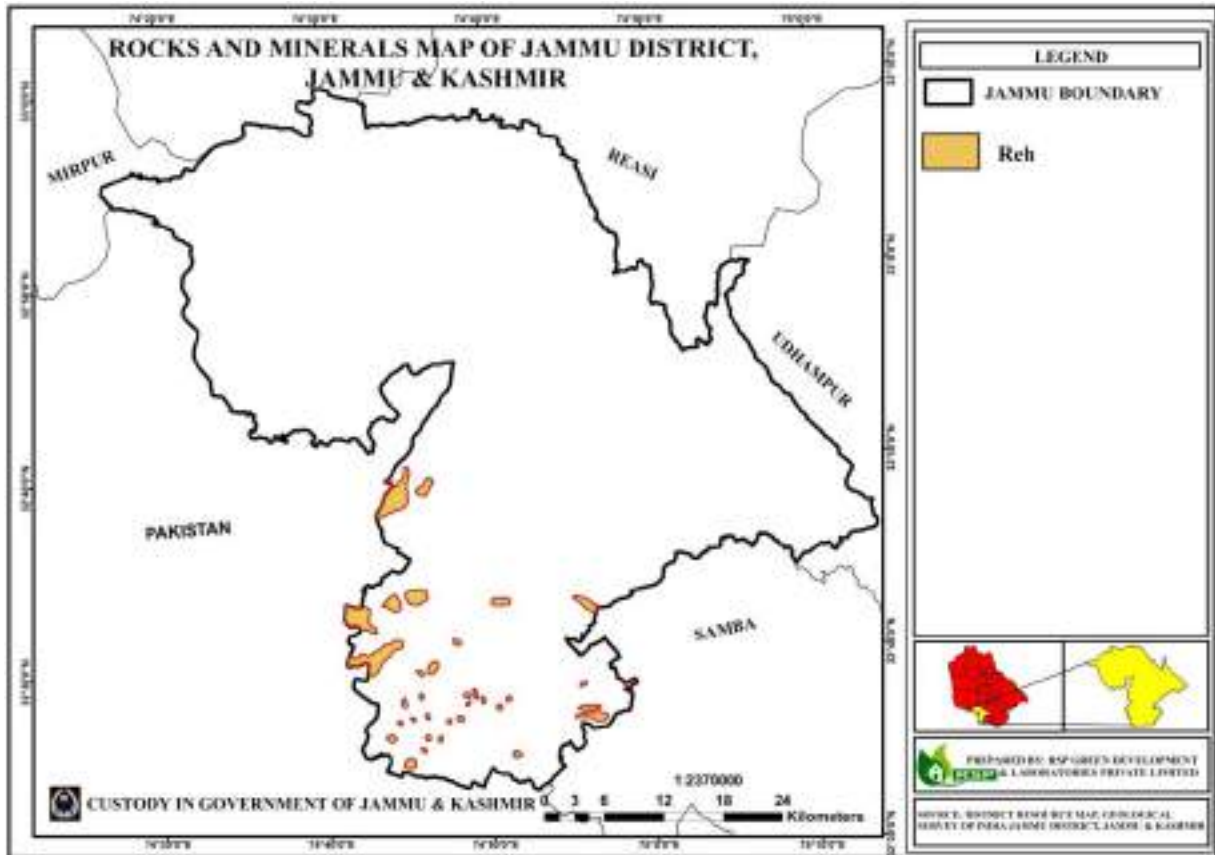
Bentonite: Bentonite is especial assemblage of clay mineral, in many instances formed by weathering of acid, lavas and pyroclastic rocks. The deposits of bentonite are spread between Bhimber and Kathua in the Jammu Division. These deposits lie, on the gentle dipping slopes of the outer plains of Jammu. Para, Chittopali, Modkali, Uttar Bhimber Bazar and Panipur are the areas of Jammu Division in which bentonite is found.

Kaolinite (China Clay): Kaolinite is a clay produced by the decomposition in-situ of the felspar. It is the natural (unwashed) china clay. Kaolinite is found in association with bauxite deposits of Jammu. It occurs between great limestone and breccia and nummulitics and bauxite series of the Salal, Songarmar and Chakar areas. The local name of the mineral is Makol. It is used for white-washing purposes. Kaolinite deposits are available upto a thickness of one to four metres in the areas of its occurrence which can be used effectively in pottery making.

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

Sand and Bajri: Sand and Bajri Quantities of sand, pebbles and shingles are available in the Chenab and Tawi rivers and the numerous Nallas and hilly terrain of the state. Sandstones are in abundance along the Jammu-Srinagar National Highway and the Jammu Poonch Road in the Siwaliks and Murree tracts which are being used for building materials.

FIGURE 22: ROCKS AND MINERAL MAP OF JAMMU DISTRICT, JAMMU AND KASHMIR



CONCLUSIONS

Sand mining or River Bed Minerals mining (used here as a generic term that includes mining of any riverine aggregates regardless of particle size) is a global activity that is receiving increasing media attention due to perceived negative environmental and social impacts. As calls grow for stronger regulation of mining, there is a need to understand the scientific evidence to support effective management. This paper summarizes the results of a structured literature review addressing the question, the review found that most investigations have focused on temperate rivers where sand or river bed mineral mining occurred historically but has now ceased. Channel incision was the most common physical impact identified; other physical responses, including habitat disturbance, alteration of riparian zones, and changes to downstream sediment transport, were highly variable and dependent on river characteristics. Ecosystem attributes affected included macro invertebrate drift, fish movements, species abundance and community structures, and food web dynamics. Studies often inferred impacts on populations, but supporting data were scarce. Limited evidence suggests that rivers can sustain extraction if volumes (weight) are within the natural sediment load variability. Significantly, the countries and rivers for which there is science-based evidence related to sand or river bed mineral mining are not those where extensive sand mining or gravel, pebbles, boulder extraction is currently reported. The lack of scientific and systematic studies of mining in these countries prevents accurate quantification of mined volumes (weight) or the type, extent, and magnitude of any impacts. Additional research into how river bed mining is affecting ecosystem services, impacting biodiversity and particularly threatened species, and how mining impacts interact with other activities or threats is urgently required.

The rapid rise in urbanization and construction of large-scale infrastructure projects are driving increasing demands for construction materials globally. United Nations Environment Programme (UNEP; 2014) estimated that between 32 and 50 billion tonnes of sand and gravel are extracted globally each year with demand increasing, especially in developing countries (Schandl et al., 2016). Rivers are a major source of sand and gravel for numerous reasons: cities tend to be located near rivers so transport costs are low; river energy grinds rocks into gravels and sands, thus eliminating the cost of mining, grinding, and sorting rocks; and the material produced by rivers tends to consist of resilient minerals of angular shape that are preferred for construction (whereas wind-blown deposits in deserts are rounder and less suitable). Sand mining or river bed minerals mining activities are one of many recognized pressures affecting riverine ecosystems, where biodiversity is already in rapid decline (World Wildlife Fund, 2018). Increasingly, there are media reports about the negative environmental and social impacts of river bed mining, and as calls grow for stronger regulation of mining (Schandl et al., 2016), there is a need to understand the scientific evidence of mining impacts to underpin management.

Impacts of sand mining or river bed mineral mining on rivers may be two types such as direct or indirect. Direct impacts are those in which the extraction of material is directly responsible for the ecosystem impact, such as due to the removal of flood plains habitat. Indirect impacts are related to ecosystem changes that are propagated through the system due to physical changes in the river system resulting from sand extraction. For example, the removal of material from a river can alter the channel, river hydraulics, or sediment budget which in turn can alter the distribution of habitats and ecosystem

functioning. These types of impacts can be difficult to attribute to river bed mining, as they may require long time frames to emerge, and other interventions can result in similar changes. The situation is further complicated by the existence of geomorphic thresholds in river systems (Schumm, 1979). Alterations linked to removal of sand, gravel, pebbles, boulder from rivers may not be gradual and/or linear, and only limited changes may be observed for an extended period, but once a threshold is reached, change may become rapid and irreversible. Whether the impacts of sand or river bed mineral mining are positive, neutral, or negative depends on the situation and perceptions of different stakeholders.

During the preparation of the present report prominent rivers/ streams has been studied in detail. These mineral concessions shall also reduce demand load and will be helpful to minimize illegal extraction of minerals, failure of which may result in to illegal mining at odd hours and shall be haphazard and more detrimental to the local ecology. Irrespective of it following geo-scientific considerations are also suggested to be taken into account during the river bed mining in a particular area:

1. Abandoned stream channels or terrace and inactive floodplains may be preferred rather than active channels and their deltas and floodplains.
2. Stream should not be diverted to form inactive channel.
3. Mining below subterranean water level should be avoided as a safeguard against environmental contamination and over exploitation of resources.
4. Mining area should be demarcated on the ground with Pucca pillars so as to avoid illegal unscientific mining.

ASSISTANCE

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- b) Dr. Raj Kumar Deputy director
- c) Dr Brijesh Kumar Manhas Geologist Grade I
- d) Dr Rajinder Singh Rana Geologist Grade I
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ANNEXURE – I

- **Details of Sand / M – Sand Source**
 - a) **Rivers,**
 - b) **De-siltation location: (Lakes/Ponds/Dams etc.)**
 - c) **Patta Lands/ khatedari Land**
 - d) **M-Sand Plants**

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

a) Rivers:

River Name/ M-Sand plant	Total stretch of River (in Km)	Type Of River
TAWI	72	Perennial
CHENAB	51.3	Perennial

Source: District survey report of Jammu district

b) List of De-siltation location (Lake, Pond, Dams, River)

Name	Maintain/Controlled by State Govt./PSU etc.	Location	District	Tehsil	Village	Size (Ha)
NA						

c) List of Patta Lands / Khatedari land

Owner	Sr. No.	Area		District	Tehsil	Village	Agricultural Land (Yes / No)
		Kanal	Marla				
NA							

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

d) M-Sand plants with location:

Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)
					Latitude	Longitude	
M/S DPS Stone Crusher	Smt. Neelam Sharma	Jammu	Bhalwal	Jandiyal Gharota	32.5349	74.4923	-
M/S Krishna Stone Crusher	Sh. Vinod Kumar	Jammu	Akhnoor	Tanda	32.922174	74.748247	-
M/S Shiva Stone Crusher	Sh. Rahul Gupta	Jammu	Akhnoor	Sungal	32.907316	74.686488	-
M/S Mahavir Stone Crusher	Sh. Uttam Singh, Sh. Satish Sharma, Sh. Ankush Sharma, Sh. Ankush Gupta & Sh. Ramesh singh	Jammu	Akhnoor	Samah	32.94923484	74.68134147	-
M/S Sai Stone Crusher	Prop. Sh. Ankush Gupta, Sh. Ramesh singh & Sh. Ankush Sharma	Jammu	Akhnoor	Gurah Brahamna	32.90640884	74.63065255	-
M/S Shree Ram Stone Crusher	Sh. Ankush Gupta, sh. Sourab singh & Sh. Ankush Sharma	Jammu	Akhnoor	Bhalwal Brahamna	32.86921136	74.61914696	-
M/S Bharat Stone Crusher	Sh. Bharat Singh	Jammu	Jourian	Chak Bhagwana	32.850615	74.579108	-
M/S Maa Vashno Crusher	Sh. Vinod Bharti	Jammu	Jourian	Chak Bhagwana	32.860059	74.58443	-
M/S Ram Saran Crusher	Sh. Sumeet Sharma	Jammu	Jourian	Chak Bhagwana	32.8529039	74.581464 0	-
M/S Sumyira Stone Crusher	Sh. Rajinder Singh	Jammu	Khour	Pahariwala	32.5047	74.2956	-

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/ Annum)
					Latitude	Longitude	
M/S Jai Dev Stone Crusher	Sh. Suram singh	Jammu	Maera	Pall Kathar	33.029433	74.786264	-
M/S Anuradha Gritz Udyog	Sh. Kamal Nain Singh	Jammu	Bhalwal	Kangar	32.4946	74.4923	-
M/S Durga Stone Crusher	Sh. Belli Ram Soodan	Jammu	Bhalwal	Seri Pandita	32.5146	74.4745	-
M/S K.N Stone Crusher	Sh. Mahesh Kumar	Jammu	Bhalwal	Jandiyal Gharota	32.5136	74.489	-
M/S Shiva Stone Crusher	Sh. Surinder Singh	Jammu	Bhalwal	Jandiyal Gharota	32.5335	74.4934	-
M/S Lakhan Stone Crusher	Smt. Narinder devi	Jammu	Akhnoor	Tanda	32.958603	74.726399	-
M/S Sharma Stone Crusher	Sh. Sanjay Raina	Jammu	Bhalwal	Jandiyal Gharota	32.5339	74.4845	-
M/S Bharat Stone Crusher	Sh. Manish Jain	Jammu	Jammu	Jallo Chack	32.651563	74.889897	-
M/S New Trikuta Stone Crusher	Sh. Vijay Kumar Sharma	Jammu	Akhnoor	Kathar	33.03242	74.758254	-
M/S J.K Stone Crusher	Sh. Yougal Kishore	Jammu	Dansal	Kishanpur Manwal	32.775799	75.136924	-
M/S Maa Durga Crusher	Sh. Nand Kishore	Jammu	Dansal	Kishanpur Manwal	32.774622	75.141625	-
M/S Manhas Stone Crusher	Sh Atam Manhas	Jammu	Akhnoor	Tanda	32.953978	74.728786	-
M/S Trikuta Stone Crusher	Sh. Anudeep Sharma	Jammu	Jourian		32.856603	74.546259	-
M/S Sharma Store Crusher	Sh. Nimish Sharma	Jammu	-	Majine	32.758095	74.901109	-
Green Earth Infra Crusher	-	Jammu	-	Kour	-	-	-
Shiv Stone Crusher	-	Jammu	-	Chaghani Ghar	-	-	-

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/ Annum)
					Latitude	Longitude	
Crusher							
Shiv Shakti enter Crusher	-	Jammu	-	Rakh kharoon	-	-	-
Sutan stone Crusher	-	Jammu	-	Hurlani Dansal	-	-	-
Trikuta Stone Crusher	-	Jammu	-	Tutan Di khui	-	-	-
M/S Swastik Stone Crusher	Sh. Vijay Sharma	Jammu	Jammu	Surya Chak	32.704318	74.82637	-
M/S Harman Stone Crusher	Sh. Gурpal Singh Sudan	Jammu	Jammu	Bajalta	32.759438	74.9329	-
M/S Tawi Stone Crusher	Sh. Gурpal Singh Sudan	Jammu	Jammu	Chatta	32.692057	74.930467	-
M/S Khatana Stone Crusher	Sh. Nazir Ahmed	Jammu	Jammu	Bajalta	32.758688	74.935453	-
M/S Jupiter Stone Crusher	Sh. Sanjay Singh, Sanjeev, Ashraf Choudhary	Jammu	Jammu	Bajalta	32.7599331	74.9343723	-
M/S Public Stone Crusher	Sh. Mohd. Iqbal	Jammu	Jammu	Bajalta	32.759934	74.93604	-
M/S Northen Stone Crusher	Sh. Razaq Choudhary	Jammu	Jammu	Bajalta	32.760924	74.971669	-
M/S Surya Stone Crusher	Sh. Farooq Ahmed Mir	Jammu	Jammu	Kanna	32.742371	74.964592	-
M/S Charak Stone Crusher	Sh. Mohd. Razaq	Jammu	Jammu	Bajalta	32.742125	74.964032	-
M/S Motal Stone Crusher	Sh. Sultan Ali	Jammu	Jammu	Panjgrian Nagrota	32.85772	74.900573	-
M/S Radhey Stone Crusher	Sh. Mohinder kumar	Jammu	Jammu	Jagti	32.807863	74.88929	-
M/S New Oriental	Lal Chand	Jammu	Jammu	Chak Ganes	32.704336	74.834539	-

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/ Annum)
					Latitude	Longitude	
Stone Crusher							
M/S Upkar Stone Crusher	Smt. Padma Sharma, Sh. Parkash Ram, Sh. Charan Singh & Smt. Usha Choudhary	Jammu	Jammu	Chak Ganes	32.702897	74.821604	-
M/S J.K Stone Crusher	Sh. Varinder Gupta	Jammu	Jammu	Gaseetpur	32.711726	74.775691	-
M/S TRB Stone Crusher	Sh. Harjeet singh & Sh. Jasbir Singh	Jammu	Jammu	Kanna Chargal	32.7502	74.971933	-
M/S Oriental Stone Crusher	Sh. Lal Chand	Jammu	Jammu	Belichrana	32.704336	74.834539	-
M/S New B.N. Crusher	Sh. Chain Singh, Smt. Nahida Akhtar & Sh. Neeraj	Jammu	Jammu	Gaseetpur	32.713001	74.777778	-
M/S Choudhary Stone Crusher	Sh. Vikram Rhandawa	Jammu	Jammu	Chak Ganeshu	32.700872	74.819119	-
M/S Tawi Stone Crusher	Sh Parveen Dev Choudhary	Jammu	Jammu	Lalyal	32.669363	74.775836	-
M/S Trikuta Stone Crusher	Sh. Manjeet Singh	Jammu	Jammu	Gaseetpur	32.7145	74.794132	-
M/S Shiva(Bharti) Stone Crusher	Sh. Sunil Bharti	Jammu	Jammu	Nandani	32.71128	74.812591	-
M/S Khushi Stone Crusher	Sh. Ishanpreet Singh & Sh. Sunny Gupta	Jammu	Jammu	Nandani	32.710496	74.810834	-
M/S Adarsh Stone	Sh. Naresh Sharma, Sh.	Jammu	Jammu	Lalyal	32.671026	74.780108	-

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/ Annum)
					Latitude	Longitude	
Crusher	Sonamdeep singh & Sh. Rakesh Kumar						
M/S Shubham stone Crusher	Sh. Ashqoor wani	Jammu	Jammu	Lalyal	32.669663	74.775836	-
M/S Trikuta Stone Crusher	Sh. Sushil Sharma	Jammu	Akhnoor	Sangani	32.956996	74.727766	-
M/S Jai Hanuman Stone Crusher	Sh. Rameshwar Sharma	Jammu	Jammu	Ghassain chak	32.677639	74.777844	-
M/S Shree Krishna Stone Crusher	Sh. Vinod Bharti	Jammu	Akhnoor	Daskal	32.922174	74.748247	-
M/S Thakur Stone Crusher	sh. Parshant Sagar Sharma	Jammu	Akhnoor	Daskal	32.926555	74.748816	--
M/S Sharma Stone Crusher	Prop. Sh. Sanjay Raina	Jammu	Bhalwal	Jandiyal Gharota	32.5339	74.4845	-

Source: District Mining Office, Jammu

ANNEXURE – II

- **List of Potential Mining Leases (existing)**
 - **Patta Lands/khatedari Land:** (existing & proposed)
 - **De-Siltation Location:** (Lakes/Ponds/Dams etc.) (existing & proposed)
 - **M-Sand Plants:** (existing)

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

a) List of existing mining zones of the district with location, area, period for each minor mineral

Sl. No.	River Details	Name of the mines or Desilting sites	RBM Zone code	Lease Details	Area (Ha)	Geolocation		Depth	Distance in (km) from PA/BR/WC	Distance from Forest Area (in km) *	Mining Leases within 500 meters (if yes cluster area)	Production as per EC (MT)	Mineral to be mined (Sand/Bajri/RBM etc)	Existing /Proposed
						Latitude	Longitude							
1	Tawi	Mines	JK_JM U_TW_01	Pavan Kumar	5.10	32°46'44.45"N 32°46'51.11"N 32°46'54.46"N 32°46'48.24"N	75°08'57.63"E 75°09'11.04"E 75°09'09.68"E 75°08'54.76"E	1.7	0.54	No forest is present within 500 mt.	No	69360	RBM	Existing
2	Tawi	Mines	JK_JM U_TW_02	Sahil Arora	9.21	32°46'41.94"N 32°46'40.11"N 32°47'0.19"N 32°47'1.25"N	75° 7'52.99"E 75° 7'48.77"E 75° 7'37.28"E 75° 7'43.74"E	1.3	0.47	No forest is present within 500 mt.	No	48300	RBM	Existing
3	Tawi	Mines	JK_JM U_TW_03	Sai Mines	6.90	32°47'17.42"N 32°47'9.43"N 32°47'5.09"N 32°47'13.59"N	75°07'26.22"E 75°07'38.38"E 75°07'33.20"E 75°07'22.06"E	1.1	1.34	No forest is present within 500 mt.	No	93150	RBM	Existing
4	Tawi	Mines	JK_JM U_TW_04	Sanchit Goutam	9.82	32°47'23.47"N 32°47'23.74"N 32°47'13.41"N 32°47'10.23"N	75° 7'1.73"E 75° 7'14.31"E 75° 7'12.81"E 75° 7'4.69"E	1.5	1.99	No forest is present within 500 mt.	No	106400	RBM	Existing
5	Tawi	Mines	JK_JM U_TW_05	Karanveer Singh	9.86	32°47'11.49"N 32°47'7.81"N 32°47'1.25"N 32°47'4.09"N	75°06'43.49"E 75°07'1.85"E 75°07'1.24"E 75°06'43.83"E	1.5	1.94	No forest is present within 500 mt.	No	88740	RBM	Existing
6	Tawi	Mines	JK_JM U_TW_06	Aditya Mahajan	9.74	32°46'44.81"N 32°46'51.33"N 32°46'47.90"N 32°46'42.20"N	75° 7'4.15"E 75° 7'1.25"E 75° 7'24.15"E 75° 7'24.40"E	1.4	1.16	No forest is present within 500 mt.	No	90720	RBM	Existing
7	Tawi	Mines	JK_JM U_TW_07	Parshotam Singh	6.40	32°46'28.48"N 32°46'18.09"N 32°46'15.78"N	75°07'2.32"E 75°06'51.23"E 75°06'53.40"E	1.8	1.53	No forest is present within	No	83250	RBM	Existing

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						32°46'24.72"N	75°07'8.43"E			500 mt.				
8	Tawi	Mines	JK_JM U_TW _08	Sushil Kumar	8.15	32°46'15.28"N 32°46'11.46"N 32°46'7.86"N 32°45'57.40"N	75° 6'42.84"E 75° 6'43.79"E 75° 6'29.09"E 75° 6'16.72"E	1.3	2.24	No forest is present within 500 mt.	No	50325	RBM	Existing
9	Chena b	Mines	JK_JM U_CH N_02	Zaheer Choud hary	9.57	32°51'54.92"N 32°51'56.02"N 32°52'9.58"N 32°52'9.37"N	74°43'5.03"E 74°42'56.54"E 74°43'0.01"E 74°43'7.41"E	1.3	5.16	No forest is present within 500 mt.	No	81300	RBM	Existing
10	Chena b	Mines	JK_JM U_CH N_03	Vipan Kumar	9.16	32°51'47.11"N 32°51'35.61"N 32°51'39.89"N 32°51'49.53"N	74°43'3.76"E 74°42'46.61"E 74°42'42.77"E 74°42'55.35"E	1.9	5.70	No forest is present within 500 mt.	No	90000	RBM	Existing
11	Chena b	Mines	JK_JM U_CH N_04	Rames hwar Singh	9.94	32°51'33.49"N 32°51'33.89"N 32°51'42.36"N 32°51'41.79"N	74°42'35.96"E 74°42'21.85"E 74°42'21.44"E 74°42'36.15"E	2.2	6.25	No forest is present within 500 mt.	No	84200	RBM	Existing
12	Chauk i Chaur a	Mines	JK_JM U_CK H_01	Sanchit Gouta m	9.32	32°51'34.19"N 32°51'36.01"N 32°51'45.11"N 32°51'42.16"N	74°42'12.83"E 74°41'59.14"E 74°42'0.54"E 74°42'12.87"E	1.3	0.64	No forest is present within 500 mt.	No	86100	RBM	Existing
13	Chauk i Chaur a	Mines	JK_JM U_CK H_02	Aditya Mahaja n	9.52	33° 1'59.03"N 33° 1'59.75"N 33° 2'8.85"N 33° 2'9.43"N	74°46'32.18"E 74°46'44.81"E 74°46'44.81"E 74°46'32.58"E	1.2	1.24	No forest is present within 500 mt.	No	76800	RBM	Existing
14	Khara ndra Khad	Mines	JK_JM U_KH ND_01	Rahil Choud hary	8.59	33°2'9.66"N 33° 2'6.78"N 33° 2'15.87"N 33° 2'15.75"N	74°44'56.98"E 74°44'45.78"E 74°44'38.34"E 74°44'54.52"E	1.1	0.65	No forest is present within 500 mt.	No	75480	RBM	Existing
15	Chauk i Chaur a	Mines	JK_JM U_CK H_03	Sushil Kumar	6.29	33° 1'49.85"N 33° 1'29.87"N 33° 1'29.78"N 33° 1'48.89"N	74°45'32.86"E 74°45'28.44"E 74°45'31.73"E 74°45'37.70"E	1	1.02	No forest is present within 500 mt.	No	104200	RBM	Existing
16	Jad khad	Mines	JK_JM U_JD_ 05	Kuldee p Singh	8.69	33° 2'23.27"N 33° 2'18.49"N 33° 2'21.78"N	74°44'11.02"E 74°43'58.14"E 74°43'56.13"E	1.2	0.58	No forest is present within	No	82900	RBM	Existing

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						33° 2'26.83"N 33° 2'27.72"N	74°44'1.83"E 74°44'15.74"E			500 mt.				
17	Jad khad	Mines	JK_JM U_JD_ 06	Harpal Singh	9.35	32°52'26.54"E 32°52'9.67"E 32°52'10.60"N 32°52'26.47"N	74°35'22.61"E 74°35'16.52"E 74°35'10.29"E 74°35'15.11"E	1.1	1.40	No forest is present within 500 mt.	No	74300	RBM	Existing
18	Jad khad	Mines	JK_JM U_JD_ 07	Kesri Nanda n	8.65	32°51'59.83"N 32°51'46.92"N 32°51'38.54"N 32°51'40.29"N 32°51'53.97"N 32°52'0.86"N	74°35'13.87"E 74°35'8.60"E 74°35'0.66"E 74°34'56.70"E 74°35'7.25"E 74°35'10.78"E	1.1	2.35	No forest is present within 500 mt.	No	89100	RBM	Existing
19	Jad khad	Mines	JK_JM U_JD_ 04	Karanv eer	9.98	32°51'31.79"N 32°51'15.58"N 32°51'16.97"N 32°51'34.24"N	74°34'58.82"E 74°34'51.59"E 74°34'45.60"E 74°34'51.62"E	1	0.58	No forest is present within 500 mt.	No	54284	RBM	Existing
20	Jad khad	Mines	JK_JM U_JD_ 03	Brinder Singh	6.17	32°53'1.79"N 32°53'12.91"N 32°53'12.63"N 32°53'0.12"N	74°35'20.16"E 74°35'22.44"E 74°35'28.45"E 74°35'28.34"E	0.9 8	1.13	No forest is present within 500 mt.	No	90400	RBM	Existing
21	Jadkh ad	Mines	JK_JM U_JD_ 02	Parshot am Singh	9.43	32°53'19.35"N 32°53'35.21"N 32°53'36.85"N 32°53'20.44"N	74°35'20.39"E 74°35'16.88"E 74°35'21.23"E 74°35'29.27"E	1.0 5	1.89	No forest is present within 500 mt.	No	69100	RBM	Existing
22	Khour a Walli Khad	Mines	JK_JM U_KW K_01	Kimat Lal	7.95	32°53'42.39"N 32°53'57.17"N 32°53'58.73"N 32°53'45.89"N	74°35'5.42"E 74°34'51.96"E 74°34'55.33"E 74°35'10.83"E	1.5	0.82	No forest is present within 500 mt.	No	81900	RBM	Existing
23	Khour a Walli Khad	Mines	JK_JM U_KW K_02	Singh mineral s	4.58	32°54'39.36"N 32°54'39.45"N 32°54'51.94"N 32°54'48.11"N	74°34'43.85"E 74°34'47.96"E 74°34'47.79"E 74°34'41.75"E	1.2	1.83	No forest is present within 500 mt.	No	86490	RBM	Existing
24	Khour a Walli Khad	Mines	JK_JM U_KW K_03	Mangal Sing	9.89	32°54'16.16"N 32°54'16.05"N 32°54'15.44"N 32°54'12.77"N 32°54'8.94"N	74°32'21.74"E 74°32'14.38"E 74°31'58.91"E 74°31'53.14"E 74°31'47.42"E	1.3	0.48	No forest is present within 500 mt.	No	60000	RBM	Existing

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						32°54'11.87"N 32°54'14.31"N 32°54'18.60"N 32°54'20.85"N	74°31'43.00"E 74°31'48.33"E 74°32'3.86"E 74°32'23.02"E							
25	Khura Walli Khad	Mines	JK_JM U_KW K_04	Mahabir Mining	9.61	32°53'35.08"N 32°53'43.00"N 32°53'54.16"N 32°53'53.46"N 32°53'44.77"N 32°53'41.87"N 32°53'33.12"N	74°31'15.29"E 74°31'21.56"E 74°31'28.56"E 74°31'31.86"E 74°31'30.53"E 74°31'25.21"E 74°31'20.44"E	1.1	0.79	No forest is present within 500 mt.	No	67500	RBM	Existing
26	Khura Walli Khad	Mines	JK_JM U_KW K_05	Rahil Choudhary	6.62	32°53'2.65"N 32°53'2.64"N 32°52'57.08"N 32°52'54.70"N 32°52'59.43"N	74°31'18.88"E 74°31'25.21"E 74°31'25.98"E 74°31'36.32"E 74°31'37.93"E	1	0.50	No forest is present within 500 mt.	No	82000	RBM	Existing
27	Chauki Chaura	Mines	JK_JM U_CK H_04	Rahil Choudhary	7.50	32°52'20.99"N 32°52'19.37"N 32°52'32.06"N 32°52'33.54"N	74°31'57.08"E 74°32'4.56"E 74°32'8.37"E 74°32'2.10"E	1.3	0.83	No forest is present within 500 mt.	No	61800	RBM	Existing
28	Chhibbe Wali Khad	Mines	JK_JM U_CW _01	Sahil Choudhary	9.66	32°51'44.68"N 32°51'43.66"N 32°51'16.87"N 32°51'18.14"N	74°31'33.63"E 74°31'38.11"E 74°31'29.89"E 74°31'26.14"E	2.4	0.44	No forest is present within 500 mt.	No	24907	RBM	Existing
29	Chenab	Mines	JK_JM U_CH N_01	JK Minerals	5.28	33° 1'48.44"N 33° 1'49.59"N 33° 1'48.06"N 33° 1'49.65"N 33° 1'54.81"N 33° 2'0.17"N 33° 2'0.03"N 33° 1'53.20"N 33° 1'46.39"N 33° 1'44.39"N 33° 1'44.93"N	74°41'13.80"E 74°41'15.50"E 74°41'17.34"E 74°41'25.43"E 74°41'29.16"E 74°41'30.47"E 74°41'32.30"E 74°41'30.02"E 74°41'26.05"E 74°41'22.39"E 74°41'15.92"E	1.4	4.58	No forest is present within 500 mt.	No	171765	RBM	Existing

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30	Jad khad	Mines	JK_JM U_JD_ 01	JK Minera ls	1.23	32°51'18.99"N 32°51'15.91"N 32°51'14.50"N 32°51'14.28"N 32°51'15.72"N 32°51'15.20"N 32°51'13.32"N 32°51'13.87"N 32°51'14.75"N 32°51'16.68"N 32°51'18.94"N	74°54'3.02"E 74°54'3.38"E 74°54'5.40"E 74°54'7.44"E 74°54'15.60"E 74°54'15.92"E 74°54'7.81"E 74°54'4.86"E 74°54'3.08"E 74°54'2.04"E 74°54'1.74"E	1.2	0.30	No forest is present within 500 mt.	No	103050	RBM	Existing
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Source: District Mining Office, Jammu

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

b) List of Patta Lands / Khatedari land

Owner	Sr. No.	Area		District	Tehsil	Village	Total Reserve (MT)	Total Mineral to be mined (MT)	Existing/Proposed
		Kanal	Marla						
NA									

c) List of De-siltation location (Lake, Pond, Dams, River)

Name	Maintain/Controlled by Sate Govt./P SU etc.	Location	District	Tehsil	Village	Size (Ha)	Quantity (MT/Year)	Existing/Proposed
NA								

d) M-Sand plants with location

Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)	Existing/Proposed
					Latitude	Longitude		
M/S DPS Stone Crusher	Smt. Neelam Sharma	Jammu	Bhalwal	Jandiyal Gharota	32.5349	74.4923	-	Existing
M/S Krishna Stone Crusher	Sh. Vinod Kumar	Jammu	Akhnoor	Tanda	32.922174	74.748247	-	Existing
M/S Shiva Stone Crusher	Sh. Rahul Gupta	Jammu	Akhnoor	Sungal	32.907316	74.686488	-	Existing
M/S Mahavir Stone Crusher	Sh. Uttam Singh, Sh. Satish Sharma, Sh. Ankush Sharma,	Jammu	Akhnoor	Samah	32.94923484	74.68134147	-	Existing

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Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)	Existing/Proposed
					Latitude	Longitude		
	Sh. Ankush Gupta & Sh. Ramesh singh							
M/S Sai Stone Crusher	Prop. Sh. Ankush Gupta, Sh. Ramesh singh & Sh. Ankush Sharma	Jammu	Akhnoor	Gurah Brahamna	32.90640884	74.63065255	-	Existing
M/S Shree Ram Stone Crusher	Sh. Ankush Gupta, sh. Sourab singh & Sh. Ankush Sharma	Jammu	Akhnoor	Bhalwal Brahamna	32.86921136	74.61914696	-	Existing
M/S Bharat Stone Crusher	Sh. Bharat Singh	Jammu	Jourian	Chak Bhagwana	32.850615	74.579108	-	Existing
M/S Maa Vashno Crusher	Sh. Vinod Bharti	Jammu	Jourian	Chak Bhagwana	32.860059	74.58443	-	Existing
M/S Ram Saran Crusher	Sh. Sumeet Sharma	Jammu	Jourian	Chak Bhagwana	32.8529039	74.581464 0	-	Existing
M/S Sumyira Stone Crusher	Sh. Rajinder Singh	Jammu	Khour	Pahariwala	32.5047	74.2956	-	Existing
M/S Jai Dev Stone Crusher	Sh. Suram singh	Jammu	Maera	Pall Kathar	33.029433	74.786264	-	Existing
M/S Anuradha Gritz Udyog	Sh. Kamal Nain Singh	Jammu	Bhalwal	Kangar	32.4946	74.4923	-	Existing
M/S Durga Stone Crusher	Sh. Belli Ram Soodan	Jammu	Bhalwal	Seri Pandita	32.5146	74.4745	-	Existing

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Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)	Existing/Proposed
					Latitude	Longitude		
M/S K.N Stone Crusher	Sh. Mahesh Kumar	Jammu	Bhalwal	Jandiyal Gharota	32.5136	74.489	-	Existing
M/S Shiva Stone Crusher	Sh. Surinder Singh	Jammu	Bhalwal	Jandiyal Gharota	32.5335	74.4934	-	Existing
M/S Lakhan Stone Crusher	Smt. Narinder devi	Jammu	Akhnoor	Tanda	32.958603	74.726399	-	Existing
M/S Sharma Stone Crusher	Sh. Sanjay Raina	Jammu	Bhalwal	Jandiyal Gharota	32.5339	74.4845	-	Existing
M/S Bharat Stone Crusher	Sh. Manish Jain	Jammu	Jammu	Jallo Chack	32.651563	74.889897	-	Existing
M/S New Trikuta Stone Crusher	Sh. Vijay Kumar Sharma	Jammu	Akhnoor	Kathar	33.03242	74.758254	-	Existing
M/S J.K Stone Crusher	Sh. Yougal Kishore	Jammu	Dansal	Kishanpur Manwal	32.775799	75.136924	-	Existing
M/S Maa Durga Crusher	Sh. Nand Kishore	Jammu	Dansal	Kishanpur Manwal	32.774622	75.141625	-	Existing
M/S Manhas Stone Crusher	Sh Atam Manhas	Jammu	Akhnoor	Tanda	32.953978	74.728786	-	Existing
M/S Trikuta Stone Crusher	Sh. Anudeep Sharma	Jammu	Jourian	-	32.856603	74.546259	-	Existing
M/S Sharma Store Crusher	Sh. Nimish Sharma	Jammu	-	Majine	32.758095	74.901109	-	Existing
Green Earth Infra Crusher	-	Jammu	-	Kour	-	-	-	Existing
Shiv Stone Crusher	-	Jammu	-	Chaghani Ghar	-	-	-	Existing
Shiv Shakti enter Crusher	-	Jammu	-	Rakhkharoon	-	-	-	Existing
Sutan stone Crusher	-	Jammu	-	Hurlani Dansal	-	-	-	Existing
Trikuta Stone	-	Jammu	-	Tutan Di khui	-	-	-	Existing

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Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)	Existing/Proposed
					Latitude	Longitude		
Crusher								
M/S Swastik Stone Crusher	Sh. Vijay Sharma	Jammu	Jammu	Surya Chak	32.704318	74.82637	-	Existing
M/S Harman Stone Crusher	Sh. Gurpal Singh Sudan	Jammu	Jammu	Bajalta	32.759438	74.9329	-	Existing
M/S Tawi Stone Crusher	Sh. Gurpal Singh Sudan	Jammu	Jammu	Chatta	32.692057	74.930467	-	Existing
M/S Khatana Stone Crusher	Sh. Nazir Ahmed	Jammu	Jammu	Bajalta	32.758688	74.935453	-	Existing
M/S Jupiter Stone Crusher	Sh. Sanjay Singh, Sanjeev, Ashraf Choudhary	Jammu	Jammu	Bajalta	32.7599331	74.9343723	-	Existing
M/S Public Stone Crusher	Sh. Mohd. Iqbal	Jammu	Jammu	Bajalta	32.759934	74.93604	-	Existing
M/S Northen Stone Crusher	Sh. Razaq Choudhary	Jammu	Jammu	Bajalta	32.760924	74.971669	-	Existing
M/S Surya Stone Crusher	Sh. Farooq Ahmed Mir	Jammu	Jammu	Kanna	32.742371	74.964592	-	Existing
M/S Charak Stone Crusher	Sh. Mohd. Razaq	Jammu	Jammu	Bajalta	32.742125	74.964032	-	Existing
M/S Motal Stone Crusher	Sh. Sultan Ali	Jammu	Jammu	Panjgrian Nagrota	32.85772	74.900573	-	Existing
M/S Radhey Stone Crusher	Sh. Mohinder kumar	Jammu	Jammu	Jagti	32.807863	74.88929	-	Existing
M/S New Oriental Stone	Lal Chand	Jammu	Jammu	Chak Ganes	32.704336	74.834539	-	Existing

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Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)	Existing/Proposed
					Latitude	Longitude		
Crusher								
M/S Upkar Stone Crusher	Smt. Padma Sharma, Sh. Parkash Ram, Sh. Charan Singh & Smt. Usha Choudhary	Jammu	Jammu	Chak Ganes	32.702897	74.821604	-	Existing
M/S J.K Stone Crusher	Sh. Varinder Gupta	Jammu	Jammu	Gaseetpur	32.711726	74.775691	-	Existing
M/S TRB Stone Crusher	Sh. Harjeet singh & Sh. Jasbir Singh	Jammu	Jammu	Kanna Chargal	32.7502	74.971933	-	Existing
M/S Oriental Stone Crusher	Sh. Lal Chand	Jammu	Jammu	Belichrana	32.704336	74.834539	-	Existing
M/S New B.N. Crusher	Sh. Chain Singh, Smt. Nahida Akhtar & Sh. Neeraj	Jammu	Jammu	Gaseetpur	32.713001	74.777778	-	Existing
M/S Choudhary Stone Crusher	Sh. Vikram Rhandawa	Jammu	Jammu	Chak Ganeshu	32.700872	74.819119	-	Existing
M/S Tawi Stone Crusher	Sh. Parveen Dev Choudhary	Jammu	Jammu	Lalyal	32.669363	74.775836	-	Existing
M/S Trikuta Stone Crusher	Sh. Manjeet Singh	Jammu	Jammu	Gaseetpur	32.7145	74.794132	-	Existing

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Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity (Tonnes/Annum)	Existing/Proposed
					Latitude	Longitude		
M/S Shiva(Bharti)Stone Crusher	Sh. Sunil Bharti	Jammu	Jammu	Nandani	32.71128	74.812591	-	Existing
M/S Khushi Stone Crusher	Sh. Ishanpreet Singh & Sh. Sunny Gupta	Jammu	Jammu	Nandani	32.710496	74.810834	-	Existing
M/S Adarsh Stone Crusher	Sh. Naresh Sharma, Sh. Sonamdeep singh & Sh. Rakesh Kumar	Jammu	Jammu	Lalyal	32.671026	74.780108	-	Existing
M/S Shubham stone Crusher	Sh. Ashqoor wani	Jammu	Jammu	Lalyal	32.669663	74.775836	-	Existing
M/S Trikuta Stone Crusher	Sh. Sushil Sharma	Jammu	Akhnoor	Sangani	32.956996	74.727766	-	Existing
M/S Jai Hanuman Stone Crusher	Sh. Rameshwar Sharma	Jammu	Jammu	Ghassain chak	32.677639	74.777844	-	Existing
M/S Shree Krishna Stone Crusher	Sh. Vinod Bharti	Jammu	Akhnoor	Daskal	32.922174	74.748247	-	Existing
M/S Thakur Stone Crusher	sh. Parshant Sagar Sharma	Jammu	Akhnoor	Daskal	32.926555	74.748816	--	Existing
M/S Sharma Stone Crusher	Prop. Sh. Sanjay Raina	Jammu	Bhalwal	Jandiyal Gharota	32.5339	74.4845	-	Existing

Source: District Mining Office, Jammu

ANNEXURE – III

- **list of Cluster and Contiguous Clusters**
 - **Clusters:**
 - **Contiguous Clusters:**

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• **Cluster details**

River Name	Cluster No.	Lease No.	Location (Riverbed/Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)

• **Contiguous Cluster details**

River Name	Contiguous Cluster No.	Cluster No.	Number of leases in the cluster	Location (Riverbed/Patta Land)	Distance between clusters	Village	Area of Cluster (Ha)	Total Mineral Excavation (Ton)

ANNEXURE – IV

- **Transportation Routes for Individual leases and leases in Cluster**

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➤ **Transportation Routes for individual leases details:**

Lease No.	Transportation Route No.	Number of tippers /days of lease	Number of tippers /days of all the lease on route	Length of the Route in Km	Type of Road (black Topped/ unpaved)	Recommendation for road (Black Topped/ unpaved)	The road will be constructed by Govt. / Lease Owner	Route Map & Location

➤ **Transportation Routes for leases in Cluster details:**

Cluster No.	Transportation Route No.	Number of tippers / days of cluster	Number of tippers / days of all the clusters on route	Length of Route in km	Type of Road (Black Topped / unpaved)	Recommendation for road (Black Topped / unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location

ANNEXURE – V

- **Final list of Potential Mining Zones :** (Existing & Proposed)
- **Final list of Patta land:** (Proposed)
- **De-siltation Location:** (Lakes/Ponds/Dams etc)(Proposed)
- **Final list of Sand/M – Sand Source:** (Existing)

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➤ **Final List of potential Mining Zones (Existing)**

Sl. No.	River Details	Name of the mines or Desilting sites	RBM Zone code	Lease Details	Area (Ha)	Geolocation		Depth	Distance in (km) from PA/BR/WC	Distance from Forest Area (in km) *	Mining Leases within 500 meters (if yes cluster area)	Production as per EC (MT)	Mineral to be mined (Sand/Bajri/RBM etc)	Existing /Proposed
						Latitude	Longitude							
1	Tawi	Mines	JK_JM U_TW _01	Pavan Kumar	5.10	32°46'44.45"N 32°46'51.11"N 32°46'54.46"N 32°46'48.24"N	75°08'57.63"E 75°09'11.04"E 75°09'09.68"E 75°08'54.76"E	1.7	0.54	No forest is present within 500 mt.	No	69360	RBM	Existing
2	Tawi	Mines	JK_JM U_TW _02	Sahil Arora	9.21	32°46'41.94"N 32°46'40.11"N 32°47'0.19"N 32°47'1.25"N	75° 7'52.99"E 75° 7'48.77"E 75° 7'37.28"E 75° 7'43.74"E	1.3	0.47	No forest is present within 500 mt.	No	48300	RBM	Existing
3	Tawi	Mines	JK_JM U_TW _03	Sai Mines	6.90	32°47'17.42"N 32°47'9.43"N 32°47'5.09"N 32°47'13.59"N	75°07'26.22"E 75°07'38.38"E 75°07'33.20"E 75°07'22.06"E	1.1	1.34	No forest is present within 500 mt.	No	93150	RBM	Existing
4	Tawi	Mines	JK_JM U_TW _04	Sanchit Goutam	9.82	32°47'23.47"N 32°47'23.74"N 32°47'13.41"N 32°47'10.23"N	75° 7'1.73"E 75° 7'14.31"E 75° 7'12.81"E 75° 7'4.69"E	1.5	1.99	No forest is present within 500 mt.	No	106400	RBM	Existing
5	Tawi	Mines	JK_JM U_TW _05	Karav eer Singh	9.86	32°47'11.49"N 32°47'7.81"N 32°47'1.25"N 32°47'4.09"N	75°06'43.49"E 75°07'1.85"E 75°07'1.24"E 75°06'43.83"E	1.5	1.94	No forest is present within 500 mt.	No	88740	RBM	Existing
6	Tawi	Mines	JK_JM U_TW _06	Aditya Mahajan	9.74	32°46'44.81"N 32°46'51.33"N 32°46'47.90"N 32°46'42.20"N	75° 7'4.15"E 75° 7'1.25"E 75° 7'24.15"E 75° 7'24.40"E	1.4	1.16	No forest is present within 500 mt.	No	90720	RBM	Existing
7	Tawi	Mines	JK_JM U_TW	Parshot	6.40	32°46'28.48"N	75°07'2.32"E	1.8	1.53	No forest	No	83250	RBM	Existing

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			_07	am Singh		32°46'18.09"N 32°46'15.78"N 32°46'24.72"N	75°06'51.23"E 75°06'53.40"E 75°07'8.43"E			is present within 500 mt.				
8	Tawi	Mines	JK_JM U_TW _08	Sushil Kumar	8.15	32°46'15.28"N 32°46'11.46"N 32°46'7.86"N 32°45'57.40"N	75° 6'42.84"E 75° 6'43.79"E 75° 6'29.09"E 75° 6'16.72"E	1.3	2.24	No forest is present within 500 mt.	No	50325	RBM	Existing
9	Chena b	Mines	JK_JM U_CH N_02	Zaheer Choudhary	9.57	32°51'54.92"N 32°51'56.02"N 32°52'9.58"N 32°52'9.37"N	74°43'5.03"E 74°42'56.54"E 74°43'0.01"E 74°43'7.41"E	1.3	5.16	No forest is present within 500 mt.	No	81300	RBM	Existing
10	Chena b	Mines	JK_JM U_CH N_03	Vipan Kumar	9.16	32°51'47.11"N 32°51'35.61"N 32°51'39.89"N 32°51'49.53"N	74°43'3.76"E 74°42'46.61"E 74°42'42.77"E 74°42'55.35"E	1.9	5.70	No forest is present within 500 mt.	No	90000	RBM	Existing
11	Chena b	Mines	JK_JM U_CH N_04	Rameshwar Singh	9.94	32°51'33.49"N 32°51'33.89"N 32°51'42.36"N 32°51'41.79"N	74°42'35.96"E 74°42'21.85"E 74°42'21.44"E 74°42'36.15"E	2.2	6.25	No forest is present within 500 mt.	No	84200	RBM	Existing
12	Chauki Chaur a	Mines	JK_JM U_CK H_01	Sanchit Goutam	9.32	32°51'34.19"N 32°51'36.01"N 32°51'45.11"N 32°51'42.16"N	74°42'12.83"E 74°41'59.14"E 74°42'0.54"E 74°42'12.87"E	1.3	0.64	No forest is present within 500 mt.	No	86100	RBM	Existing
13	Chauki Chaur a	Mines	JK_JM U_CK H_02	Aditya Mahajan	9.52	33° 1'59.03"N 33° 1'59.75"N 33° 2'8.85"N 33° 2'9.43"N	74°46'32.18"E 74°46'44.81"E 74°46'44.81"E 74°46'32.58"E	1.2	1.24	No forest is present within 500 mt.	No	76800	RBM	Existing
14	Khara ndra Khad	Mines	JK_JM U_KH ND_01	Rahil Choudhary	8.59	33°2'9.66"N 33° 2'6.78"N 33° 2'15.87"N 33° 2'15.75"N	74°44'56.98"E 74°44'45.78"E 74°44'38.34"E 74°44'54.52"E	1.1	0.65	No forest is present within 500 mt.	No	75480	RBM	Existing
15	Chauki Chaur a	Mines	JK_JM U_CK H_03	Sushil Kumar	6.29	33° 1'49.85"N 33° 1'29.87"N 33° 1'29.78"N 33° 1'48.89"N	74°45'32.86"E 74°45'28.44"E 74°45'31.73"E 74°45'37.70"E	1	1.02	No forest is present within 500 mt.	No	104200	RBM	Existing

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16	Jad khad	Mines	JK_JM U_JD_ 05	Kuldee p Singh	8.69	33° 2'23.27"N 33° 2'18.49"N 33° 2'21.78"N 33° 2'26.83"N 33° 2'27.72"N	74°44'11.02"E 74°43'58.14"E 74°43'56.13"E 74°44'1.83"E 74°44'15.74"E	1.2	0.58	No forest is present within 500 mt.	No	82900	RBM	Existing
17	Jad khad	Mines	JK_JM U_JD_ 06	Harpal Singh	9.35	32°52'26.54"E 32°52'9.67"E 32°52'10.60"N 32°52'26.47"N	74°35'22.61"E 74°35'16.52"E 74°35'10.29"E 74°35'15.11"E	1.1	1.40	No forest is present within 500 mt.	No	74300	RBM	Existing
18	Jad khad	Mines	JK_JM U_JD_ 07	Kesri Nandan	8.65	32°51'59.83"N 32°51'46.92"N 32°51'38.54"N 32°51'40.29"N 32°51'53.97"N 32°52'0.86"N	74°35'13.87"E 74°35'8.60"E 74°35'0.66"E 74°34'56.70"E 74°35'7.25"E 74°35'10.78"E	1.1	2.35	No forest is present within 500 mt.	No	89100	RBM	Existing
19	Jad khad	Mines	JK_JM U_JD_ 04	Karav eer	9.98	32°51'31.79"N 32°51'15.58"N 32°51'16.97"N 32°51'34.24"N	74°34'58.82"E 74°34'51.59"E 74°34'45.60"E 74°34'51.62"E	1	0.58	No forest is present within 500 mt.	No	54284	RBM	Existing
20	Jad khad	Mines	JK_JM U_JD_ 03	Brinder Singh	6.17	32°53'1.79"N 32°53'12.91"N 32°53'12.63"N 32°53'0.12"N	74°35'20.16"E 74°35'22.44"E 74°35'28.45"E 74°35'28.34"E	0.9 8	1.13	No forest is present within 500 mt.	No	90400	RBM	Existing
21	Jadkha d	Mines	JK_JM U_JD_ 02	Parshot am Singh	9.43	32°53'19.35"N 32°53'35.21"N 32°53'36.85"N 32°53'20.44"N	74°35'20.39"E 74°35'16.88"E 74°35'21.23"E 74°35'29.27"E	1.0 5	1.89	No forest is present within 500 mt.	No	69100	RBM	Existing
22	Khour a Walli Khad	Mines	JK_JM U_KW K_01	Kimat Lal	7.95	32°53'42.39"N 32°53'57.17"N 32°53'58.73"N 32°53'45.89"N	74°35'5.42"E 74°34'51.96"E 74°34'55.33"E 74°35'10.83"E	1.5	0.82	No forest is present within 500 mt.	No	81900	RBM	Existing
23	Khour a Walli Khad	Mines	JK_JM U_KW K_02	Singh mineral s	4.58	32°54'39.36"N 32°54'39.45"N 32°54'51.94"N 32°54'48.11"N	74°34'43.85"E 74°34'47.96"E 74°34'47.79"E 74°34'41.75"E	1.2	1.83	No forest is present within 500 mt.	No	86490	RBM	Existing

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24	Khour a Walli Khad	Mines	JK_JM U_KW K_03	Mangal Sing	9.89	32°54'16.16"N 32°54'16.05"N 32°54'15.44"N 32°54'12.77"N 32°54'8.94"N 32°54'11.87"N 32°54'14.31"N 32°54'18.60"N 32°54'20.85"N	74°32'21.74"E 74°32'14.38"E 74°31'58.91"E 74°31'53.14"E 74°31'47.42"E 74°31'43.00"E 74°31'48.33"E 74°32'3.86"E 74°32'23.02"E	1.3	0.48	No forest is present within 500 mt.	No	60000	RBM	Existing
25	Khour a Walli Khad	Mines	JK_JM U_KW K_04	Mahabi r Mining	9.61	32°53'35.08"N 32°53'43.00"N 32°53'54.16"N 32°53'53.46"N 32°53'44.77"N 32°53'41.87"N 32°53'33.12"N	74°31'15.29"E 74°31'21.56"E 74°31'28.56"E 74°31'31.86"E 74°31'30.53"E 74°31'25.21"E 74°31'20.44"E	1.1	0.79	No forest is present within 500 mt.	No	67500	RBM	Existing
26	Khour a Walli Khad	Mines	JK_JM U_KW K_05	Rahil Choudh ary	6.62	32°53'2.65"N 32°53'2.64"N 32°52'57.08"N 32°52'54.70"N 32°52'59.43"N	74°31'18.88"E 74°31'25.21"E 74°31'25.98"E 74°31'36.32"E 74°31'37.93"E	1	0.50	No forest is present within 500 mt.	No	82000	RBM	Existing
27	Chauk i Chaur a	Mines	JK_JM U_CK H_04	Rahil Choudh ary	7.50	32°52'20.99"N 32°52'19.37"N 32°52'32.06"N 32°52'33.54"N	74°31'57.08"E 74°32'4.56"E 74°32'8.37"E 74°32'2.10"E	1.3	0.83	No forest is present within 500 mt.	No	61800	RBM	Existing
28	Chhib be Wali Khad	Mines	JK_JM U_CW _01	Sahil Choudh ary	9.66	32°51'44.68"N 32°51'43.66"N 32°51'16.87"N 32°51'18.14"N	74°31'33.63"E 74°31'38.11"E 74°31'29.89"E 74°31'26.14"E	2.4	0.44	No forest is present within 500 mt.	No	24907	RBM	Existing

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29	Chenab	Mines	JK_JM U_CH N_01	JK Minerals	5.28	33° 1'48.44"N 33° 1'49.59"N 33° 1'48.06"N 33° 1'49.65"N 33° 1'54.81"N 33° 2'0.17"N 33° 2'0.03"N 33° 1'53.20"N 33° 1'46.39"N 33° 1'44.39"N 33° 1'44.93"N	74°41'13.80"E 74°41'15.50"E 74°41'17.34"E 74°41'25.43"E 74°41'29.16"E 74°41'30.47"E 74°41'32.30"E 74°41'30.02"E 74°41'26.05"E 74°41'22.39"E 74°41'15.92"E	1.4	4.58	No forest is present within 500 mt.	No	171765	RBM	Existing
30	Jadkhad	Mines	JK_JM U_JD_ 01	JK Minerals	1.23	32°51'18.99"N 32°51'15.91"N 32°51'14.50"N 32°51'14.28"N 32°51'15.72"N 32°51'15.20"N 32°51'13.32"N 32°51'13.87"N 32°51'14.75"N 32°51'16.68"N 32°51'18.94"N	74°54'3.02"E 74°54'3.38"E 74°54'5.40"E 74°54'7.44"E 74°54'15.60"E 74°54'15.92"E 74°54'7.81"E 74°54'4.86"E 74°54'3.08"E 74°54'2.04"E 74°54'1.74"E	1.2	0.30	No forest is present within 500 mt.	No	103050	RBM	Existing

Source: District Mining Office, Jammu

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➤ **New e-auctioned blocks with LOI issued date, provided by the district. The site location maps are added in Annexure-VIII. The details of the blocks are given below:**

Sl. No.	Block Number	Name of Minor Mineral Block	Area in hectors	Co-ordinates of the Blocks	Particulars of successful bidders (H1)	Remarks
1.	6/J	Tawi River, Village- Chak Rakwakan, District- Jammu, J&K.	4.00	A=32°46'24.58"N 74°54'15.94"E B=32°46'31.87"N 74°54'2.38"E C=32°46'30.87"N 74°53'58.90"E D=32°46'21.29"N 74°54'15.19"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail.co m Mob. No. 9906029191	LOI ISSUED on 19.02.2024
2.	12/J	Nikki Tawi River at Village Chak Ganeshu Distt. Jammu	4.50	A=32°42'7.42"N 74°49'34.17"E B=32°42'17.95"N 74°49'51.38"E C=32°42'15.77"N 74°49'53.87"E D=32°42'8.56"N 74°49'42.66"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3 rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail.co m Mob. No. 9906029191	LOI ISSUED on 18.07.2023
3.	13/J	Nikki Tawi River at Village Surya Chak Distt. Jammu	4.40	A=32°41'55.77"N 74°49'19.70"E B=32°41'50.25"N 74°49'25.63"E C=32°41'46.34"N 74°49'19.07"E D=32°41'51.54"N 74°49'14.14"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3 rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail.co m Mob. No. 9906029191	LOI ISSUED on 18.07.2023

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4.	18/J	Nikki Tawi River (Confluence point of Nikki Tawi Balole Nallah), Village- Top Manhasan, District- Jammu, J&K.	4.10	A=32°38'51.47"N 74°45'10.27"E B=32°38'55.62"N 74°45'10.36"E C=32°38'58.33"N 74°45'13.62"E D=32°39'3.45"N 74°45'17.09"E E=32°39'2.79"N 74°45'20.34"E F=32°38'55.10"N 74°45'16.94"E	CHOUDHARY POWER PROJECT PVT LTD R/o Choudhary Towers, 3 rd Floor, Sector-1A, Ext, Trikuta Nagar Jammu, E- choudharypowerprojects@gmail.com m Mob. No. 9906029191	LOI ISSUED on 19.02.2024
5.	19/J	Nikki Tawi River at Village Badyal Brahamna Distt. Jammu	4.63	A=32°38'55.03"N 74°44'51.0"E B=32°38'52.75"N 74°44'49.84"E C=32°38'56.45"N 74°44'42.12"E D=32°39'5.93"N 74°44'31.89"E E=32°39'7.49"N 74°44'33.81"E F=32°38'58.65"N 74°44'43.99"E	Sh. Sandeep Singh S/o Sh. Sukhwinder Singh R/o Village Khandwal Tehsil and District Jammu E- aulakhsandeep@gmail.com Mob. No. 9419139391	LOI ISSUED on 18.07.2023

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6.	27/J	Sardan Nallah Downstream	2.55	A=32°46'30.97" N 74°58'11.90" E B=32°46'28.16" N 74°58'11.39" E C=32°46'31.30"N 74°58'1.67"E D=32°4 6'33.25"N 74°58'2.06"E E=32°46'33.77"N 74°58'6.29"E	Sh Naresh Singh Charak S/o Sh Natha Charak Singh R/O Jallo Chack, Tehsil Bhau District Jammu. E Mail.-bhadwal@me.com Mob No 9419129777	LOI ISSUED on 25.05.2023
7.	28/J	Sardan Nallah up stream Railway Bridge Pargolta Area District Jammu	1.58	A=32°46'10.83"N 74°58'36.67"E B=32°46'8.71"N 74°58'35.09"E C=32°46'9.07"N 74°58'38.32"E D=32°46'10.84"N 74°58'40.26"E E=32°46'12.14"N 74°58'44.32"E F=32°46'14.88"N 74°58'44.02"E G=32°46'12.58"N 74°58'39.64"E	Sh Mohit Singh S/o Sh Prem Singh R/O Tridwan, Tehsil & District Kathua. E-Mail mohitrajput7099@gmail.com Mob No 7298110733	LOI ISSUED on 27.05.2023

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8.	29/J	Sardan Nallah up stream Railway Bridge Pargolta Area District Jammu	3.00	<p>A=32°45'48.88"N 74°58'27.85"E B=32°45'47.68"N 74°58'31.64"E C=32°45'41.41"N 74°58'34.71"E D=32°45'40.49"N 74°58'29.94"E E=32°45'44.18"N 74°58'27.48"E</p>	<p>Choudhary Power Project Pvt Ltd R/O Choudhary Towers,3RD Floor,Sector- 1A,Ext,Trikuta Nagar Jammu, E- choudharypowerprojects@ gmail.com Mob No 9906029191</p>	<p>LOI ISSUED on 27.05.2023</p>
9.	32/J	Jhajjar Nallah at Village Sarmal, District Jammu	3.20	<p>A=32°52'0.01"N 75° 0'11.04"E B=32°51'57.29"N 75° 0'14.35"E C=32°51'54.92"N 75° 0'17.67"E D=32°51'50.97"N 75° 0'21.95"E E=32°51'52.14"N 75° 0'24.25"E F=32°51'55.06"N 75° 0'23.20"E G=32°51'56.62"N 75° 0'21.68"E H=32°51'58.60"N 75° 0'16.24"E I=32°51'59.90"N 75° 0'14.14"E J=32°52'2.81"N 75° 0'12.33"E</p>	<p>Sh Bharat Bhushan S/o Sh Sham Singh R/O Assok Nagar,Bhagwati Nagar Jammu. E- mail, bharatchib1981@gmail.com Mob No 9419171439, 9419171438</p>	<p>LOI ISSUED on 27.05.2023</p>

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➤ **Final List of potential Mining Zones (PROPOSED)**

Sl. No.	River Details	Lease Details	Area (In Ha)	Latitude	Longitude	Depth	Distance (In Km) From PA/BR/WC	Distance From Forest Area (In Km)	Toatal Excavation in (CUM/Yr) (Mine Depth max as 3m)	Mineral to be mined (Sand/ Bajri/ RBM etc.)	Existing / Proposed
1	Tawi	JK_JMU_ZA_TW_01	4.44	32°46'48.56"N 32°46'44.50"N 32°46'47.81"N 32°46'50.23"N 32°46'54.24"N 32°46'53.60"N 32°46'52.33"N 32°46'49.80"N	75° 8'56.34"E 75° 8'59.26"E 75° 9'6.42"E 75° 9'9.35"E 75° 9'11.11"E 75° 9'7.63"E 75° 9'3.14"E 75° 8'58.60"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	132312	RBM	Proposed
2	Tawi	JK_JMU_ZA_TW_02	90.7	32°46'43.36"N 32°46'48.59"N 32°47'7.49"N 32°47'11.30"N 32°47'13.83"N 32°47'14.28"N 32°46'55.34"N 32°46'57.74"N 32°47'8.10"N 32°47'14.65"N 32°47'21.71"N 32°47'21.19"N 32°47'22.85"N 32°47'16.45"N 32°47'8.94"N	75° 7'25.07"E 75° 7'28.30"E 75° 7'20.57"E 75° 7'16.09"E 75° 7'17.75"E 75° 7'20.27"E 75° 7'39.09"E 75° 7'43.16"E 75° 7'39.33"E 75° 7'31.09"E 75° 7'15.24"E 75° 7'2.12"E 75° 6'55.45"E 75° 6'47.96"E 75° 6'46.95"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	2721000	RBM	Proposed

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				32°46'55.67"N 32°46'49.01"N	75° 7'0.41"E 75° 7'17.54"E						
3	Tawi	JK_JMU_ZA_T W_03	31.7	32°46'20.66"N 32°46'42.01"N 32°46'53.10"N 32°46'43.64"N 32°46'30.18"N	75° 6'55.72"E 75° 7'5.00"E 75° 6'58.92"E 75° 7'19.64"E 75° 7'18.73"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	944660	RBM	Proposed
4	Tawi	JK_JMU_ZA_T W_04	3.1	32°46'24.54"N 32°46'34.04"N 32°46'36.00"N 32°46'29.15"N 32°46'22.91"N	75° 7'19.35"E 75° 7'24.05"E 75° 7'26.51"E 75° 7'26.51"E 75° 7'19.99"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	88040	RBM	Proposed
5	Tawi	JK_JMU_ZA_T W_05	1.94	32°46'8.32"N 32°46'4.92"N 32°46'0.01"N 32°46'7.87"N	75° 6'32.76"E 75° 6'27.45"E 75° 6'21.76"E 75° 6'26.18"E	2.9	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	56260	RBM	Proposed
6	Tawi	JK_JMU_ZA_T W_06	4.31	32°46'3.90"N 32°46'3.98"N 32°45'59.02"N 32°45'58.94"N 32°46'1.36"N 32°46'7.65"N 32°46'5.36"N 32°45'59.35"N 32°45'55.58"N 32°45'59.70"N	75° 6'20.32"E 75° 6'19.50"E 75° 6'13.57"E 75° 6'10.32"E 75° 6'5.96"E 75° 6'1.32"E 75° 6'1.91"E 75° 6'5.15"E 75° 6'11.74"E 75° 6'18.69"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	123697	RBM	Proposed
7	Tawi	JK_JMU_ZA_T W_07	1.68	32°46'15.99"N 32°46'13.55"N 32°46'10.17"N 32°46'4.68"N 32°46'6.92"N 32°46'10.30"N	75° 5'50.67"E 75° 5'50.61"E 75° 5'53.02"E 75° 5'58.61"E 75° 5'58.42"E 75° 5'55.50"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	47712	RBM	Proposed

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8	Tawi	JK_JMU_ZA_T W_08	2.38	32°46'56.20"N 32°46'59.60"N 32°47'2.80"N 32°47'5.41"N 32°47'5.27"N 32°47'2.37"N 32°46'59.39"N	75° 5'36.16"E 75° 5'37.69"E 75° 5'35.47"E 75° 5'30.53"E 75° 5'28.34"E 75° 5'31.34"E 75° 5'34.09"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	70686	RBM	Proposed
9	Tawi	JK_JMU_ZA_T W_09	12.7	32°47'0.57"N 32°47'6.62"N 32°47'15.47"N 32°47'18.59"N 32°47'10.17"N 32°47'6.29"N	75° 5'40.81"E 75° 5'44.05"E 75° 5'28.56"E 75° 5'22.81"E 75° 5'16.48"E 75° 5'32.74"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	373380	RBM	Proposed
10	Tawi	JK_JMU_ZA_T W_10	4.67	32°47'4.52"N 32°47'2.18"N 32°47'4.13"N 32°47'4.80"N 32°47'7.11"N	75° 5'4.09"E 75° 5'25.51"E 75° 5'28.11"E 75° 5'27.44"E 75° 5'13.85"E	2.92	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	136364	RBM	Proposed
11	Tawi	JK_JMU_ZA_T W_11	3.37	32°47'9.72"N 32°47'6.50"N 32°47'10.62"N 32°47'11.21"N 32°47'10.18"N	75° 5'13.33"E 75° 5'1.48"E 75° 4'51.52"E 75° 4'52.59"E 75° 4'58.47"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	100426	RBM	Proposed
12	Tawi	JK_JMU_ZA_T W_12	2.49	32°46'59.78"N 32°47'2.00"N 32°47'4.32"N 32°47'6.51"N 32°47'7.29"N 32°47'5.29"N 32°47'2.58"N	75° 4'44.07"E 75° 4'50.82"E 75° 4'53.87"E 75° 4'54.00"E 75° 4'50.09"E 75° 4'49.44"E 75° 4'46.30"E	2.9	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	72210	RBM	Proposed
13	Tawi	JK_JMU_ZA_T W_13	2.97	32°47'9.32"N 32°47'5.44"N	75° 4'36.15"E 75° 4'35.47"E	2.99	No protected Area, Bridge	No Forest Available in	88803	RBM	Proposed

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				32°47'3.64"N 32°46'59.97"N 32°47'2.92"N 32°47'3.89"N 32°47'3.88"N 32°47'6.24"N	75° 4'36.14"E 75° 4'41.30"E 75° 4'44.31"E 75° 4'43.67"E 75° 4'41.67"E 75° 4'38.58"E		are available with in 500m	500m			
14	Tawi	JK_JMU_ZA_T W_14	3.26	32°47'19.14"N 32°47'19.01"N 32°47'20.55"N 32°47'22.52"N 32°47'23.99"N 32°47'30.68"N 32°47'35.28"N 32°47'33.57"N 32°47'31.99"N 32°47'29.87"N	75° 4'29.89"E 75° 4'29.15"E 75° 4'28.43"E 75° 4'25.10"E 75° 4'24.73"E 75° 4'25.45"E 75° 4'26.90"E 75° 4'27.59"E 75° 4'27.16"E 75° 4'28.16"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	93236	RBM	Proposed
15	Tawi	JK_JMU_ZA_T W_15	17.9	32°47'33.69"N 32°47'43.79"N 32°47'53.91"N 32°47'58.25"N 32°47'58.97"N 32°47'59.41"N 32°48'0.69"N 32°48'2.54"N 32°48'1.71"N 32°47'56.95"N 32°47'53.25"N 32°47'40.94"N 32°47'38.84"N	75° 4'22.76"E 75° 4'20.88"E 75° 4'15.07"E 75° 4'6.71"E 75° 4'9.95"E 75° 4'13.23"E 75° 4'14.27"E 75° 4'19.63"E 75° 4'26.10"E 75° 4'28.05"E 75° 4'25.00"E 75° 4'25.15"E 75° 4'25.94"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	508360	RBM	Proposed
16	Tawi	JK_JMU_ZA_T W_16	5.37	32°48'49.92"N 32°48'54.69"N 32°48'57.37"N	75° 2'21.31"E 75° 2'22.56"E 75° 2'22.55"E	2.95	No protected Area, Bridge are available	No Forest Available in 500m	158415	RBM	Proposed

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				32°48'59.50"N 32°48'59.92"N 32°49'0.30"N 32°48'57.97"N 32°48'55.35"N 32°48'54.58"N 32°48'56.53"N 32°48'55.23"N	75° 2'26.36"E 75° 2'32.19"E 75° 2'33.32"E 75° 2'36.73"E 75° 2'35.89"E 75° 2'34.41"E 75° 2'28.77"E 75° 2'25.48"E		with in 500m				
17	Tawi	JK_JMU_ZA_T W_17	3.17	32°48'56.15"N 32°48'51.52"N 32°48'51.47"N 32°48'50.24"N 32°48'51.98"N 32°48'53.90"N 32°48'53.96"N 32°48'52.70"N 32°48'54.72"N	75° 2'0.98"E 75° 2'6.46"E 75° 2'11.95"E 75° 2'15.28"E 75° 2'19.50"E 75° 2'19.64"E 75° 2'18.37"E 75° 2'16.22"E 75° 2'4.86"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	90979	RBM	Proposed
18	Tawi	JK_JMU_ZA_T W_18	4	32°49'19.86"N 32°49'24.54"N 32°49'18.93"N 32°49'11.94"N 32°49'16.37"N 32°49'22.10"N 32°49'26.25"N 32°49'26.79"N 32°49'23.98"N	75° 1'38.53"E 75° 1'30.76"E 75° 1'26.10"E 75° 1'25.73"E 75° 1'23.92"E 75° 1'24.33"E 75° 1'28.83"E 75° 1'31.90"E 75° 1'36.98"E	2.79	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	111600	RBM	Proposed
19	Tawi	JK_JMU_ZA_T W_19	3.46	32°47'57.69"N 32°47'56.65"N 32°47'57.14"N 32°48'4.14"N 32°48'6.14"N 32°48'7.52"N	75° 1'11.76"E 75° 1'13.34"E 75° 1'14.71"E 75° 1'19.01"E 75° 1'18.85"E 75° 1'16.97"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	98264	RBM	Proposed

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				32°48'5.97"N 32°48'1.82"N	75° 1'14.01"E 75° 1'13.88"E						
20	Tawi	JK_JMU_ZA_T W_20	2.51	32°47'58.30"N 32°47'58.12"N 32°48'1.83"N 32°48'1.04"N 32°48'1.52"N 32°48'7.26"N 32°48'6.98"N 32°48'6.12"N 32°48'2.06"N	75° 1'6.90"E 75° 1'9.79"E 75° 1'11.60"E 75° 1'9.24"E 75° 1'6.78"E 75° 1'0.15"E 75° 0'58.87"E 75° 0'59.10"E 75° 1'3.70"E	2.83	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	71033	RBM	Proposed
21	Tawi	JK_JMU_ZA_T W_21	8.1	32°48'5.71"N 32°48'20.25"N 32°48'20.51"N 32°48'19.08"N 32°48'15.37"N 32°48'21.81"N 32°48'22.47"N 32°48'18.19"N	75° 0'55.07"E 75° 0'39.84"E 75° 0'21.26"E 75° 0'16.38"E 75° 0'12.49"E 75° 0'16.66"E 75° 0'35.02"E 75° 0'48.60"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	234090	RBM	Proposed
22	Tawi	JK_JMU_ZA_T W_22	4.67	32°48'21.62"N 32°48'17.57"N 32°48'14.97"N 32°48'15.92"N 32°48'16.74"N 32°48'17.41"N 32°48'15.56"N 32°48'14.03"N 32°48'13.09"N 32°48'18.86"N	74°59'51.42"E 74°59'55.66"E 75° 0'3.75"E 75° 0'8.14"E 75° 0'8.42"E 75° 0'9.60"E 75° 0'10.68"E 75° 0'9.16"E 74°59'58.85"E 74°59'50.51"E	2.92	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	136364	RBM	Proposed
23	Tawi	JK_JMU_ZA_T W_23	2.13	32°48'22.36"N 32°48'25.61"N 32°48'29.94"N	74°59'48.89"E 74°59'47.59"E 74°59'43.11"E	2.95	No protected Area, Bridge are available	No Forest Available in 500m	62835	RBM	Proposed

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				32°48'31.20"N 32°48'26.06"N	74°59'39.12"E 74°59'43.63"E		with in 500m				
24	Tawi	JK_JMU_ZA_T W_24	1.79	32°48'33.14"N 32°48'35.72"N 32°48'38.38"N 32°48'40.67"N 32°48'40.84"N 32°48'39.48"N 32°48'39.44"N 32°48'40.07"N 32°48'38.44"N 32°48'34.52"N	74°59'26.19"E 74°59'23.92"E 74°59'21.73"E 74°59'22.49"E 74°59'27.19"E 74°59'28.20"E 74°59'27.70"E 74°59'26.08"E 74°59'25.08"E 74°59'26.62"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	52984	RBM	Proposed
25	Tawi	JK_JMU_ZA_T W_25	1	32°48'22.75"N 32°48'23.07"N 32°48'27.83"N 32°48'28.62"N 32°48'27.92"N 32°48'26.84"N	74°59'23.49"E 74°59'25.46"E 74°59'27.47"E 74°59'27.22"E 74°59'25.62"E 74°59'24.56"E	2.88	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	28800	RBM	Proposed
26	Tawi	JK_JMU_ZA_T W_26	1.51	32°48'22.88"N 32°48'19.89"N 32°48'20.25"N 32°48'20.07"N 32°48'18.98"N 32°48'24.23"N 32°48'21.16"N 32°48'21.61"N 32°48'22.97"N	74°59'21.98"E 74°59'19.60"E 74°59'14.03"E 74°59'13.32"E 74°59'13.36"E 74°59'9.85"E 74°59'14.16"E 74°59'19.00"E 74°59'20.68"E	2.92	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	44092	RBM	Proposed
27	Tawi	JK_JMU_ZA_T W_27	9.75	32°47'55.96"N 32°47'58.91"N 32°48'9.19"N 32°48'12.09"N 32°48'18.20"N	74°59'4.25"E 74°58'52.48"E 74°58'36.45"E 74°58'38.23"E 74°58'38.62"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	276900	RBM	Proposed

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				32°48'20.67"N 32°48'20.91"N 32°48'14.12"N 32°48'3.19"N 32°47'59.61"N	74°58'40.98"E 74°58'45.34"E 74°58'41.07"E 74°58'51.18"E 74°59'0.66"E						
28	Tawi	JK_JMU_ZA_T W_28	12.3	32°47'56.76"N 32°47'45.41"N 32°47'46.10"N 32°47'39.13"N 32°47'42.66"N 32°47'40.63"N	74°58'53.34"E 74°59'5.86"E 74°58'46.40"E 74°58'57.98"E 74°59'2.68"E 74°59'9.76"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	355470	RBM	Proposed
29	Tawi	JK_JMU_ZA_T W_29	6.41	32°47'40.13"N 32°47'42.44"N 32°47'40.03"N 32°47'41.65"N 32°47'39.43"N 32°47'35.58"N 32°47'39.62"N	74°58'49.22"E 74°58'45.98"E 74°58'38.43"E 74°58'24.35"E 74°58'26.09"E 74°58'34.45"E 74°58'45.40"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	191018	RBM	Proposed
30	Tawi	JK_JMU_ZA_T W_30	23.8	32°46'42.70"N 32°46'30.73"N 32°46'29.45"N 32°46'33.37"N 32°46'40.02"N 32°46'42.25"N	74°57'18.75"E 74°57'26.52"E 74°57'34.85"E 74°57'42.55"E 74°57'52.23"E 74°57'50.40"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	706860	RBM	Proposed
31	Tawi	JK_JMU_ZA_T W_31	86.3	32°46'30.19"N 32°47'5.69"N 32°47'32.59"N 32°47'23.62"N 32°47'0.19"N 32°46'49.96"N 32°46'38.69"N 32°46'54.07"N	74°55'31.31"E 74°55'46.27"E 74°56'20.91"E 74°56'39.05"E 74°56'56.73"E 74°57'8.08"E 74°57'13.05"E 74°56'55.94"E	2.91	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	2511330	RBM	Proposed

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				32°47'19.65"N 32°47'20.35"N 32°47'9.33"N 32°46'47.35"N 32°46'41.01"N 32°46'31.02"N	74°56'26.24"E 74°56'14.46"E 74°56'0.78"E 74°55'52.47"E 74°55'42.20"E 74°55'33.61"E						
32	Tawi	JK_JMU_ZA_T W_32	12.5	32°47'9.39"N 32°47'12.99"N 32°47'22.97"N 32°47'30.92"N 32°47'18.76"N	74°55'47.69"E 74°55'43.43"E 74°55'59.48"E 74°56'15.66"E 74°56'2.13"E	2.93	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	366250	RBM	Proposed
33	Tawi	JK_JMU_ZA_T W_33	58	32°46'44.93"N 32°46'41.64"N 32°46'12.17"N 32°46'8.81"N 32°46'19.39"N 32°46'25.19"N 32°46'25.74"N 32°46'18.72"N 32°46'14.52"N 32°46'23.84"N	74°55'27.97"E 74°55'30.38"E 74°55'17.21"E 74°54'48.31"E 74°54'20.43"E 74°54'20.10"E 74°54'25.57"E 74°54'29.82"E 74°54'39.36"E 74°55'7.67"E	2.92	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1693600	RBM	Proposed
34	Tawi	JK_JMU_ZA_T W_34	62.1	32°46'1.40"N 32°45'48.33"N 32°45'48.81"N 32°46'21.62"N 32°46'15.19"N 32°46'5.76"N	74°55'13.24"E 74°55'9.17"E 74°54'48.38"E 74°54'0.34"E 74°54'17.12"E 74°54'39.63"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1850580	RBM	Proposed
35	Tawi	JK_JMU_ZA_T W_35	15.1	32°46'28.32"N 32°46'22.87"N 32°46'21.83"N 32°46'19.78"N 32°46'28.36"N	74°53'51.01"E 74°53'57.88"E 74°54'11.42"E 74°54'16.37"E 74°54'15.21"E	2.82	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	425820	RBM	Proposed

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				32°46'32.02"N 32°46'32.14"N 32°46'28.71"N	74°54'6.25"E 74°53'59.55"E 74°53'53.88"E						
36	Tawi	JK_JMU_ZA_T W_36	7.17	32°46'20.35"N 32°46'21.84"N 32°46'23.31"N 32°46'20.85"N 32°46'28.55"N 32°46'26.53"N 32°46'24.50"N	74°53'31.29"E 74°53'35.00"E 74°53'50.17"E 74°53'57.84"E 74°53'47.09"E 74°53'37.33"E 74°53'34.21"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	205779	RBM	Proposed
37	Tawi	JK_JMU_ZA_T W_37	27.3	32°46'15.93"N 32°46'26.91"N 32°46'35.59"N 32°46'42.22"N 32°46'33.30"N	74°53'9.97"E 74°53'28.56"E 74°53'55.22"E 74°53'43.09"E 74°53'27.77"E	2.85	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	778050	RBM	Proposed
38	Tawi	JK_JMU_ZA_T W_38	14.2	32°44'54.17"N 32°45'4.73"N 32°45'11.62"N 32°45'13.52"N 32°45'1.55"N 32°44'54.64"N	74°52'52.92"E 74°52'56.07"E 74°53'1.39"E 74°52'45.33"E 74°52'46.20"E 74°52'50.39"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	417480	RBM	Proposed
39	Tawi	JK_JMU_ZA_T W_39	113	32°45'11.42"N 32°44'49.18"N 32°43'49.96"N 32°43'47.71"N 32°44'32.29"N 32°44'34.08"N	74°52'40.93"E 74°52'32.74"E 74°52'40.60"E 74°52'45.95"E 74°53'3.56"E 74°52'57.61"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	3378700	RBM	Proposed
40	Tawi	JK_JMU_ZA_T W_40	64.9	32°44'50.35"N 32°45'0.86"N 32°45'13.48"N 32°45'11.58"N 32°45'7.92"N	74°52'53.53"E 74°52'44.83"E 74°52'45.33"E 74°53'1.38"E 74°52'59.55"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1856140	RBM	Proposed

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				32°45'4.76"N 32°44'57.71"N	74°52'56.09"E 74°52'53.66"E						
41	Tawi	JK_JMU_ZA_T W_41	45	32°43'49.96"N 32°43'47.73"N 32°44'1.66"N 32°44'33.92"N 32°44'33.73"N 32°44'44.85"N 32°44'55.00"N 32°45'11.35"N 32°44'37.49"N 32°44'5.85"N	74°52'40.60"E 74°52'45.95"E 74°53'1.58"E 74°53'1.47"E 74°52'58.61"E 74°52'54.00"E 74°52'45.38"E 74°52'40.93"E 74°52'32.83"E 74°52'45.00"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1323000	RBM	Proposed
42	Tawi	JK_JMU_ZA_T W_42	11.2	32°42'47.37"N 32°42'49.44"N 32°42'48.03"N 32°42'54.64"N 32°42'53.11"N 32°43'2.69"N 32°43'1.64"N 32°43'9.49"N 32°43'5.49"N 32°42'55.14"N	74°48'51.36"E 74°49'2.91"E 74°49'11.95"E 74°49'26.62"E 74°49'54.96"E 74°49'48.86"E 74°49'32.37"E 74°49'22.77"E 74°49'1.25"E 74°48'52.85"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	321440	RBM	Proposed
43	Tawi	JK_JMU_ZA_T W_43	13.6	32°42'48.12"N 32°42'45.23"N 32°42'44.39"N 32°42'34.79"N 32°42'31.73"N 32°42'39.74"N 32°42'48.48"N 32°42'46.75"N 32°42'46.78"N 32°42'50.94"N	74°47'10.28"E 74°47'18.38"E 74°47'40.46"E 74°48'0.33"E 74°48'11.04"E 74°48'26.52"E 74°48'20.88"E 74°47'57.02"E 74°47'36.26"E 74°47'20.01"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	386240	RBM	Proposed

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44	Tawi	JK_JMU_ZA_T W_44	41	32°42'34.57"N 32°42'38.64"N 32°42'40.75"N 32°42'40.03"N 32°42'43.19"N 32°42'46.92"N 32°42'46.37"N 32°42'36.80"N	74°46'42.42"E 74°46'54.85"E 74°47'4.44"E 74°47'11.91"E 74°47'19.31"E 74°47'10.01"E 74°47'2.20"E 74°46'44.37"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1221800	RBM	Proposed
45	Tawi	JK_JMU_ZA_T W_45	11.7	32°42'40.39"N 32°42'40.73"N 32°42'45.84"N 32°42'48.36"N 32°42'38.79"N 32°42'36.28"N	74°46'21.05"E 74°46'37.19"E 74°46'45.57"E 74°47'0.67"E 74°46'47.87"E 74°46'39.78"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	338130	RBM	Proposed
46	Nikki Tawi	JK_JMU_ZA_ NKTW_01	11.4	32°42'21.76"N 32°42'28.66"N 32°42'38.08"N 32°42'42.43"N 32°42'39.07"N	74°50'2.56"E 74°50'11.87"E 74°50'17.34"E 74°50'11.17"E 74°50'6.91"E	2.85	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	324900	RBM	Proposed
47	Nikki Tawi	JK_JMU_ZA_ NKTW_02	6.85	32°42'9.59"N 32°42'18.05"N 32°42'20.58"N 32°42'14.66"N 32°42'12.43"N	74°49'35.49"E 74°49'51.34"E 74°49'57.65"E 74°49'57.97"E 74°49'55.04"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	194540	RBM	Proposed
48	Nikki Tawi	JK_JMU_ZA_ NKTW_03	39.3	32°41'43.91"N 32°41'41.38"N 32°41'53.34"N 32°42'8.34"N 32°42'9.05"N 32°41'59.46"N	74°49'6.29"E 74°49'8.36"E 74°49'40.44"E 74°49'49.56"E 74°49'42.99"E 74°49'20.92"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1171140	RBM	Proposed
49	Nikki Tawi	JK_JMU_ZA_ NKTW_04	19	32°40'49.26"N 32°40'53.18"N	74°47'37.53"E 74°47'42.01"E	2.95	No protected Area, Bridge	No Forest Available in	560500	RBM	Proposed

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				32°40'52.17"N 32°40'59.54"N 32°41'4.75"N 32°41'2.74"N	74°47'49.77"E 74°48'6.21"E 74°48'0.17"E 74°47'46.74"E		are available with in 500m	500m			
50	Nikki Tawi	JK_JMU_ZA_ NKTW_05	24	32°40'34.02"N 32°40'29.16"N 32°40'41.04"N 32°40'47.83"N 32°41'1.85"N 32°40'50.35"N	74°46'53.82"E 74°46'57.07"E 74°47'9.65"E 74°47'34.97"E 74°47'40.24"E 74°47'18.65"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	710400	RBM	Proposed
51	Nikki Tawi	JK_JMU_ZA_ NKTW_06	7.39	32°40'32.14"N 32°40'38.52"N 32°40'43.34"N 32°40'44.81"N 32°40'37.09"N	74°47'8.91"E 74°47'25.21"E 74°47'27.14"E 74°47'24.01"E 74°47'11.20"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	219483	RBM	Proposed
52	Nikki Tawi	JK_JMU_ZA_ NKTW_07	11.6	32°39'7.43"N 32°39'18.66"N 32°39'30.64"N 32°39'16.31"N 32°39'8.46"N 32°39'7.07"N 32°39'8.72"N	74°45'15.25"E 74°45'20.47"E 74°45'29.67"E 74°45'28.44"E 74°45'25.51"E 74°45'24.33"E 74°45'21.30"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	332920	RBM	Proposed
53	Nikki Tawi	JK_JMU_ZA_ NKTW_08	19.4	32°38'48.77"N 32°39'0.95"N 32°39'5.43"N 32°39'7.01"N 32°38'59.93"N 32°38'54.66"N 32°38'48.32"N 32°38'47.35"N	74°44'58.27"E 74°45'13.61"E 74°45'20.83"E 74°45'26.53"E 74°45'24.63"E 74°45'22.30"E 74°45'14.44"E 74°45'10.54"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	554840	RBM	Proposed
54	Nikki Tawi	JK_JMU_ZA_ NKTW_09	29	32°39'42.11"N 32°39'37.17"N	74°44'14.05"E 74°44'16.67"E	2.84	No protected Area, Bridge	No Forest Available in	823600	RBM	Proposed

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				32°39'35.16"N 32°39'3.81"N 32°38'54.58"N 32°38'50.07"N 32°38'50.51"N 32°39'31.72"N 32°39'35.96"N	74°44'19.86"E 74°44'38.78"E 74°44'59.93"E 74°44'52.22"E 74°44'46.16"E 74°44'15.73"E 74°44'12.63"E		are available with in 500m	500m			
55	Nikki Tawi	JK_JMU_ZA_NKTW_10	16	32°40'9.18"N 32°40'8.21"N 32°39'49.36"N 32°39'35.76"N 32°40'3.08"N	74°43'51.62"E 74°43'55.55"E 74°44'10.22"E 74°44'8.66"E 74°43'51.93"E	2.8	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	448000	RBM	Proposed
56	Nikki Tawi	JK_JMU_ZA_NKTW_11	17.2	32°40'36.79"N 32°40'39.15"N 32°40'43.00"N 32°40'42.12"N 32°40'41.99"N 32°40'42.66"N 32°40'39.37"N 32°40'35.91"N 32°40'35.59"N	74°41'48.10"E 74°41'55.37"E 74°42'0.49"E 74°42'8.60"E 74°42'26.55"E 74°42'36.70"E 74°42'40.01"E 74°42'7.35"E 74°41'55.38"E	2.83	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	486760	RBM	Proposed
57	Nikki Tawi	JK_JMU_ZA_NKTW_12	6.76	32°40'42.07"N 32°40'45.42"N 32°40'45.15"N 32°40'40.89"N 32°40'40.64"N 32°40'42.14"N 32°40'40.45"N 32°40'40.95"N	74°41'30.40"E 74°41'49.92"E 74°41'58.01"E 74°41'53.02"E 74°41'49.62"E 74°41'45.66"E 74°41'37.15"E 74°41'29.92"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	194012	RBM	Proposed
58	Nikki Tawi	JK_JMU_ZA_NKTW_13	2.61	32°40'4.53"N 32°40'12.70"N 32°40'2.08"N	74°41'15.01"E 74°41'19.72"E 74°41'21.65"E	2.81	No protected Area, Bridge are available	No Forest Available in 500m	73341	RBM	Proposed

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				32°40'3.86"N	74°41'17.87"E		with in 500m				
59	CHEN AB	JK_JMU_ZA_ CHN_01	163	33° 1'38.89"N 33° 1'42.74"N 33° 1'4.05"N 33° 1'15.52"N 33° 1'30.58"N 33° 1'31.90"N 33° 1'31.76"N 33° 1'14.56"N 33° 1'3.80"N 33° 0'35.86"N 33° 0'35.82"N 33° 0'32.25"N 33° 0'9.75"N 32°59'54.19"N 32°59'55.84"N 33° 0'4.96"N 33° 0'33.16"N 33° 0'35.44"N 33° 0'47.26"N 33° 1'14.94"N	74°47'17.69"E 74°47'25.10"E 74°47'55.14"E 74°47'53.08"E 74°47'38.78"E 74°47'40.96"E 74°47'45.81"E 74°47'57.59"E 74°48'4.79"E 74°48'6.49"E 74°48'8.30"E 74°48'13.63"E 74°48'36.12"E 74°48'48.96"E 74°48'40.81"E 74°48'27.28"E 74°48'3.33"E 74°47'51.28"E 74°47'34.08"E 74°47'30.17"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	4661800	RBM	Proposed
60	CHEN AB	JK_JMU_ZA_ CHN_02	11.8	33° 0'58.70"N 33° 0'53.94"N 33° 0'47.01"N 33° 0'43.84"N 33° 0'31.04"N 33° 0'40.94"N 33° 0'58.22"N	74°48'10.10"E 74°48'16.10"E 74°48'14.87"E 74°48'18.73"E 74°48'18.06"E 74°48'10.63"E 74°48'9.00"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	352820	RBM	Proposed
61	CHEN AB	JK_JMU_ZA_ CHN_03	1.85	33° 0'52.43"N 33° 0'50.60"N 33° 0'46.34"N 33° 0'44.42"N	74°48'17.79"E 74°48'20.24"E 74°48'21.97"E 74°48'19.73"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	55500	RBM	Proposed

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				33° 0'47.56"N 33° 0'48.83"N	74°48'17.95"E 74°48'16.47"E						
62	CHEN AB	JK_JMU_ZA_ CHN_04	4.56	33° 0'13.91"N 33° 0'22.59"N 33° 0'28.13"N 33° 0'28.32"N 33° 0'29.46"N 33° 0'31.20"N 33° 0'28.59"N 33° 0'22.39"N	74°48'36.97"E 74°48'27.72"E 74°48'28.56"E 74°48'30.15"E 74°48'30.39"E 74°48'29.91"E 74°48'32.11"E 74°48'33.27"E	2.92	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	133152	RBM	Proposed
63	CHEN AB	JK_JMU_ZA_ CHN_05	8.9	33° 0'16.21"N 33° 0'11.06"N 33° 0'3.71"N 32°59'53.16"N 32°59'56.15"N 32°59'57.49"N 33° 0'10.75"N	74°48'50.81"E 74°48'52.72"E 74°48'51.43"E 74°48'58.93"E 74°48'52.24"E 74°48'52.04"E 74°48'42.07"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	262550	RBM	Proposed
64	CHEN AB	JK_JMU_ZA_ CHN_06	8.18	33° 0'8.02"N 33° 0'3.29"N 32°59'58.92"N 32°59'50.57"N 32°59'51.09"N 32°59'52.77"N 33° 0'0.98"N 33° 0'5.19"N	74°48'53.65"E 74°48'57.63"E 74°48'58.31"E 74°49'11.35"E 74°49'5.44"E 74°49'1.73"E 74°48'56.08"E 74°48'53.11"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	245400	RBM	Proposed
65	CHEN AB	JK_JMU_ZA_ CHN_07	13.5	32°59'34.51"N 32°59'35.59"N 32°59'34.09"N 32°59'24.13"N 32°59'23.23"N 32°59'24.93"N 32°59'31.62"N	74°48'51.95"E 74°48'55.45"E 74°48'58.79"E 74°49'7.57"E 74°49'13.72"E 74°49'16.93"E 74°49'18.50"E	2.93	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	395550	RBM	Proposed

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				32°59'45.52"N 32°59'38.70"N 32°59'34.31"N 32°59'27.08"N 32°59'20.63"N 32°59'19.68"N 32°59'32.76"N	74°49'8.91"E 74°49'21.71"E 74°49'21.96"E 74°49'19.19"E 74°49'15.77"E 74°49'10.82"E 74°48'53.14"E						
66	CHEN AB	JK_JMU_ZA_ CHN_08	9.94	32°59'36.19"N 32°59'26.74"N 32°59'19.45"N 32°59'18.14"N 32°59'18.39"N 32°59'20.47"N 32°59'20.91"N 32°59'24.14"N 32°59'33.89"N	74°49'24.10"E 74°49'20.27"E 74°49'15.42"E 74°49'12.19"E 74°49'21.41"E 74°49'23.62"E 74°49'25.97"E 74°49'27.54"E 74°49'26.81"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	287266	RBM	Proposed
67	CHEN AB	JK_JMU_ZA_ CHN_09	8.2	32°59'23.91"N 32°59'27.46"N 32°59'25.27"N 32°59'18.96"N 32°59'17.98"N 32°59'30.37"N 32°59'30.49"N 32°59'27.69"N 32°59'26.57"N	74°48'33.24"E 74°48'38.08"E 74°48'47.89"E 74°49'0.72"E 74°49'6.02"E 74°48'48.19"E 74°48'46.47"E 74°48'32.21"E 74°48'31.45"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	244360	RBM	Proposed
68	CHEN AB	JK_JMU_ZA_ CHN_10	5.89	32°59'5.26"N 32°59'25.25"N 32°59'19.32"N 32°59'12.95"N 32°59'7.86"N	74°48'17.99"E 74°48'26.69"E 74°48'29.83"E 74°48'26.14"E 74°48'21.40"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	176700	RBM	Proposed
69	CHEN AB	JK_JMU_ZA_ CHN_11	4.25	32°56'25.92"N 32°56'23.85"N	74°46'52.71"E 74°46'50.74"E	2.95	No protected Area, Bridge	No Forest Available in	125375	RBM	Proposed

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				32°56'16.42"N 32°56'9.43"N 32°56'4.00"N 32°56'5.96"N 32°56'15.82"N 32°56'20.08"N 32°56'23.19"N	74°46'49.83"E 74°46'53.36"E 74°46'59.26"E 74°46'59.22"E 74°46'53.11"E 74°46'51.42"E 74°46'51.57"E		are available with in 500m	500m			
70	CHEN AB	JK_JMU_ZA_ CHN_12	3.8	32°55'57.84"N 32°55'55.18"N 32°55'45.83"N 32°55'41.76"N 32°55'34.74"N 32°55'39.46"N 32°55'46.29"N 32°55'50.08"N	74°46'56.15"E 74°47'0.31"E 74°46'59.39"E 74°46'55.95"E 74°46'51.42"E 74°46'52.30"E 74°46'57.66"E 74°46'58.12"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	112860	RBM	Proposed
71	CHEN AB	JK_JMU_ZA_ CHN_13	4.14	32°55'18.28"N 32°55'12.72"N 32°55'3.64"N 32°54'53.56"N 32°54'56.86"N 32°55'5.04"N 32°55'11.68"N	74°46'52.07"E 74°46'53.07"E 74°46'58.10"E 74°47'12.93"E 74°47'3.96"E 74°46'54.80"E 74°46'51.92"E	2.93	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	121302	RBM	Proposed
72	CHEN AB	JK_JMU_ZA_ CHN_14	3.1	32°54'26.67"N 32°54'25.99"N 32°54'30.15"N 32°54'34.06"N 32°54'37.54"N 32°54'40.71"N 32°54'43.18"N 32°54'43.55"N 32°54'37.65"N 32°54'33.99"N	74°47'16.43"E 74°47'17.28"E 74°47'24.62"E 74°47'28.24"E 74°47'29.09"E 74°47'27.82"E 74°47'24.61"E 74°47'23.12"E 74°47'27.93"E 74°47'26.08"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	92070	RBM	Proposed

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				32°54'29.34"N	74°47'19.02"E						
73	CHEN AB	JK_JMU_ZA_ CHN_15	3.41	32°54'14.49"N 32°54'13.79"N 32°54'14.18"N 32°54'19.42"N 32°54'23.11"N 32°54'27.94"N 32°54'22.27"N 32°54'16.71"N 32°54'14.66"N	74°46'54.94"E 74°46'51.86"E 74°46'49.29"E 74°46'39.81"E 74°46'37.23"E 74°46'37.03"E 74°46'40.71"E 74°46'47.28"E 74°46'52.40"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	101618	RBM	Proposed
74	CHEN AB	JK_JMU_ZA_ CHN_16	4.41	32°54'30.00"N 32°54'31.48"N 32°54'30.66"N 32°54'28.48"N 32°54'24.90"N 32°54'23.01"N 32°54'23.49"N 32°54'28.34"N 32°54'29.23"N	74°46'22.93"E 74°46'27.36"E 74°46'30.87"E 74°46'33.55"E 74°46'33.28"E 74°46'30.86"E 74°46'29.35"E 74°46'23.92"E 74°46'23.70"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	130977	RBM	Proposed
75	CHEN AB	JK_JMU_ZA_ CHN_17	21.9	32°53'40.37"N 32°53'34.83"N 32°53'23.61"N 32°53'14.67"N 32°53'15.62"N 32°53'10.80"N 32°53'19.16"N 32°53'35.25"N	74°44'30.12"E 74°44'35.68"E 74°44'20.59"E 74°44'13.23"E 74°44'9.54"E 74°44'3.22"E 74°44'7.61"E 74°44'20.92"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	652620	RBM	Proposed
76	CHEN AB	JK_JMU_ZA_ CHN_18	112	32°52'20.98"N 32°52'14.76"N 32°51'53.83"N 32°51'43.45"N 32°51'44.00"N	74°43'22.91"E 74°43'28.41"E 74°43'16.13"E 74°42'59.94"E 74°42'50.96"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	3304000	RBM	Proposed

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				32°51'36.06"N 32°51'34.42"N 32°51'32.91"N 32°51'36.95"N 32°51'38.28"N 32°51'35.03"N 32°51'56.81"N 32°51'46.39"N 32°51'45.29"N 32°51'43.71"N 32°51'47.01"N 32°51'55.16"N 32°52'10.52"N	74°42'36.71"E 74°42'17.17"E 74°42'14.21"E 74°41'58.36"E 74°41'56.74"E 74°41'45.20"E 74°42'20.33"E 74°42'9.28"E 74°42'9.40"E 74°42'13.03"E 74°42'45.53"E 74°42'53.18"E 74°42'57.14"E						
77	CHEN AB	JK_JMU_ZA_ CHN_19	61.7	32°51'51.21"N 32°51'37.69"N 32°51'41.13"N 32°51'42.91"N 32°51'47.13"N 32°51'46.16"N 32°51'55.09"N 32°51'56.19"N 32°51'51.04"N 32°51'52.49"N	74°41'53.26"E 74°41'30.09"E 74°41'24.56"E 74°41'3.42"E 74°40'45.66"E 74°40'34.88"E 74°40'49.31"E 74°41'10.24"E 74°41'33.42"E 74°41'42.04"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1832490	RBM	Proposed
78	CHEN AB	JK_JMU_ZA_ CHN_20	7.41	32°51'35.42"N 32°51'32.70"N 32°51'33.37"N 32°51'40.91"N 32°51'40.08"N 32°51'37.51"N	74°41'27.91"E 74°41'19.90"E 74°41'16.65"E 74°41'8.50"E 74°41'23.23"E 74°41'23.94"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	219336	RBM	Proposed
79	CHEN AB	JK_JMU_ZA_ CHN_21	13.5	32°51'25.05"N 32°51'21.55"N 32°51'19.21"N	74°41'23.79"E 74°41'22.08"E 74°41'7.25"E	2.88	No protected Area, Bridge are available	No Forest Available in 500m	388800	RBM	Proposed

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				32°51'18.10"N 32°51'18.88"N 32°51'18.13"N 32°51'21.91"N 32°51'25.47"N 32°51'25.19"N	74°41'0.56"E 74°40'57.73"E 74°40'53.83"E 74°40'55.62"E 74°41'0.03"E 74°41'18.89"E		with in 500m				
80	CHEN AB	JK_JMU_ZA_ CHN_22	67.9	32°51'30.78"N 32°51'41.59"N 32°51'41.26"N 32°51'36.68"N 32°51'24.41"N 32°51'19.14"N 32°51'5.39"N 32°50'59.50"N 32°50'56.61"N 32°50'55.47"N 32°50'56.60"N 32°50'59.87"N 32°51'3.86"N 32°51'24.28"N 32°51'22.99"N 32°51'27.06"N	74°41'10.81"E 74°40'54.18"E 74°40'47.59"E 74°40'31.95"E 74°40'13.88"E 74°40'13.45"E 74°40'3.80"E 74°39'47.86"E 74°39'45.77"E 74°39'48.09"E 74°39'56.84"E 74°40'5.85"E 74°40'7.28"E 74°40'29.81"E 74°40'34.42"E 74°40'55.91"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1948730	RBM	Proposed
81	CHEN AB	JK_JMU_ZA_ CHN_23	21.8	32°51'13.73"N 32°51'23.47"N 32°51'25.12"N 32°51'20.28"N 32°51'12.28"N 32°51'12.29"N 32°51'3.41"N 32°51'11.47"N	74°40'45.62"E 74°40'51.19"E 74°40'50.98"E 74°40'33.00"E 74°40'22.39"E 74°40'20.67"E 74°40'11.54"E 74°40'33.51"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	630020	RBM	Proposed
82	CHEN AB	JK_JMU_ZA_ CHN_24	23	32°51'7.90"N 32°51'8.16"N	74°40'39.20"E 74°40'31.99"E	2.97	No protected Area, Bridge	No Forest Available in	683100	RBM	Proposed

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				32°50'58.34"N 32°50'54.77"N 32°50'46.26"N 32°50'41.00"N 32°50'37.93"N 32°50'39.84"N 32°50'55.77"N	74°40'19.25"E 74°40'2.55"E 74°40'5.55"E 74°40'0.83"E 74°40'3.72"E 74°40'9.02"E 74°40'22.89"E		are available with in 500m	500m			
83	CHEN AB	JK_JMU_ZA_ CHN_25	13.8	32°51'24.96"N 32°51'15.60"N 32°51'10.04"N 32°51'9.78"N 32°51'11.69"N 32°51'15.73"N 32°51'21.31"N 32°51'23.61"N 32°51'24.57"N 32°51'24.50"N	74°40'7.16"E 74°39'59.13"E 74°39'53.97"E 74°39'50.67"E 74°39'43.14"E 74°39'44.02"E 74°39'50.89"E 74°39'56.44"E 74°40'0.43"E 74°40'4.69"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	398820	RBM	Proposed
84	CHEN AB	JK_JMU_ZA_ CHN_26	20.4	32°50'45.44"N 32°50'45.66"N 32°50'48.82"N 32°51'1.65"N 32°51'6.06"N 32°51'7.89"N 32°50'51.60"N	74°39'20.84"E 74°39'27.39"E 74°39'33.62"E 74°39'45.19"E 74°39'56.51"E 74°39'42.30"E 74°39'25.23"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	607920	RBM	Proposed
85	CHEN AB	JK_JMU_ZA_ CHN_27	2.1	32°50'46.45"N 32°50'46.22"N 32°50'46.15"N 32°50'49.67"N 32°50'50.79"N 32°50'47.98"N	74°39'11.53"E 74°39'11.62"E 74°39'18.38"E 74°39'24.67"E 74°39'23.39"E 74°39'16.09"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	61950	RBM	Proposed
86	CHEN AB	JK_JMU_ZA_ CHN_28	18.4	32°50'40.94"N 32°50'46.13"N	74°38'36.33"E 74°38'52.21"E	2.88	No protected Area, Bridge	No Forest Available in	529920	RBM	Proposed

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				32°50'49.96"N 32°50'47.74"N 32°50'39.84"N 32°50'35.01"N	74°38'59.81"E 74°39'9.21"E 74°38'58.41"E 74°38'45.25"E		are available with in 500m	500m			
87	CHEN AB	JK_JMU_ZA_ CHN_29	9.4	32°50'24.97"N 32°50'27.31"N 32°50'28.44"N 32°50'31.82"N 32°50'40.08"N 32°50'41.38"N 32°50'35.76"N 32°50'31.82"N 32°50'25.85"N	74°38'51.83"E 74°38'53.58"E 74°38'56.90"E 74°39'3.71"E 74°39'15.10"E 74°39'11.69"E 74°39'0.47"E 74°38'52.55"E 74°38'51.31"E	2.93	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	275420	RBM	Proposed
88	CHEN AB	JK_JMU_ZA_ CHN_30	7.69	32°50'36.00"N 32°50'39.98"N 32°50'31.78"N 32°50'30.01"N 32°50'32.42"N 32°50'32.92"N 32°50'35.84"N	74°38'37.12"E 74°38'32.56"E 74°38'20.53"E 74°38'34.92"E 74°38'37.01"E 74°38'34.25"E 74°38'35.00"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	228393	RBM	Proposed
89	CHEN AB	JK_JMU_ZA_ CHN_31	14.5	32°50'22.25"N 32°50'20.38"N 32°50'21.30"N 32°50'29.49"N 32°50'29.84"N 32°50'28.50"N 32°50'30.93"N 32°50'26.49"N	74°38'12.14"E 74°38'19.88"E 74°38'32.61"E 74°38'41.45"E 74°38'41.20"E 74°38'36.95"E 74°38'21.68"E 74°38'17.72"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	419050	RBM	Proposed
90	CHEN AB	JK_JMU_ZA_ CHN_32	0.72	32°50'29.03"N 32°50'27.31"N 32°50'23.27"N 32°50'25.17"N	74°38'46.77"E 74°38'46.93"E 74°38'45.28"E 74°38'43.86"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	21600	RBM	Proposed

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				32°50'27.08"N	74°38'44.77"E						
91	CHEN AB	JK_JMU_ZA_ CHN_33	1.33	32°50'21.89"N 32°50'18.88"N 32°50'16.65"N 32°50'16.87"N 32°50'19.01"N	74°38'41.10"E 74°38'38.02"E 74°38'38.57"E 74°38'41.33"E 74°38'42.37"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	39102	RBM	Proposed
92	CHEN AB	JK_JMU_ZA_ CHN_34	3.59	32°50'13.01"N 32°50'12.28"N 32°50'14.22"N 32°50'16.20"N 32°50'14.57"N 32°50'14.66"N	74°38'12.90"E 74°38'24.23"E 74°38'31.86"E 74°38'26.59"E 74°38'18.02"E 74°38'14.69"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	106264	RBM	Proposed
93	CHEN AB	JK_JMU_ZA_ CHN_35	1.49	32°50'15.13"N 32°50'16.45"N 32°50'15.69"N 32°50'17.45"N 32°50'18.62"N 32°50'18.20"N	74°38'12.08"E 74°38'17.96"E 74°38'20.31"E 74°38'22.42"E 74°38'19.82"E 74°38'15.29"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	44253	RBM	Proposed
94	CHEN AB	JK_JMU_ZA_ CHN_36	2.32	32°50'11.71"N 32°50'12.10"N 32°50'19.99"N 32°50'20.51"N 32°50'19.18"N	74°38'3.28"E 74°38'5.96"E 74°38'14.17"E 74°38'14.11"E 74°38'9.36"E	2.9	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	67280	RBM	Proposed
95	CHEN AB	JK_JMU_ZA_ CHN_37	7	32°50'10.85"N 32°50'14.28"N 32°50'20.52"N 32°50'20.96"N 32°50'10.05"N 32°50'10.29"N	74°37'40.92"E 74°37'49.60"E 74°37'56.19"E 74°38'2.08"E 74°37'48.80"E 74°37'46.82"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	202300	RBM	Proposed
96	CHEN AB	JK_JMU_ZA_ CHN_38	31.9	32°50'8.95"N 32°50'0.20"N 32°49'49.04"N	74°38'36.31"E 74°38'24.32"E 74°38'19.46"E	2.87	No protected Area, Bridge are available	No Forest Available in 500m	915530	RBM	Proposed

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				32°49'48.88"N 32°50'1.09"N 32°50'10.03"N	74°38'2.99"E 74°38'5.59"E 74°38'15.50"E		with in 500m				
97	CHEN AB	JK_JMU_ZA_ CHN_39	50.5	32°49'6.35"N 32°49'8.83"N 32°49'6.63"N 32°49'10.95"N 32°49'19.45"N 32°49'26.94"N 32°49'37.29"N 32°49'38.34"N 32°49'27.70"N 32°49'21.26"N	74°37'22.85"E 74°37'38.50"E 74°37'45.51"E 74°37'55.98"E 74°38'8.12"E 74°38'17.64"E 74°38'24.86"E 74°38'24.28"E 74°38'5.59"E 74°37'34.75"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1489750	RBM	Proposed
98	CHEN AB	JK_JMU_ZA_ CHN_40	26.4	32°49'17.78"N 32°49'20.23"N 32°49'31.62"N 32°49'46.59"N 32°49'45.35"N 32°49'40.60"N 32°49'32.63"N	74°37'17.24"E 74°37'23.58"E 74°37'40.09"E 74°37'55.51"E 74°37'43.47"E 74°37'30.43"E 74°37'26.46"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	792000	RBM	Proposed
99	CHEN AB	JK_JMU_ZA_ CHN_41	3.77	32°49'12.61"N 32°49'15.35"N 32°49'16.13"N 32°49'18.74"N 32°49'21.90"N 32°49'21.92"N 32°49'21.71"N 32°49'21.23"N 32°49'16.75"N 32°49'14.07"N 32°49'12.37"N 32°49'11.20"N	74°37'18.25"E 74°37'19.18"E 74°37'19.97"E 74°37'24.18"E 74°37'27.65"E 74°37'28.40"E 74°37'28.71"E 74°37'28.70"E 74°37'26.62"E 74°37'24.79"E 74°37'23.82"E 74°37'22.53"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	113100	RBM	Proposed

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				32°49'10.93"N	74°37'21.68"E						
100	CHEN AB	JK_JMU_ZA_ CHN_42	130	32°48'53.01"N 32°48'54.20"N 32°49'1.15"N 32°49'3.72"N 32°49'7.83"N 32°49'11.43"N 32°49'23.95"N 32°49'35.68"N 32°49'43.60"N 32°49'44.11"N 32°49'46.80"N 32°49'49.16"N 32°49'58.80"N 32°50'1.90"N 32°50'3.61"N 32°50'5.45"N 32°50'6.54"N 32°50'9.16"N 32°50'7.41"N 32°49'54.27"N 32°49'51.82"N 32°49'48.63"N 32°49'42.12"N 32°49'33.66"N 32°49'31.87"N 32°49'25.93"N 32°49'19.22"N 32°49'18.66"N 32°49'13.66"N 32°49'5.22"N 32°48'55.96"N	74°35'56.20"E 74°35'55.10"E 74°35'59.33"E 74°36'15.32"E 74°36'24.09"E 74°36'32.33"E 74°36'37.42"E 74°36'44.99"E 74°37'11.31"E 74°37'23.25"E 74°37'27.86"E 74°37'37.33"E 74°37'46.58"E 74°37'51.59"E 74°37'51.97"E 74°37'54.11"E 74°37'57.08"E 74°38'0.67"E 74°38'3.14"E 74°37'57.33"E 74°37'48.14"E 74°37'46.53"E 74°37'26.88"E 74°37'20.57"E 74°37'22.85"E 74°37'15.98"E 74°37'9.11"E 74°36'48.86"E 74°36'39.89"E 74°36'36.06"E 74°36'21.51"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	3900000	RBM	Proposed

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				32°48'52.82"N	74°36'10.64"E						
101	CHEN AB	JK_JMU_ZA_ CHN_43	33.8	32°49'41.72"N 32°49'45.19"N 32°49'46.92"N 32°49'47.41"N 32°49'47.51"N 32°49'54.45"N 32°49'56.68"N 32°50'2.95"N 32°50'2.31"N 32°50'1.36"N 32°49'55.37"N 32°49'52.07"N 32°49'50.57"N 32°49'50.32"N 32°49'45.00"N 32°49'44.29"N 32°49'44.67"N	74°36'52.08"E 74°36'54.38"E 74°36'56.93"E 74°36'59.86"E 74°37'4.27"E 74°37'13.38"E 74°37'18.56"E 74°37'28.88"E 74°37'34.65"E 74°37'43.29"E 74°37'38.87"E 74°37'39.30"E 74°37'35.50"E 74°37'31.99"E 74°37'21.13"E 74°37'9.50"E 74°37'0.01"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	966680	RBM	Proposed
102	CHEN AB	JK_JMU_ZA_ CHN_44	2.1	32°50'0.79"N 32°50'1.86"N 32°50'4.80"N 32°50'5.71"N 32°50'4.40"N 32°50'3.04"N 32°50'0.31"N 32°49'59.10"N 32°49'59.12"N	74°37'13.30"E 74°37'13.40"E 74°37'19.39"E 74°37'23.08"E 74°37'21.94"E 74°37'20.20"E 74°37'18.22"E 74°37'16.48"E 74°37'15.37"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	61950	RBM	Proposed
103	CHEN AB	JK_JMU_ZA_ CHN_45	2.61	32°50'0.67"N 32°50'0.76"N 32°50'2.96"N 32°50'5.60"N 32°50'4.30"N	74°36'57.96"E 74°37'3.12"E 74°37'5.61"E 74°37'9.92"E 74°37'11.66"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	77778	RBM	Proposed

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				32°50'1.20"N 32°49'59.99"N 32°49'59.77"N	74°37'11.31"E 74°37'6.46"E 74°37'1.10"E						
104	CHEN AB	JK_JMU_ZA_ CHN_46	1.11	32°49'55.74"N 32°49'56.92"N 32°49'58.28"N 32°49'56.25"N 32°49'55.96"N	74°36'59.42"E 74°37'1.19"E 74°37'8.22"E 74°37'9.47"E 74°37'1.74"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	32967	RBM	Proposed
105	CHEN AB	JK_JMU_ZA_ CHN_47	1.1	32°49'55.95"N 32°49'57.85"N 32°49'58.28"N 32°49'57.95"N 32°49'56.56"N 32°49'55.64"N 32°49'55.19"N 32°49'55.51"N	74°36'52.38"E 74°36'52.74"E 74°36'54.77"E 74°36'56.61"E 74°36'58.48"E 74°36'57.26"E 74°36'54.38"E 74°36'52.68"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	32450	RBM	Proposed
106	CHEN AB	JK_JMU_ZA_ CHN_48	7.47	32°49'44.96"N 32°49'48.91"N 32°49'51.86"N 32°49'51.85"N 32°49'53.05"N 32°49'53.64"N 32°49'54.25"N 32°49'54.31"N 32°49'53.92"N 32°49'50.57"N 32°49'49.69"N 32°49'48.69"N 32°49'48.34"N 32°49'45.88"N	74°36'46.88"E 74°36'48.12"E 74°36'51.00"E 74°36'52.15"E 74°36'54.69"E 74°36'59.53"E 74°37'1.23"E 74°37'7.80"E 74°37'8.03"E 74°37'5.08"E 74°37'2.28"E 74°37'0.12"E 74°36'57.71"E 74°36'49.22"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	222606	RBM	Proposed
107	CHEN AB	JK_JMU_ZA_ CHN_49	1.99	32°49'40.12"N 32°49'41.82"N	74°36'46.21"E 74°36'45.88"E	3	No protected Area, Bridge	No Forest Available in	59700	RBM	Proposed

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				32°49'44.25"N 32°49'45.44"N 32°49'46.27"N 32°49'45.97"N 32°49'41.51"N 32°49'40.41"N 32°49'39.49"N	74°36'47.27"E 74°36'49.82"E 74°36'53.93"E 74°36'53.98"E 74°36'49.62"E 74°36'49.02"E 74°36'47.51"E		are available with in 500m	500m			
108	CHEN AB	JK_JMU_ZA_ CHN_50	18.1	32°49'4.53"N 32°49'6.51"N 32°49'9.16"N 32°49'13.17"N 32°49'14.54"N 32°49'15.51"N 32°49'19.39"N 32°49'20.91"N 32°49'20.97"N 32°49'20.37"N 32°49'17.62"N 32°49'16.57"N 32°49'13.21"N 32°49'10.51"N 32°49'9.14"N 32°49'3.84"N 32°49'2.55"N 32°49'2.69"N 32°49'3.66"N	74°36'51.15"E 74°36'52.05"E 74°36'52.62"E 74°36'55.31"E 74°36'59.00"E 74°37'6.29"E 74°37'12.33"E 74°37'13.51"E 74°37'15.55"E 74°37'16.11"E 74°37'15.39"E 74°37'16.18"E 74°37'16.36"E 74°37'13.90"E 74°37'9.27"E 74°37'0.72"E 74°36'55.70"E 74°36'53.97"E 74°36'52.87"E	2.85	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	515850	RBM	Proposed
109	CHEN AB	JK_JMU_ZA_ CHN_51	11.6	32°49'1.32"N 32°49'6.67"N 32°49'12.61"N 32°49'17.10"N 32°49'17.15"N 32°49'15.38"N	74°36'37.13"E 74°36'38.72"E 74°36'42.30"E 74°36'50.01"E 74°36'55.16"E 74°36'56.87"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	335240	RBM	Proposed

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				32°49'14.43"N 32°49'9.08"N 32°49'4.93"N 32°49'4.56"N	74°36'54.89"E 74°36'51.26"E 74°36'49.69"E 74°36'44.03"E						
110	CHEN AB	JK_JMU_ZA_ CHN_52	6.33	32°49'11.74"N 32°49'13.58"N 32°49'20.58"N 32°49'24.65"N 32°49'23.81"N 32°49'17.71"N 32°49'14.82"N	74°36'22.77"E 74°36'22.67"E 74°36'26.53"E 74°36'31.12"E 74°36'34.71"E 74°36'32.75"E 74°36'30.57"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	186102	RBM	Proposed
111	CHEN AB	JK_JMU_ZA_ CHN_53	4.45	32°49'6.79"N 32°49'7.69"N 32°49'9.88"N 32°49'11.97"N 32°49'13.53"N 32°49'17.63"N 32°49'16.28"N 32°49'11.32"N 32°49'7.72"N	74°36'9.00"E 74°36'9.01"E 74°36'11.31"E 74°36'14.06"E 74°36'16.78"E 74°36'22.16"E 74°36'22.37"E 74°36'21.05"E 74°36'15.09"E	2.91	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	129495	RBM	Proposed
112	CHEN AB	JK_JMU_ZA_ CHN_54	5.95	32°48'58.66"N 32°49'0.78"N 32°48'59.57"N 32°48'58.29"N 32°48'56.38"N 32°48'55.07"N 32°48'53.37"N 32°48'55.94"N	74°36'39.21"E 74°36'43.91"E 74°36'53.83"E 74°36'53.20"E 74°36'53.14"E 74°36'52.36"E 74°36'45.94"E 74°36'40.89"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	177905	RBM	Proposed
113	CHEN AB	JK_JMU_ZA_ CHN_55	7.49	32°48'51.20"N 32°48'51.66"N 32°48'52.94"N 32°48'54.31"N	74°36'23.40"E 74°36'23.31"E 74°36'25.09"E 74°36'28.39"E	2.85	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	213465	RBM	Proposed

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				32°48'52.97"N 32°48'54.08"N 32°48'53.31"N 32°48'50.99"N 32°48'48.58"N 32°48'47.10"N 32°48'50.15"N 32°48'51.16"N 32°48'51.82"N	74°36'29.12"E 74°36'32.21"E 74°36'34.88"E 74°36'44.67"E 74°36'42.34"E 74°36'30.99"E 74°36'24.11"E 74°36'27.98"E 74°36'26.91"E						
114	CHEN AB	JK_JMU_ZA_ CHN_56	4.26	32°48'50.89"N 32°48'52.61"N 32°48'50.85"N 32°48'48.58"N 32°48'47.46"N 32°48'47.71"N 32°48'50.13"N	74°35'54.81"E 74°35'59.22"E 74°36'9.25"E 74°36'7.40"E 74°36'3.44"E 74°35'58.15"E 74°35'55.98"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	122262	RBM	Proposed
115	CHEN AB	JK_JMU_ZA_ CHN_57	2.31	32°48'44.33"N 32°48'42.01"N 32°48'40.88"N 32°48'39.65"N 32°48'42.58"N 32°48'43.56"N 32°48'43.99"N 32°48'43.59"N 32°48'44.03"N 32°48'44.04"N 32°48'45.32"N 32°48'44.91"N	74°35'54.44"E 74°35'51.98"E 74°35'51.71"E 74°35'50.00"E 74°35'46.28"E 74°35'47.82"E 74°35'46.51"E 74°35'43.79"E 74°35'43.77"E 74°35'43.71"E 74°35'47.40"E 74°35'48.15"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	69300	RBM	Proposed
116	CHEN AB	JK_JMU_ZA_ CHN_58	54.6	32°48'38.83"N 32°48'19.20"N 32°48'28.55"N 32°48'45.95"N	74°35'50.83"E 74°36'13.17"E 74°36'26.61"E 74°36'33.55"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1616160	RBM	Proposed

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				32°48'49.48"N 32°48'47.10"N 32°48'40.23"N 32°48'40.62"N 32°48'44.56"N 32°48'45.23"N 32°48'42.90"N 32°48'41.73"N 32°48'40.79"N	74°36'23.10"E 74°36'21.54"E 74°36'9.60"E 74°36'7.27"E 74°36'8.80"E 74°36'7.48"E 74°35'55.07"E 74°35'53.73"E 74°35'53.72"E						
117	CHEN AB	JK_JMU_ZA_ CHN_59	5.57	32°47'37.26"N 32°47'37.30"N 32°47'36.49"N 32°47'38.02"N 32°47'41.05"N 32°47'45.31"N 32°47'46.76"N 32°47'47.68"N 32°47'49.62"N 32°47'47.86"N 32°47'46.56"N 32°47'46.72"N 32°47'47.15"N 32°47'46.67"N 32°47'43.80"N 32°47'44.62"N 32°47'44.07"N 32°47'41.39"N 32°47'39.70"N	74°34'43.44"E 74°34'46.37"E 74°34'48.72"E 74°34'50.89"E 74°34'50.82"E 74°34'50.84"E 74°34'51.42"E 74°34'52.20"E 74°34'52.11"E 74°34'50.39"E 74°34'48.35"E 74°34'49.15"E 74°34'50.01"E 74°34'49.76"E 74°34'47.43"E 74°34'45.70"E 74°34'44.12"E 74°34'41.77"E 74°34'42.03"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	167100	RBM	Proposed
118	CHEN AB	JK_JMU_ZA_ CHN_60	7.9	32°47'37.27"N 32°47'39.41"N 32°47'38.51"N 32°47'41.03"N	74°34'25.00"E 74°34'30.79"E 74°34'31.48"E 74°34'33.35"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	235420	RBM	Proposed

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

				32°47'43.66"N 32°47'46.79"N 32°47'52.71"N 32°47'54.73"N 32°47'54.49"N 32°47'51.90"N 32°47'50.70"N 32°47'46.36"N 32°47'42.44"N 32°47'38.64"N 32°47'36.42"N 32°47'36.08"N 32°47'36.69"N 32°47'36.35"N 32°47'37.32"N	74°34'36.04"E 74°34'41.94"E 74°34'50.73"E 74°34'52.40"E 74°34'54.27"E 74°34'52.52"E 74°34'50.32"E 74°34'45.43"E 74°34'40.32"E 74°34'39.47"E 74°34'40.30"E 74°34'36.08"E 74°34'32.73"E 74°34'31.00"E 74°34'28.07"E						
119	CHEN AB	JK_JMU_ZA_ CHN_61	7.3	32°47'33.69"N 32°47'40.58"N 32°47'41.50"N 32°47'42.72"N 32°47'49.77"N 32°47'51.48"N 32°47'48.74"N 32°47'40.60"N 32°47'39.30"N 32°47'43.93"N 32°47'36.25"N	74°34'10.23"E 74°34'14.80"E 74°34'16.78"E 74°34'18.29"E 74°34'22.71"E 74°34'26.93"E 74°34'25.95"E 74°34'26.11"E 74°34'20.82"E 74°34'22.46"E 74°34'16.39"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	210970	RBM	Proposed

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120	CHEN AB	JK_JMU_ZA_ CHN_62	8.94	32°47'32.32"N 32°47'35.45"N 32°47'36.89"N 32°47'36.15"N 32°47'36.66"N 32°47'37.06"N 32°47'37.27"N 32°47'39.18"N 32°47'39.84"N 32°47'40.61"N 32°47'40.30"N 32°47'43.89"N 32°47'49.07"N 32°47'42.92"N 32°47'36.83"N 32°47'34.94"N 32°47'33.93"N 32°47'33.78"N 32°47'34.74"N 32°47'33.81"N	74°33'43.42"E 74°33'47.23"E 74°33'52.26"E 74°33'58.00"E 74°34'2.80"E 74°34'3.07"E 74°34'2.04"E 74°34'5.41"E 74°34'7.48"E 74°34'7.54"E 74°34'5.87"E 74°34'7.49"E 74°34'11.69"E 74°34'12.55"E 74°34'9.11"E 74°34'5.18"E 74°34'3.88"E 74°34'3.04"E 74°34'2.19"E 74°33'54.99"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	255684	RBM	Proposed
121	CHEN AB	JK_JMU_ZA_ CHN_63	2	32°47'40.37"N 32°47'43.13"N 32°47'42.41"N 32°47'41.38"N 32°47'40.49"N 32°47'37.92"N 32°47'37.18"N 32°47'38.52"N 32°47'39.29"N 32°47'39.78"N	74°33'54.62"E 74°34'4.72"E 74°34'4.33"E 74°34'4.56"E 74°34'4.29"E 74°34'0.63"E 74°33'57.67"E 74°33'58.87"E 74°33'58.79"E 74°33'57.94"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	58800	RBM	Proposed
122	CHEN AB	JK_JMU_ZA_ CHN_64	6.21	32°48'2.30"N 32°48'3.76"N	74°34'21.49"E 74°34'23.40"E	2.99	No protected Area, Bridge	No Forest Available in	185679	RBM	Proposed

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

				32°48'5.37"N 32°48'8.78"N 32°48'9.54"N 32°48'11.54"N 32°48'5.64"N 32°48'4.49"N 32°48'3.78"N 32°48'2.71"N 32°48'2.43"N 32°48'2.18"N 32°48'2.52"N	74°34'29.18"E 74°34'30.54"E 74°34'31.76"E 74°34'40.43"E 74°34'38.85"E 74°34'37.84"E 74°34'33.89"E 74°34'32.67"E 74°34'26.57"E 74°34'25.49"E 74°34'23.22"E		are available with in 500m	500m			
123	CHEN AB	JK_JMU_ZA_ CHN_65	12.6	32°48'5.81"N 32°48'11.93"N 32°48'12.45"N 32°48'12.86"N 32°48'11.69"N 32°48'11.82"N 32°48'9.31"N 32°48'7.96"N 32°48'8.48"N 32°48'9.26"N 32°48'9.59"N 32°48'9.14"N 32°48'6.55"N 32°48'5.60"N 32°48'5.85"N 32°48'4.83"N 32°48'7.44"N 32°48'8.29"N 32°48'8.26"N 32°48'6.52"N 32°48'4.41"N	74°33'47.75"E 74°33'57.16"E 74°34'0.60"E 74°34'0.99"E 74°34'6.54"E 74°34'8.53"E 74°34'13.46"E 74°34'22.19"E 74°34'26.95"E 74°34'23.19"E 74°34'26.84"E 74°34'29.34"E 74°34'29.81"E 74°34'27.84"E 74°34'27.06"E 74°34'22.19"E 74°34'4.84"E 74°34'5.93"E 74°34'0.34"E 74°33'54.75"E 74°33'51.72"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	378000	RBM	Proposed

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124	CHEN AB	JK_JMU_ZA_ CHN_66	24	32°48'5.49"N 32°48'24.15"N 32°48'22.37"N 32°48'23.96"N 32°48'23.06"N 32°48'23.18"N 32°48'17.38"N 32°48'13.95"N 32°48'17.14"N 32°48'16.76"N 32°48'14.82"N 32°48'12.06"N 32°48'12.87"N 32°48'14.41"N 32°48'14.64"N 32°48'14.27"N 32°48'10.95"N 32°48'11.42"N 32°48'13.68"N 32°48'16.76"N 32°48'17.30"N 32°48'16.14"N 32°48'14.96"N 32°48'15.13"N 32°48'11.22"N	74°33'41.06"E 74°33'56.49"E 74°33'59.12"E 74°34'4.56"E 74°34'5.75"E 74°34'13.31"E 74°34'19.40"E 74°34'24.73"E 74°34'27.62"E 74°34'36.67"E 74°34'39.82"E 74°34'32.75"E 74°34'32.73"E 74°34'34.28"E 74°34'33.79"E 74°34'32.39"E 74°34'25.87"E 74°34'23.48"E 74°34'22.75"E 74°34'18.19"E 74°34'7.98"E 74°34'5.08"E 74°34'6.00"E 74°33'57.47"E 74°33'53.07"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	715200	RBM	Proposed
125	CHEN AB	JK_JMU_ZA_ CHN_67	1.94	32°48'21.83"N 32°48'20.67"N 32°48'18.11"N 32°48'16.41"N 32°48'15.15"N 32°48'15.28"N 32°48'18.48"N	74°34'16.73"E 74°34'21.62"E 74°34'25.94"E 74°34'25.30"E 74°34'23.68"E 74°34'22.98"E 74°34'20.22"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	57036	RBM	Proposed

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

				32°48'19.54"N	74°34'18.43"E						
126	CHEN AB	JK_JMU_ZA_ CHN_68	1.75	32°48'24.43"N 32°48'25.64"N 32°48'25.75"N 32°48'24.41"N 32°48'23.91"N 32°48'23.24"N 32°48'22.62"N 32°48'22.36"N 32°48'24.75"N 32°48'24.94"N 32°48'24.48"N 32°48'23.46"N	74°34'4.76"E 74°34'6.28"E 74°34'12.13"E 74°34'15.86"E 74°34'18.62"E 74°34'19.92"E 74°34'20.10"E 74°34'17.77"E 74°34'11.52"E 74°34'10.17"E 74°34'9.46"E 74°34'8.99"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	52325	RBM	Proposed
127	CHEN AB	JK_JMU_ZA_ CHN_69	2.54	32°47'23.40"N 32°47'27.81"N 32°47'29.95"N 32°47'29.69"N 32°47'29.19"N 32°47'28.21"N 32°47'26.60"N 32°47'25.73"N 32°47'25.46"N 32°47'23.61"N	74°33'37.54"E 74°33'43.80"E 74°33'48.14"E 74°33'51.60"E 74°33'51.68"E 74°33'50.37"E 74°33'49.46"E 74°33'46.80"E 74°33'43.86"E 74°33'39.99"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	76200	RBM	Proposed
128	CHEN AB	JK_JMU_ZA_ CHN_70	20.9	32°47'40.81"N 32°47'44.52"N 32°47'43.22"N 32°47'41.55"N 32°47'41.50"N 32°47'44.59"N 32°47'54.06"N 32°47'54.35"N 32°47'52.77"N	74°32'56.66"E 74°33'8.81"E 74°33'13.65"E 74°33'14.83"E 74°33'18.46"E 74°33'23.63"E 74°33'24.85"E 74°33'10.17"E 74°33'5.32"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	622820	RBM	Proposed

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				32°47'52.42"N 32°47'52.16"N 32°47'49.70"N 32°47'48.32"N 32°47'42.89"N 32°47'45.58"N	74°33'8.07"E 74°33'3.16"E 74°33'8.93"E 74°33'9.01"E 74°32'53.11"E 74°32'50.29"E						
129	CHEN AB	JK_JMU_ZA_ CHN_71	8.95	32°47'56.62"N 32°48'1.44"N 32°48'3.53"N 32°48'4.05"N 32°47'58.98"N 32°47'58.72"N 32°47'59.14"N 32°47'57.11"N 32°47'57.20"N 32°47'53.43"N	74°33'14.34"E 74°33'10.05"E 74°33'10.00"E 74°33'7.31"E 74°33'1.40"E 74°33'0.32"E 74°32'55.32"E 74°32'51.73"E 74°32'53.22"E 74°33'1.20"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	258655	RBM	Proposed
130	CHEN AB	JK_JMU_ZA_ CHN_72	1	32°47'59.65"N 32°47'59.88"N 32°47'59.51"N 32°48'3.07"N 32°48'1.61"N	74°32'52.76"E 74°32'56.98"E 74°33'0.92"E 74°33'4.25"E 74°33'0.96"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	29500	RBM	Proposed
131	CHEN AB	JK_JMU_ZA_ CHN_73	6.72	32°47'53.62"N 32°47'52.24"N 32°47'50.36"N 32°47'49.13"N 32°47'44.78"N 32°47'39.75"N 32°47'36.71"N 32°47'34.20"N 32°47'42.86"N 32°47'46.31"N 32°47'47.47"N	74°32'55.62"E 74°32'58.03"E 74°32'55.63"E 74°32'48.84"E 74°32'41.06"E 74°32'38.95"E 74°32'40.03"E 74°32'37.27"E 74°32'36.21"E 74°32'38.80"E 74°32'44.09"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	198912	RBM	Proposed

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

				32°47'50.50"N 32°47'55.42"N 32°47'55.99"N 32°47'55.62"N 32°47'55.81"N	74°32'48.36"E 74°32'50.09"E 74°32'53.28"E 74°32'52.93"E 74°32'50.91"E						
132	CHEN AB	JK_JMU_ZA_ CHN_74	13.9	32°47'22.27"N 32°47'30.53"N 32°47'35.52"N 32°47'36.75"N 32°47'38.34"N 32°47'39.64"N 32°47'40.36"N 32°47'40.26"N 32°47'36.22"N 32°47'35.48"N 32°47'33.09"N 32°47'32.00"N 32°47'33.55"N 32°47'28.77"N 32°47'31.42"N 32°47'25.14"N	74°32'37.54"E 74°32'37.51"E 74°32'41.44"E 74°32'46.04"E 74°32'47.52"E 74°32'46.95"E 74°32'47.85"E 74°32'50.36"E 74°33'0.04"E 74°33'4.39"E 74°33'2.35"E 74°32'55.71"E 74°32'48.96"E 74°32'45.33"E 74°32'45.19"E 74°32'41.62"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	408660	RBM	Proposed
133	CHEN AB	JK_JMU_ZA_ CHN_75	5.25	32°47'19.34"N 32°47'25.84"N 32°47'21.10"N 32°47'18.15"N	74°33'0.96"E 74°33'10.40"E 74°33'16.99"E 74°33'9.06"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	156975	RBM	Proposed
134	CHEN AB	JK_JMU_ZA_ CHN_76	9.98	32°47'1.87"N 32°47'10.26"N 32°47'15.40"N 32°47'15.44"N 32°47'4.63"N 32°47'2.16"N	74°32'49.99"E 74°32'54.41"E 74°33'2.03"E 74°33'8.04"E 74°33'1.26"E 74°32'56.24"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	297404	RBM	Proposed
135	CHEN	JK_JMU_ZA_	13.3	32°47'2.27"N	74°33'10.91"E	3	No protected	No Forest	399000	RBM	Proposed

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	AB	CHN_77		32°47'5.60"N 32°47'18.09"N 32°47'18.88"N 32°47'7.41"N 32°47'4.28"N 32°47'4.15"N 32°47'2.21"N	74°33'18.44"E 74°33'24.03"E 74°33'35.05"E 74°33'30.38"E 74°33'26.06"E 74°33'22.62"E 74°33'20.55"E		Area, Bridge are available with in 500m	Available in 500m			
136	CHEN AB	JK_JMU_ZA_ CHN_78	11.3	32°46'51.78"N 32°46'53.92"N 32°46'56.01"N 32°46'54.20"N 32°46'51.06"N 32°46'46.86"N 32°46'50.03"N 32°46'49.72"N 32°46'51.90"N 32°46'59.37"N 32°46'59.54"N 32°46'56.50"N	74°32'37.25"E 74°32'50.37"E 74°32'53.94"E 74°32'53.68"E 74°32'48.04"E 74°32'44.85"E 74°32'51.86"E 74°32'54.97"E 74°32'58.96"E 74°32'59.85"E 74°32'48.92"E 74°32'40.80"E	2.88	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	325440	RBM	Proposed
137	CHEN AB	JK_JMU_ZA_ CHN_79	7.18	32°46'58.75"N 32°47'4.90"N 32°47'7.54"N 32°47'9.98"N 32°47'14.33"N 32°47'15.15"N	74°32'23.49"E 74°32'21.91"E 74°32'15.34"E 74°32'15.41"E 74°32'21.56"E 74°32'26.65"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	213964	RBM	Proposed
138	CHEN AB	JK_JMU_ZA_ CHN_80	3.11	32°46'38.71"N 32°46'48.27"N 32°46'47.50"N 32°46'48.53"N 32°46'51.21"N 32°46'49.71"N 32°46'45.66"N	74°32'7.28"E 74°32'20.11"E 74°32'22.58"E 74°32'24.73"E 74°32'25.48"E 74°32'19.38"E 74°32'12.96"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	92989	RBM	Proposed

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				32°46'44.84"N	74°32'10.90"E						
139	CHEN AB	JK_JMU_ZA_ CHN_81	11.8	32°46'14.20"N 32°46'19.54"N 32°46'23.13"N 32°46'29.78"N 32°46'40.12"N 32°46'46.99"N 32°46'40.71"N 32°46'29.17"N 32°46'19.39"N 32°46'15.69"N	74°32'12.35"E 74°32'15.09"E 74°32'12.00"E 74°32'12.52"E 74°32'19.82"E 74°32'27.92"E 74°32'14.87"E 74°32'7.06"E 74°32'9.02"E 74°32'9.00"E	2.88	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	339840	RBM	Proposed
140	CHEN AB	JK_JMU_ZA_ CHN_82	19.8	32°46'3.54"N 32°46'19.73"N 32°46'23.75"N 32°46'26.01"N 32°46'22.57"N 32°46'23.37"N 32°46'20.01"N 32°46'14.81"N 32°46'10.32"N	74°31'49.15"E 74°31'40.27"E 74°31'50.32"E 74°31'59.94"E 74°31'59.44"E 74°32'1.24"E 74°32'1.73"E 74°31'56.15"E 74°31'55.80"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	562320	RBM	Proposed
141	CHEN AB	JK_JMU_ZA_ CHN_83	16.5	32°45'48.40"N 32°45'53.67"N 32°45'41.10"N 32°45'54.99"N 32°45'51.17"N 32°45'51.55"N 32°46'7.34"N 32°46'7.21"N	74°32'11.66"E 74°32'10.69"E 74°32'6.54"E 74°32'4.52"E 74°31'59.32"E 74°31'53.98"E 74°32'4.66"E 74°32'6.04"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	476850	RBM	Proposed
142	CHEN AB	JK_JMU_ZA_ CHN_84	5.76	32°45'59.29"N 32°45'48.40"N 32°45'45.78"N 32°45'47.75"N	74°31'55.94"E 74°31'49.99"E 74°31'46.00"E 74°31'42.60"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	164736	RBM	Proposed

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				32°45'53.12"N 32°45'54.35"N 32°45'59.74"N	74°31'45.58"E 74°31'48.97"E 74°31'55.27"E						
143	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_01	35.7	33° 2'17.68"N 33° 2'13.90"N 33° 2'10.39"N 33° 2'9.74"N 33° 2'3.71"N 33° 1'56.28"N 33° 1'55.85"N 33° 1'58.62"N	74°46'10.74"E 74°46'13.97"E 74°46'24.18"E 74°46'48.51"E 74°46'48.59"E 74°46'36.77"E 74°46'31.91"E 74°46'16.58"E	2.84	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1013880	RBM	Proposed
144	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_02	5.57	33° 2'10.26"N 33° 2'7.55"N 33° 2'7.45"N 33° 2'10.88"N 33° 2'11.72"N 33° 2'13.80"N 33° 2'14.01"N 33° 2'11.78"N 33° 2'26.24"N 33° 2'25.38"N 33° 2'21.18"N	74°44'45.49"E 74°44'52.93"E 74°44'58.31"E 74°45'3.56"E 74°45'7.80"E 74°45'2.49"E 74°45'0.02"E 74°44'55.62"E 74°44'19.30"E 74°44'16.72"E 74°44'14.31"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	164315	RBM	Proposed
145	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_03	7.95	33° 2'19.59"N 33° 2'17.13"N 33° 2'14.58"N 33° 2'11.79"N 33° 2'11.00"N 33° 2'13.14"N 33° 2'12.62"N 33° 2'16.59"N 33° 2'17.25"N 33° 2'17.68"N	74°44'33.05"E 74°44'33.32"E 74°44'34.74"E 74°44'42.55"E 74°44'46.54"E 74°44'50.79"E 74°44'55.84"E 74°45'0.03"E 74°45'1.37"E 74°44'59.26"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	238500	RBM	Proposed

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				33° 2'15.43"N 33° 2'15.28"N	74°44'47.25"E 74°44'49.79"E						
146	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_04	1.13	33° 2'23.17"N 33° 2'22.47"N 33° 2'16.04"N 33° 2'21.33"N 33° 2'23.35"N 33° 2'23.55"N 33° 2'24.36"N 33° 2'24.59"N 33° 2'26.40"N	74°44'26.18"E 74°44'28.17"E 74°44'32.80"E 74°44'31.98"E 74°44'30.15"E 74°44'28.46"E 74°44'29.32"E 74°44'29.88"E 74°44'23.21"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	33335	RBM	Proposed
147	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_05	10.3	33° 2'18.87"N 33° 2'28.32"N 33° 2'26.84"N 33° 2'25.19"N 33° 2'24.36"N 33° 2'24.59"N 33° 2'26.40"N	74°43'57.94"E 74°44'4.34"E 74°44'26.04"E 74°44'29.32"E 74°44'29.88"E 74°44'23.21"E 74°44'9.83"E	2.93	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	301790	RBM	Proposed
148	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_06	5.61	33° 2'10.73"N 33° 2'10.77"N 33° 2'12.83"N 33° 2'15.74"N 33° 2'17.08"N 33° 2'17.06"N 33° 2'13.36"N 33° 2'8.27"N 33° 2'9.72"N 33° 2'9.93"N	74°43'40.28"E 74°43'42.38"E 74°43'47.82"E 74°43'50.18"E 74°43'55.29"E 74°43'57.54"E 74°43'56.98"E 74°43'49.18"E 74°43'44.14"E 74°43'42.26"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	166617	RBM	Proposed
149	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_07	1.75	33° 2'15.41"N 33° 2'14.35"N 33° 2'11.06"N 33° 2'11.65"N	74°43'31.46"E 74°43'32.78"E 74°43'41.46"E 74°43'43.29"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	52150	RBM	Proposed

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				33° 2'12.40"N 33° 2'12.70"N 33° 2'14.69"N 33° 2'15.31"N 33° 2'14.95"N	74°43'44.28"E 74°43'41.73"E 74°43'39.80"E 74°43'38.45"E 74°43'34.32"E						
150	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_08	1.71	33° 2'20.30"N 33° 2'20.27"N 33° 2'19.98"N 33° 2'16.26"N 33° 2'14.22"N 33° 2'13.41"N 33° 2'12.10"N 33° 2'12.86"N 33° 2'13.07"N 33° 2'12.89"N 33° 2'13.29"N 33° 2'14.25"N 33° 2'15.70"N	74°43'27.07"E 74°43'27.80"E 74°43'28.22"E 74°43'29.21"E 74°43'31.44"E 74°43'33.76"E 74°43'34.65"E 74°43'32.78"E 74°43'31.26"E 74°43'29.88"E 74°43'28.59"E 74°43'27.43"E 74°43'26.46"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	51300	RBM	Proposed
151	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_09	0.71	33° 2'24.58"N 33° 2'23.65"N 33° 2'18.86"N 33° 2'20.09"N 33° 2'20.13"N 33° 2'21.19"N 33° 2'21.61"N 33° 2'23.39"N	74°43'31.58"E 74°43'30.73"E 74°43'29.13"E 74°43'28.52"E 74°43'28.53"E 74°43'27.25"E 74°43'27.24"E 74°43'28.80"E	2.88	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	20448	RBM	Proposed
152	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_10	1.15	33° 2'31.19"N 33° 2'30.77"N 33° 2'27.88"N 33° 2'25.47"N 33° 2'22.94"N 33° 2'23.67"N	74°43'31.40"E 74°43'33.80"E 74°43'34.06"E 74°43'32.21"E 74°43'26.99"E 74°43'26.92"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	34500	RBM	Proposed

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				33° 2'25.60"N 33° 2'28.26"N 33° 2'29.08"N 33° 2'30.47"N	74°43'30.23"E 74°43'32.21"E 74°43'32.27"E 74°43'31.90"E						
153	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_11	1.33	33° 2'41.08"N 33° 2'41.75"N 33° 2'42.04"N 33° 2'42.13"N 33° 2'40.83"N 33° 2'39.09"N 33° 2'36.95"N 33° 2'38.47"N 33° 2'40.30"N 33° 2'42.61"N 33° 2'43.75"N 33° 2'43.59"N 33° 2'42.68"N 33° 2'42.31"N 33° 2'41.80"N	74°43'13.55"E 74°43'13.87"E 74°43'14.41"E 74°43'15.89"E 74°43'20.24"E 74°43'22.78"E 74°43'24.73"E 74°43'24.24"E 74°43'22.91"E 74°43'19.54"E 74°43'13.94"E 74°43'13.54"E 74°43'12.95"E 74°43'12.87"E 74°43'13.00"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	39368	RBM	Proposed
154	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_12	2.1	33° 2'36.57"N 33° 2'37.31"N 33° 2'38.44"N 33° 2'38.62"N 33° 2'38.30"N 33° 2'36.39"N 33° 2'35.93"N 33° 2'36.63"N 33° 2'37.25"N 33° 2'38.49"N 33° 2'37.85"N 33° 2'37.56"N 33° 2'38.04"N	74°42'57.86"E 74°42'58.23"E 74°42'59.81"E 74°43'1.23"E 74°43'3.91"E 74°43'8.81"E 74°43'13.07"E 74°43'14.56"E 74°43'14.78"E 74°43'14.27"E 74°43'12.72"E 74°43'9.19"E 74°43'6.69"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	61950	RBM	Proposed

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				33° 2'39.33"N 33° 2'40.20"N 33° 2'40.20"N 33° 2'37.97"N 33° 2'37.61"N 33° 2'37.32"N	74°43'4.58"E 74°43'1.24"E 74°43'0.36"E 74°42'57.00"E 74°42'56.93"E 74°42'56.99"E						
155	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_13	1.49	33° 2'33.65"N 33° 2'33.15"N 33° 2'33.15"N 33° 2'33.98"N 33° 2'37.27"N 33° 2'35.93"N 33° 2'35.36"N 33° 2'34.86"N 33° 2'34.25"N 33° 2'32.43"N 33° 2'29.91"N 33° 2'29.51"N 33° 2'29.32"N 33° 2'29.29"N 33° 2'29.46"N 33° 2'30.34"N 33° 2'31.11"N 33° 2'32.59"N	74°42'53.02"E 74°42'54.30"E 74°42'54.98"E 74°42'55.63"E 74°42'56.54"E 74°42'57.05"E 74°42'57.41"E 74°42'57.60"E 74°42'57.63"E 74°42'56.96"E 74°42'57.72"E 74°42'57.59"E 74°42'57.02"E 74°42'56.21"E 74°42'55.59"E 74°42'54.15"E 74°42'53.59"E 74°42'53.13"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	44104	RBM	Proposed
156	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_14	0.97	33° 2'35.27"N 33° 2'35.45"N 33° 2'34.88"N 33° 2'33.64"N 33° 2'32.44"N 33° 2'34.72"N 33° 2'35.55"N 33° 2'36.22"N	74°42'45.69"E 74°42'49.20"E 74°42'49.82"E 74°42'50.55"E 74°42'51.65"E 74°42'52.38"E 74°42'52.33"E 74°42'51.70"E	2.94	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	28518	RBM	Proposed

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				33° 2'36.80"N 33° 2'37.16"N 33° 2'37.06"N	74°42'50.54"E 74°42'49.41"E 74°42'48.51"E						
157	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_15	1.41	33° 2'33.08"N 33° 2'33.18"N 33° 2'32.13"N 33° 2'32.60"N 33° 2'34.73"N 33° 2'33.97"N 33° 2'33.69"N 33° 2'34.27"N 33° 2'33.70"N	74°42'27.45"E 74°42'30.65"E 74°42'38.04"E 74°42'40.05"E 74°42'43.41"E 74°42'40.44"E 74°42'37.39"E 74°42'34.22"E 74°42'28.25"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	42018	RBM	Proposed
158	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_16	0.65	33° 2'9.13"N 33° 2'8.42"N 33° 2'7.83"N 33° 2'8.04"N 33° 2'8.70"N 33° 2'16.95"N 33° 2'13.56"N 33° 2'11.71"N 33° 2'10.24"N 33° 2'9.15"N 33° 2'8.54"N 33° 2'8.57"N	74°41'57.15"E 74°41'57.71"E 74°41'59.48"E 74°42'1.30"E 74°42'2.02"E 74°42'6.12"E 74°42'3.06"E 74°42'2.35"E 74°42'2.10"E 74°42'1.49"E 74°41'59.48"E 74°41'58.68"E	2.89	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	18785	RBM	Proposed
159	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_17	0.88	33° 2'14.31"N 33° 2'15.87"N 33° 2'19.51"N 33° 2'18.38"N 33° 2'16.76"N 33° 2'14.80"N 33° 2'16.89"N 33° 2'18.32"N	74°41'42.02"E 74°41'42.53"E 74°41'48.33"E 74°41'52.73"E 74°41'54.15"E 74°41'54.74"E 74°41'54.95"E 74°41'54.13"E	2.92	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	25696	RBM	Proposed

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				33° 2'19.17"N 33° 2'19.55"N 33° 2'19.65"N 33° 2'18.87"N 33° 2'17.62"N 33° 2'16.76"N 33° 2'15.44"N	74°41'52.77"E 74°41'50.97"E 74°41'48.31"E 74°41'45.33"E 74°41'42.98"E 74°41'42.06"E 74°41'41.88"E						
160	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_18	0.71	33° 2'11.44"N 33° 2'10.18"N 33° 2'9.87"N 33° 2'10.23"N 33° 2'10.90"N 33° 2'11.69"N 33° 2'16.14"N 33° 2'15.33"N 33° 2'12.27"N 33° 2'11.16"N 33° 2'10.38"N 33° 2'10.36"N	74°41'33.36"E 74°41'35.21"E 74°41'37.72"E 74°41'40.82"E 74°41'41.69"E 74°41'42.04"E 74°41'40.66"E 74°41'40.20"E 74°41'40.80"E 74°41'40.58"E 74°41'39.37"E 74°41'36.70"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	20377	RBM	Proposed
161	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_19	0.87	33° 2'6.67"N 33° 2'8.24"N 33° 2'9.69"N 33° 2'10.71"N 33° 2'11.57"N 33° 2'12.18"N 33° 2'12.36"N 33° 2'12.16"N 33° 2'11.78"N 33° 2'10.54"N 33° 2'9.97"N 33° 2'9.27"N 33° 2'7.55"N	74°41'31.66"E 74°41'30.56"E 74°41'30.30"E 74°41'32.01"E 74°41'32.63"E 74°41'31.87"E 74°41'30.75"E 74°41'29.64"E 74°41'29.00"E 74°41'28.34"E 74°41'28.39"E 74°41'30.34"E 74°41'28.70"E	2.88	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	25056	RBM	Proposed

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162	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_20	1.6	33° 1'50.41"N 33° 1'51.34"N 33° 2'4.03"N 33° 2'2.95"N 33° 1'58.84"N	74°41'28.79"E 74°41'29.56"E 74°41'33.57"E 74°41'32.26"E 74°41'30.05"E	2.86	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	45760	RBM	Proposed
163	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_21	4.26	33° 1'51.10"N 33° 1'48.26"N 33° 1'46.12"N 33° 1'44.95"N 33° 1'44.53"N 33° 1'44.44"N 33° 1'47.04"N 33° 1'47.93"N 33° 1'48.75"N 33° 1'53.58"N 33° 1'50.46"N 33° 1'48.85"N 33° 1'49.31"N	74°41'15.40"E 74°41'15.03"E 74°41'15.56"E 74°41'16.77"E 74°41'18.36"E 74°41'20.14"E 74°41'25.92"E 74°41'26.54"E 74°41'27.06"E 74°41'28.03"E 74°41'24.75"E 74°41'20.49"E 74°41'17.00"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	126948	RBM	Proposed
164	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_22	2.1	33° 1'59.73"N 33° 2'0.38"N 33° 2'0.73"N 33° 2'1.24"N 33° 2'1.23"N 33° 2'0.99"N 33° 1'60.00"N 33° 2'2.10"N 33° 2'3.38"N 33° 2'4.11"N 33° 2'4.87"N 33° 2'4.39"N 33° 2'2.49"N 33° 2'1.03"N	74°41'5.10"E 74°41'5.62"E 74°41'6.10"E 74°41'8.12"E 74°41'9.76"E 74°41'11.11"E 74°41'12.39"E 74°41'11.74"E 74°41'11.59"E 74°41'11.06"E 74°41'7.48"E 74°41'6.20"E 74°41'4.25"E 74°41'4.23"E	2.96	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	62160	RBM	Proposed

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165	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_23	1.52	33° 1'47.85"N 33° 1'48.50"N 33° 1'51.46"N 33° 1'54.92"N 33° 1'56.12"N 33° 1'56.95"N 33° 1'55.82"N 33° 1'53.75"N 33° 1'52.58"N 33° 1'50.41"N 33° 1'50.01"N 33° 1'48.33"N	74°40'59.44"E 74°40'58.97"E 74°40'59.73"E 74°41'6.40"E 74°41'7.51"E 74°41'7.55"E 74°41'5.95"E 74°41'1.42"E 74°40'58.89"E 74°40'56.61"E 74°40'56.49"E 74°40'57.64"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	45600	RBM	Proposed
166	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_24	3	33° 1'37.66"N 33° 1'36.76"N 33° 1'36.73"N 33° 1'37.17"N 33° 1'37.91"N 33° 1'38.51"N 33° 1'39.51"N 33° 1'40.90"N 33° 1'42.22"N 33° 1'43.94"N 33° 1'45.96"N 33° 1'47.24"N 33° 1'45.61"N 33° 1'41.68"N 33° 1'40.30"N 33° 1'38.43"N	74°40'58.21"E 74°41'1.46"E 74°41'3.20"E 74°41'4.44"E 74°41'5.24"E 74°41'5.43"E 74°41'5.03"E 74°41'5.22"E 74°41'4.79"E 74°41'2.91"E 74°41'2.08"E 74°40'57.80"E 74°40'59.77"E 74°41'1.18"E 74°41'0.90"E 74°40'59.77"E	2.98	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	89400	RBM	Proposed
167	CHAU KI CHAU RA	JK_JMU_ZA_ CKH_25	1.88	33° 1'29.61"N 33° 1'30.14"N 33° 1'36.99"N 33° 1'37.43"N	74°40'46.77"E 74°40'48.45"E 74°40'57.50"E 74°40'56.93"E	2.87	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	53956	RBM	Proposed

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				33° 1'38.03"N 33° 1'37.05"N 33° 1'30.48"N	74°40'54.87"E 74°40'51.92"E 74°40'47.91"E						
168	KHAR AN DRA KHA D	JK_JMU_ZA_ KHND_01	35.2	33° 1'14.85"N 33° 1'16.78"N 33° 1'12.89"N 33° 1'14.83"N 33° 1'23.05"N 33° 1'49.84"N 33° 1'48.74"N 33° 1'19.09"N 33° 1'19.76"N 33° 1'11.30"N 33° 1'14.74"N	74°43'36.55"E 74°43'58.69"E 74°44'27.53"E 74°44'34.86"E 74°45'9.80"E 74°45'33.56"E 74°45'39.33"E 74°45'16.26"E 74°45'0.92"E 74°44'26.32"E 74°44'0.04"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1038400	RBM	Proposed
169	JAD KHA D	JK_JMU_ZA_J D_01	3.21	32°55'14.24"N 32°55'21.83"N 32°55'28.23"N 32°55'35.78"N 32°55'30.47"N 32°55'27.84"N	74°34'44.61"E 74°34'43.90"E 74°34'47.61"E 74°35'1.36"E 74°34'58.02"E 74°34'50.09"E	2.99	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	95979	RBM	Proposed
170	JAD KHA D	JK_JMU_ZA_J D_02	3.14	32°54'45.85"N 32°54'45.78"N 32°54'52.33"N 32°54'54.67"N 32°54'49.31"N	74°34'40.56"E 74°34'48.52"E 74°34'47.82"E 74°34'49.49"E 74°34'42.17"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	94200	RBM	Proposed
171	JAD KHA D	JK_JMU_ZA_J D_03	41.4	32°53'17.58"N 32°53'18.31"N 32°53'32.63"N 32°53'52.91"N 32°54'0.68"N 32°54'14.09"N 32°54'14.21"N	74°35'20.29"E 74°35'30.38"E 74°35'26.03"E 74°35'3.02"E 74°34'52.91"E 74°34'50.97"E 74°34'47.14"E	2.97	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1229580	RBM	Proposed

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				32°54'3.36"N 32°53'39.09"N	74°34'49.24"E 74°35'9.69"E						
172	JAD KHA D	JK_JMU_ZA_J D_04	50.3	32°50'56.69"N 32°51'17.56"N 32°51'36.54"N 32°52'10.12"N 32°52'11.56"N 32°51'45.66"N 32°51'19.68"N 32°50'58.19"N	74°34'36.68"E 74°34'53.44"E 74°35'0.09"E 74°35'22.65"E 74°35'9.37"E 74°34'59.58"E 74°34'44.86"E 74°34'34.52"E	2.9	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1458700	RBM	Proposed
173	JAD KHA D	JK_JMU_ZA_J D_05	9.31	32°50'43.79"N 32°50'41.10"N 32°50'48.80"N 32°50'55.07"N 32°50'56.63"N 32°50'56.01"N 32°50'53.10"N	74°34'9.65"E 74°34'14.61"E 74°34'21.00"E 74°34'33.27"E 74°34'32.11"E 74°34'23.96"E 74°34'18.12"E	2.95	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	274645	RBM	Proposed
174	KHO URA WAL LI KHA D	JK_JMU_ZA_ KWK_01	12.6	32°54'15.63"N 32°54'16.92"N 32°54'21.94"N 32°54'32.99"N 32°54'25.98"N 32°54'22.05"N	74°31'59.72"E 74°32'22.61"E 74°32'39.86"E 74°32'50.37"E 74°32'43.94"E 74°32'29.13"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	378000	RBM	Proposed
175	KHO URA WAL LI KHA D	JK_JMU_ZA_ KWK_02	8.74	32°54'5.68"N 32°54'9.20"N 32°54'18.16"N 32°54'16.46"N 32°54'8.29"N	74°31'35.56"E 74°31'47.45"E 74°32'0.09"E 74°31'46.90"E 74°31'36.06"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	262200	RBM	Proposed
176	KHO URA WAL	JK_JMU_ZA_ KWK_03	11.8	32°53'50.54"N 32°53'47.58"N 32°53'53.99"N	74°31'23.68"E 74°31'33.72"E 74°31'33.86"E	3	No protected Area, Bridge are available	No Forest Available in 500m	354000	RBM	Proposed

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	LI KHA D			32°54'3.41"N 32°54'9.50"N 32°54'3.42"N 32°54'0.65"N	74°31'41.35"E 74°31'49.91"E 74°31'29.57"E 74°31'32.29"E		with in 500m				
177	KHO URA WAL LI KHA D	JK_JMU_ZA_ KWK_04	31.8	32°52'18.49"N 32°52'16.41"N 32°52'33.50"N 32°52'49.13"N 32°52'59.91"N 32°52'52.75"N 32°52'40.51"N 32°52'32.15"N	74°31'56.37"E 74°32'9.16"E 74°32'9.04"E 74°32'3.00"E 74°31'43.50"E 74°31'40.27"E 74°32'1.32"E 74°32'1.51"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	954000	RBM	Proposed
178	KHO URA WAL LI KHA D	JK_JMU_ZA_ KWK_05	35.2	32°50'23.44"N 32°50'27.72"N 32°50'39.07"N 32°50'48.45"N 32°50'57.17"N 32°50'52.00"N 32°50'41.32"N 32°50'33.62"N 32°50'28.39"N	74°30'9.78"E 74°30'10.77"E 74°30'29.34"E 74°30'51.27"E 74°31'2.71"E 74°31'9.21"E 74°30'53.98"E 74°30'36.23"E 74°30'26.43"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	1056000	RBM	Proposed
179	KHO URA WAL LI KHA D	JK_JMU_ZA_ KWK_06	6.2	32°50'18.29"N 32°50'22.13"N 32°50'23.28"N 32°50'30.31"N 32°50'28.08"N 32°50'25.32"N	74°29'52.85"E 74°30'3.76"E 74°30'9.39"E 74°30'12.82"E 74°30'9.22"E 74°29'57.43"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	186000	RBM	Proposed
180	KHO URA WAL LI KHA	JK_JMU_ZA_ KWK_07	6.75	32°50'16.14"N 32°50'10.71"N 32°50'14.04"N 32°50'19.83"N 32°50'20.44"N	74°29'40.00"E 74°29'46.77"E 74°29'54.53"E 74°30'0.24"E 74°30'4.56"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	202500	RBM	Proposed

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	D			32°50'21.74"N 32°50'17.36"N 32°50'17.21"N	74°30'3.43"E 74°29'53.15"E 74°29'44.15"E						
181	CHIB BE WAL LI KHA D	JK_JMU_ZA_ CW_01	13.3	32°52'0.11"N 32°51'49.16"N 32°51'47.53"N 32°51'51.06"N 32°51'46.76"N 32°51'45.22"N 32°51'35.15"N 32°51'29.24"N 32°51'30.28"N 32°51'28.85"N 32°51'37.68"N 32°51'42.14"N 32°51'48.39"N 32°51'47.72"N 32°51'44.64"N	74°52'56.33"E 74°53'6.98"E 74°53'18.07"E 74°53'31.39"E 74°53'32.49"E 74°53'29.16"E 74°53'35.25"E 74°53'37.91"E 74°53'43.49"E 74°53'35.35"E 74°53'31.45"E 74°53'26.78"E 74°53'29.41"E 74°53'23.36"E 74°53'7.17"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	399000	RBM	Proposed
182	CHIB BE WAL LI KHA D	JK_JMU_ZA_ CW_02	7.53	32°51'31.86"N 32°51'31.29"N 32°51'26.05"N 32°51'16.19"N 32°51'14.98"N 32°51'14.33"N 32°51'15.44"N 32°51'27.96"N	74°53'48.56"E 74°54'1.34"E 74°54'6.44"E 74°54'3.50"E 74°54'12.12"E 74°54'12.70"E 74°54'2.07"E 74°53'59.47"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	225900	RBM	Proposed
183	CHIB BE WAL LI KHA D	JK_JMU_ZA_ CW_03	2.16	32°49'43.31"N 32°49'48.47"N 32°49'52.60"N 32°49'55.74"N 32°49'52.22"N 32°49'48.07"N	74°55'30.35"E 74°55'42.41"E 74°55'45.28"E 74°55'44.40"E 74°55'43.25"E 74°55'38.28"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	64800	RBM	Proposed

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184	CHIB BE WAL LI KHA D	JK_JMU_ZA_ CW_04	1.12	32°49'38.61"N 32°49'39.02"N 32°49'41.14"N 32°49'43.67"N 32°49'43.78"N 32°49'41.60"N	74°55'30.12"E 74°55'32.00"E 74°55'32.26"E 74°55'34.65"E 74°55'33.96"E 74°55'28.54"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	33600	RBM	Proposed
185	CHIB BE WAL LI KHA D	JK_JMU_ZA_ CW_05	2.28	32°47'31.56"N 32°47'24.74"N 32°47'19.02"N 32°47'21.39"N 32°47'25.11"N 32°47'30.94"N	74°55'33.70"E 74°55'37.73"E 74°55'37.13"E 74°55'39.84"E 74°55'40.92"E 74°55'36.30"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	68400	RBM	Proposed
186	CHIB BE WAL LI KHA D	JK_JMU_ZA_ CW_06	1.72	32°47'23.22"N 32°47'15.53"N 32°47'13.53"N 32°47'14.40"N	74°55'41.85"E 74°55'38.16"E 74°55'41.66"E 74°55'42.21"E	3	No protected Area, Bridge are available with in 500m	No Forest Available in 500m	51600	RBM	Proposed
TOTAL			2786.1 9						81711097		

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➤ **Final List of proposed Patta Lands/Khatedari land**

Owner	Sr.No.	Area (hectare)	Latitude	Longitude	District	Tehsil	Village	Khasra No	Type of Material	Total Reserve (CUM)	Total Mineral to be mined (CUM)	Existing/Proposed
NA												

➤ **Final List of Proposed De-siltation location (Lake, Pond, Dams, River):**

Name	Maintain/Controlled by State Govt./PSU etc.	Location	Khasra No.	District	Tehsil	Village	Size (Ha)	Quantity (CUM/Year)	Existing/Proposed
NA									

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➤ **Final List of Proposed M-Sand Plants :**

Sl. No	Plant Name	Owner	District	Tehsil	Village	Geolocation		Quantity / Capacity (Tonnes/Annum)	Existing / proposed
						Latitude	Longitude		
1	M/S DPS Stone Crusher	Smt. Neelam Sharma	Jammu	Bhalwal	Jandiyal Gharota	32.5349	74.4923	-	Existing
2	M/S Krishna Stone Crusher	Sh. Vinod Kumar	Jammu	Akhnoor	Tanda	32.922174	74.748247	-	Existing
3	M/S Shiva Stone Crusher	Sh. Rahul Gupta	Jammu	Akhnoor	Sungal	32.907316	74.686488	-	Existing
4	M/S Mahavir Stone Crusher	Sh. Uttam Singh, Sh. Satish Sharma, Sh. Ankush Sharma, Sh. Ankush Gupta & Sh. Ramesh singh	Jammu	Akhnoor	Samah	32.94923484	74.68134147	-	Existing
5	M/S Sai Stone Crusher	Prop. Sh. Ankush Gupta, Sh. Ramesh singh & Sh. Ankush Sharma	Jammu	Akhnoor	Gurah Brahamna	32.90640884	74.63065255	-	Existing
6	M/S Shree Ram Stone Crusher	Sh. Ankush Gupta, sh. Sourab singh & Sh. Ankush Sharma	Jammu	Akhnoor	Bhalwal Brahamna	32.86921136	74.61914696	-	Existing
7	M/S Bharat Stone Crusher	Sh. Bharat Singh	Jammu	Jourian	Chak Bhagwana	32.850615	74.579108	-	Existing
8	M/S Maa Vashno Crusher	Sh. Vinod Bharti	Jammu	Jourian	Chak Bhagwana	32.860059	74.58443	-	Existing
9	M/S Ram Saran Crusher	Sh. Sumeet Sharma	Jammu	Jourian	Chak Bhagwana	32.8529039	74.581464 0	-	Existing
10	M/S Sumyira Stone Crusher	Sh. Rajinder Singh	Jammu	Khour	Pahariwala	32.5047	74.2956	-	Existing

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11	M/S Jai Dev Stone Crusher	Sh. Suram singh	Jammu	Maera	Pall Kathar	33.029433	74.786264	-	Existing
12	M/S Anuradha Gritz Udyog	Sh. Kamal Nain Singh	Jammu	Bhalwal	Kangar	32.4946	74.4923	-	Existing
13	M/S Durga Stone Crusher	Sh. Belli Ram Soodan	Jammu	Bhalwal	Seri Pandita	32.5146	74.4745	-	Existing
14	M/S K.N Stone Crusher	Sh. Mahesh Kumar	Jammu	Bhalwal	Jandiyal Gharota	32.5136	74.489	-	Existing
15	M/S Shiva Stone Crusher	Sh. Surinder Singh	Jammu	Bhalwal	Jandiyal Gharota	32.5335	74.4934	-	Existing
16	M/S Lakhan Stone Crusher	Smt. Narinder devi	Jammu	Akhnoor	Tanda	32.958603	74.726399	-	Existing
17	M/S Sharma Stone Crusher	Sh. Sanjay Raina	Jammu	Bhalwal	Jandiyal Gharota	32.5339	74.4845	-	Existing
18	M/S Bharat Stone Crusher	Sh. Manish Jain	Jammu	Jammu	Jallo Chack	32.651563	74.889897	-	Existing
19	M/S New Trikuta Stone Crusher	Sh. Vijay Kumar Sharma	Jammu	Akhnoor	Kathar	33.03242	74.758254	-	Existing
20	M/S J.K Stone Crusher	Sh. Yougal Kishore	Jammu	Dansal	Kishanpur Manwal	32.775799	75.136924	-	Existing
21	M/S Maa Durga Crusher	Sh. Nand Kishore	Jammu	Dansal	Kishanpur Manwal	32.774622	75.141625	-	Existing
22	M/S Manhas Stone Crusher	Sh Atam Manhas	Jammu	Akhnoor	Tanda	32.953978	74.728786	-	Existing
23	M/S Trikuta Stone Crusher	Sh. Anudeep Sharma	Jammu	Jourian	-	32.856603	74.546259	-	Existing
24	M/S Sharma Store Crusher	Sh. Nimish Sharma	Jammu	-	Majine	32.758095	74.901109	-	Existing
25	Green Earth Infra Crusher	-	Jammu	-	Kour	-	-	-	Existing
26	Shiv Stone Crusher	-	Jammu	-	Chaghani Ghar	-	-	-	Existing

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27	Shiv Shakti enter Crusher	-	Jammu	-	Rakh kharoon	-	-	-	Existing
28	Sutan stone Crusher	-	Jammu	-	Hurlani Dansal	-	-	-	Existing
29	Trikuta Stone Crusher	-	Jammu	-	Tutan Di khui	-	-	-	Existing
30	M/S Swastik Stone Crusher	Sh. Vijay Sharma	Jammu	Jammu	Surya Chak	32.704318	74.82637	-	Existing
31	M/S Harman Stone Crusher	Sh. Gurpal Singh Sudan	Jammu	Jammu	Bajalta	32.759438	74.9329	-	Existing
32	M/S Tawi Stone Crusher	Sh. Gurpal Singh Sudan	Jammu	Jammu	Chatta	32.692057	74.930467	-	Existing
33	M/S Khatana Stone Crusher	Sh. Nazir Ahmed	Jammu	Jammu	Bajalta	32.758688	74.935453	-	Existing
34	M/S Jupiter Stone Crusher	Sh. Sanjay Singh, Sanjeev, Ashraf Choudhary	Jammu	Jammu	Bajalta	32.7599331	74.9343723	-	Existing
35	M/S Public Stone Crusher	Sh. Mohd. Iqbal	Jammu	Jammu	Bajalta	32.759934	74.93604	-	Existing
36	M/S Northern Stone Crusher	Sh. Razaq Choudhary	Jammu	Jammu	Bajalta	32.760924	74.971669	-	Existing
37	M/S Surya Stone Crusher	Sh. Farooq Ahmed Mir	Jammu	Jammu	Kanna	32.742371	74.964592	-	Existing
38	M/S Charak Stone Crusher	Sh. Mohd. Razaq	Jammu	Jammu	Bajalta	32.742125	74.964032	-	Existing
39	M/S Motal Stone Crusher	Sh. Sultan Ali	Jammu	Jammu	Panjgrian Nagrota	32.85772	74.900573	-	Existing
40	M/S Radhey Stone Crusher	Sh. Mohinder kumar	Jammu	Jammu	Jagti	32.807863	74.88929	-	Existing
41	M/S New Oriental Stone Crusher	Lal Chand	Jammu	Jammu	Chak Ganes	32.704336	74.834539	-	Existing
42	M/S Upkar Stone Crusher	Smt. Padma Sharma, Sh. Parkash Ram, Sh. Charan Singh & Smt.	Jammu	Jammu	Chak Ganes	32.702897	74.821604	-	Existing

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		Usha Choudhary							
43	M/S J.K Stone Crusher	Sh. Varinder Gupta	Jammu	Jammu	Gaseetpur	32.711726	74.775691	-	Existing
44	M/S TRB Stone Crusher	Sh. Harjeet singh & Sh. Jasbir Singh	Jammu	Jammu	Kanna Chargal	32.7502	74.971933	-	Existing
45	M/S Oriental Stone Crusher	Sh. Lal Chand	Jammu	Jammu	Belichrana	32.704336	74.834539	-	Existing
46	M/S New B.N. Crusher	Sh. Chain Singh, Smt. Nahida Akhtar & Sh. Neeraj	Jammu	Jammu	Gaseetpur	32.713001	74.777778	-	Existing
47	M/S Choudhary Stone Crusher	Sh. Vikram Rhandawa	Jammu	Jammu	Chak Ganeshu	32.700872	74.819119	-	Existing
48	M/S Tawi Stone Crusher	Sh Parveen Dev Choudhary	Jammu	Jammu	Lalyal	32.669363	74.775836	-	Existing
49	M/S Trikuta Stone Crusher	Sh. Manjeet Singh	Jammu	Jammu	Gaseetpur	32.7145	74.794132	-	Existing
50	M/S Shiva(Bharti)Stone Crusher	Sh. Sunil Bharti	Jammu	Jammu	Nandani	32.71128	74.812591	-	Existing
51	M/S Khushi Stone Crusher	Sh. Ishanpreet Singh & Sh. Sunny Gupta	Jammu	Jammu	Nandani	32.710496	74.810834	-	Existing
52	M/S Adarsh Stone Crusher	Sh. Naresh Sharma, Sh. Sonamdeep singh & Sh. Rakesh Kumar	Jammu	Jammu	Lalyal	32.671026	74.780108	-	Existing
53	M/S Shubham stone Crusher	Sh. Ashqoor wani	Jammu	Jammu	Lalyal	32.669663	74.775836	-	Existing
54	M/S Trikuta Stone Crusher	Sh. Sushil Sharma	Jammu	Akhnoor	Sangani	32.956996	74.727766	-	Existing

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55	M/S Jai Hanuman Stone Crusher	Sh. Rameshwar Sharma	Jammu	Jammu	Ghassain chak	32.677639	74.777844	-	Existing
56	M/S Shree Krishna Stone Crusher	Sh. Vinod Bharti	Jammu	Akhnoor	Daskal	32.922174	74.748247	-	Existing
57	M/S Thakur Stone Crusher	sh. Parshant Sagar Sharma	Jammu	Akhnoor	Daskal	32.926555	74.748816	-	Existing
58	M/S Sharma Stone Crusher	Prop. Sh. Sanjay Raina	Jammu	Bhalwal	Jandiyal Gharota	32.5339	74.4845	-	Existing

TOTAL

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Source: District Mining Office, Jammu

ANNEXURE – VI

- **Final list of Cluster and Contiguous Clusters**

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➤ **Cluster details**

River Name	Cluster No.	Lease No.	Location (Riverbed/Patta Land)	Village	Area (in Ha)	Total Excavation (Ton)	Total Mineral Excavation (Ton)
NA							

➤ **Contiguous Cluster details**

River Name	Contiguous Cluster No.	Cluster No.	Number of leases in the cluster	Location (Riverbed/Patta Land)	Distance between clusters	Village	Area of Cluster (Ha)	Total Mineral Excavation (Ton)
NA								

Note: The final Cluster details shall be as per the approved mine plan and as per the environment clearance granted by the competent authority.

ANNEXURE – VII

- **Final Transportation Routes for individual leases and leases in Cluster(s): (Proposed)**

DISTRICT SURVEY REPORT OF JAMMU DISTRICT, JAMMU & KASHMIR

➤ **Transportation Routes for individual leases details (Riverbed)**

Lease No.	Transportation Route No.	Number of tippers /days of lease	Number of tippers /days of all the lease on route	Length of the Route in Km	Type of Road (black Topped/unpaved)	Recommendation for road (Black Topped/unpaved)	The road will be constructed by Govt. / Lease Owner	Route Map & Location
NA								

➤ **Transportation Routes for leases in Cluster details (Riverbed)**

Cluster No.	Transportation Route No.	Number of tippers / days of cluster	Number of tippers / days of all the clusters on route	Length of Route in km	Type of Road (Black Topped / unpaved)	Recommendation for road (Black Topped / unpaved)	The road will be Constructed by Govt. / Lease Owner	Route Map & Location
NA								

Note: The final transportation routes shall be as per the approved mine plan and as per the environment clearance granted by the competent authority.

ANNEXURE-VIII
**LAYOUT MAP OF EXISTING
AND
PROPOSED MINERAL ZONE**

TAWI RIVER PART - 1

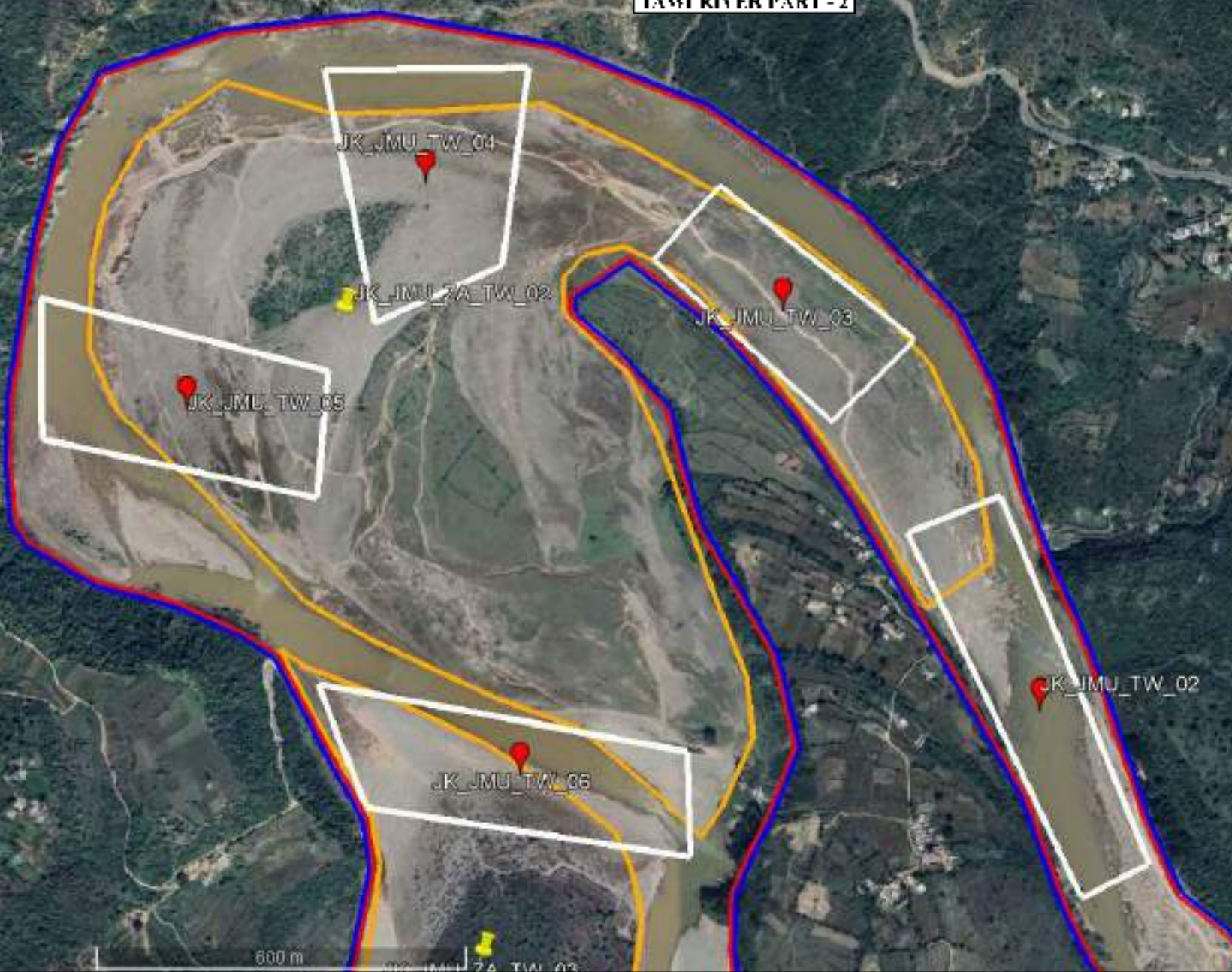


JK_JMU_ZA_TW_01
JK_JMU_TW_01

LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

200 m

TAWI RIVER PART - 2



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 3



JK_JMU_TW_02

JK_JMU_TW_06

JK_JMU_ZA_TW_03

JK_JMU_ZA_TW_04

JK_JMU_TW_07

500 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 4



JK_JMU_ZA_TW_07

JK_JMU_TW_08

JK_JMU_ZA_TW_05

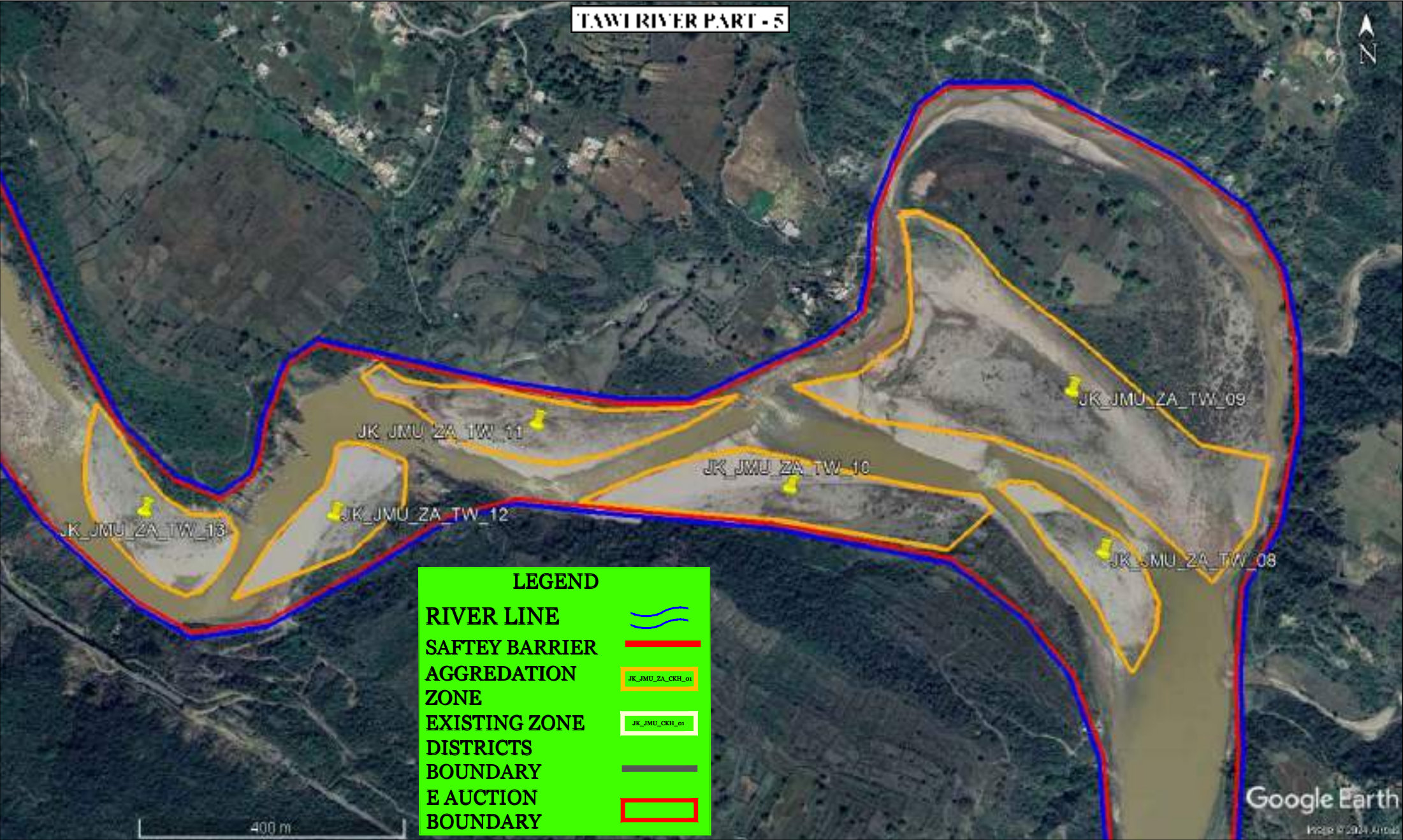
JK_JMU_ZA_TW_08

300 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 5



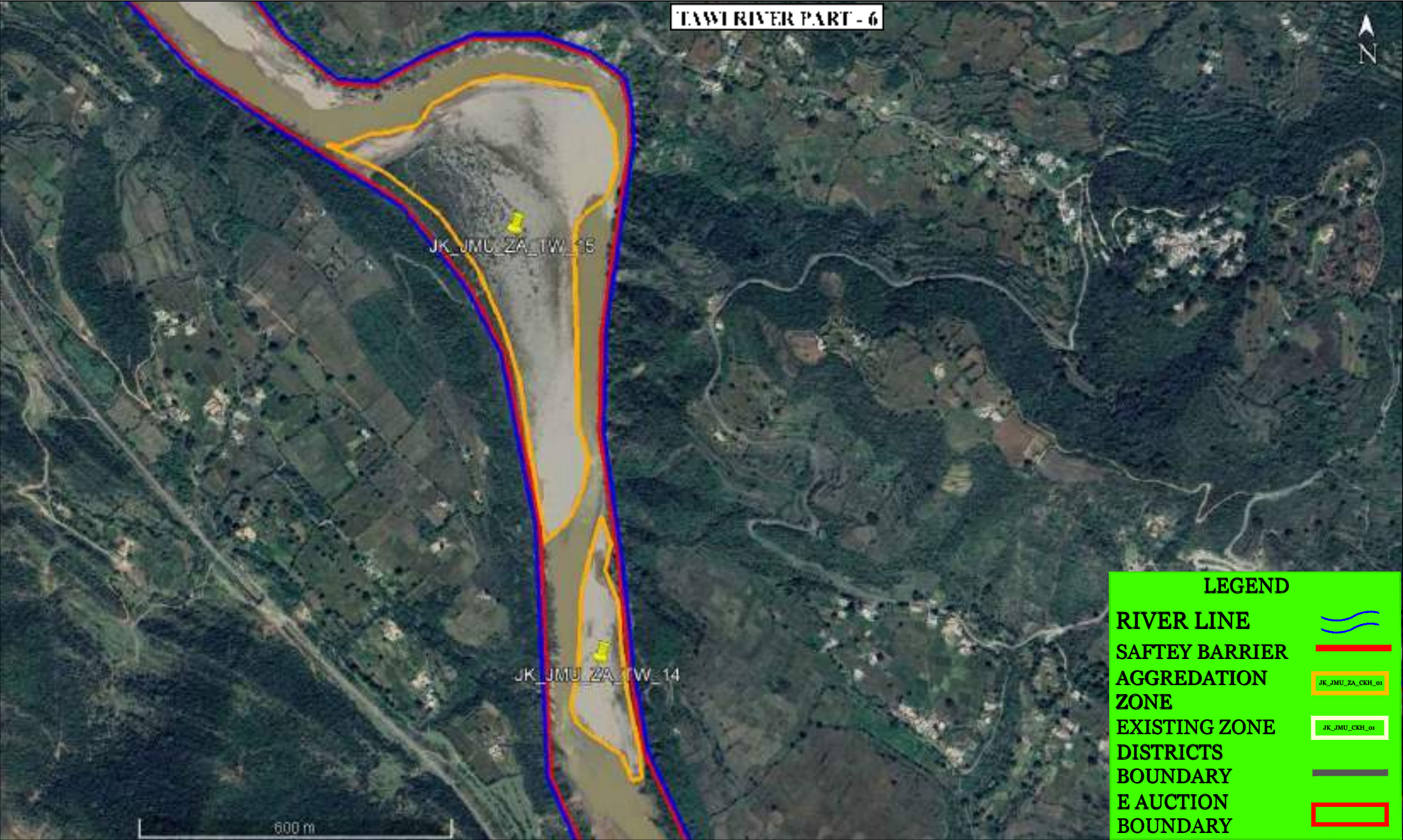
LEGEND

RIVER LINE	
SAFTEY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

400 m

Google Earth
Image © 2024, Airbus

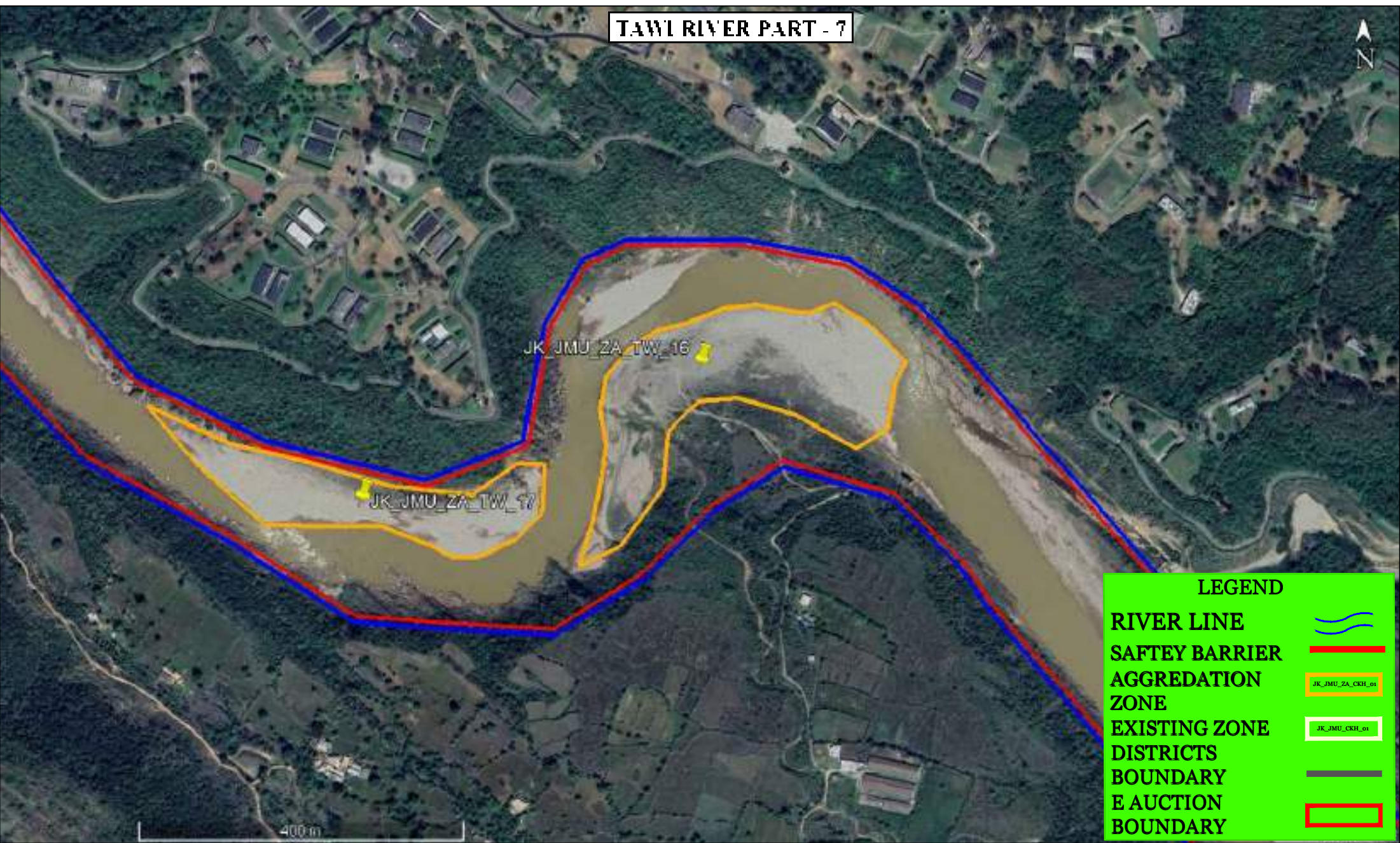
TAWI RIVER PART - 6



LEGEND

- RIVER LINE 
- SAFETY BARRIER 
- AGGREDATION ZONE 
- EXISTING ZONE 
- DISTRICTS BOUNDARY 
- E AUCTION BOUNDARY 

TAWI RIVER PART - 7



JK JMU_ZA_TW_16

JK JMU_ZA_TW_17

400 m

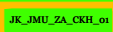
LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 8

JK_JMU_ZA_TW_18

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

400 m



TAWI RIVER PART - 9



JK JMU ZA_TW_21

JK JMU ZA_TW_20

JK JMU ZA_TW_19

LEGEND

RIVER LINE	
SAFTEY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

500 m

Google Earth
Image © 2024, Airbus

LAWI RIVER PART - 10



JK_JMU_ZA_TW_24

JK_JMU_ZA_TW_25

JK_JMU_ZA_TW_23

JK_JMU_ZA_TW_26

JK_JMU_ZA_TW_22

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

500 m

LAWI RIVER PART - II

JK_JMU_ZA_TW_25
JK_JMU_ZA_TW_26

JK_JMU_ZA_TW_26

JK_JMU_ZA_TW_27

JK_JMU_ZA_TW_28

JK_JMU_ZA_TW_29

200 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 12

JK_JMU_ZA_TW_31

JK_JMU_ZA_TW_32

JK_JMU_ZA_TW_30

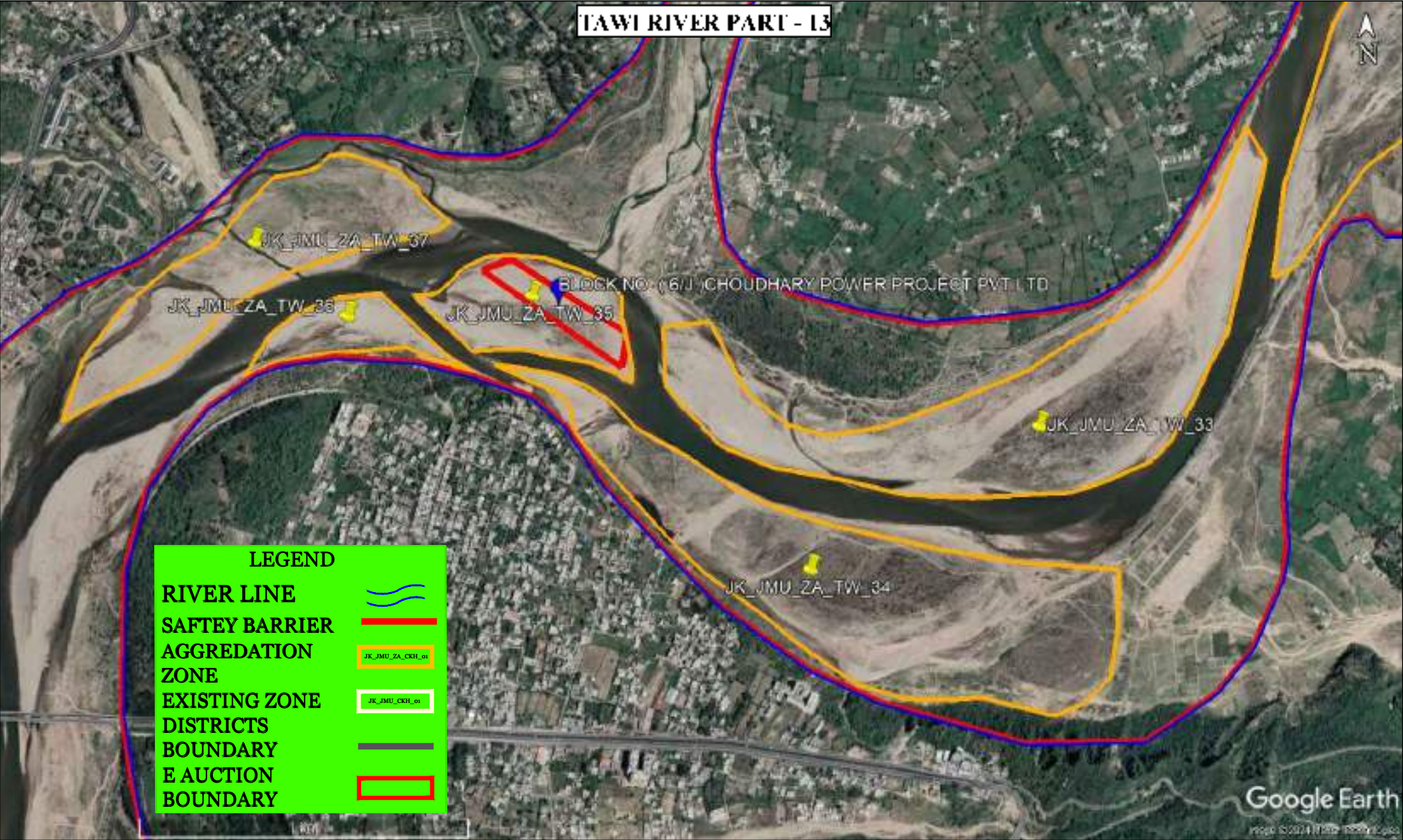
LEGEND

RIVER LINE	
SAFTEY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

1 km

Google Earth
Imagery © 2024 Map data © 2024

TAWI RIVER PART - 13



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
AUCTION BOUNDARY	

TAWI RIVER PART - 14

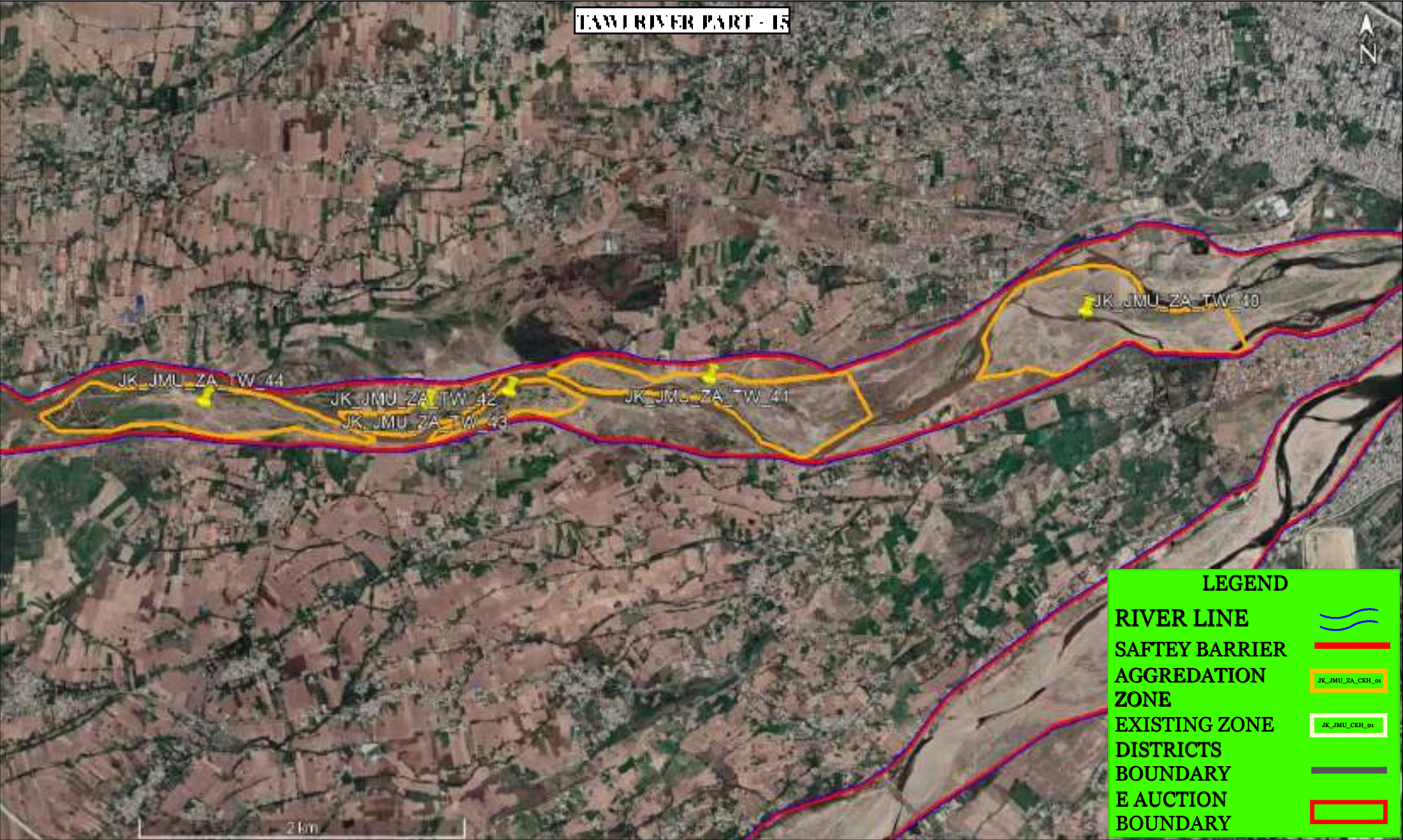
JK_JMU_ZA_TW_38

JK_JMU_ZA_TW_39

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 15



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

TAWI RIVER PART - 16



JK_JMU_ZA_TW_45

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

600m

NIKKUTAWI RIVER PART - I

JK_JMU_ZA_NKIW_01

BI CSK NO - 12 J CHOUHARY POWER PROJECT PVT LTD

JK_JMU_ZA_NKIW_03

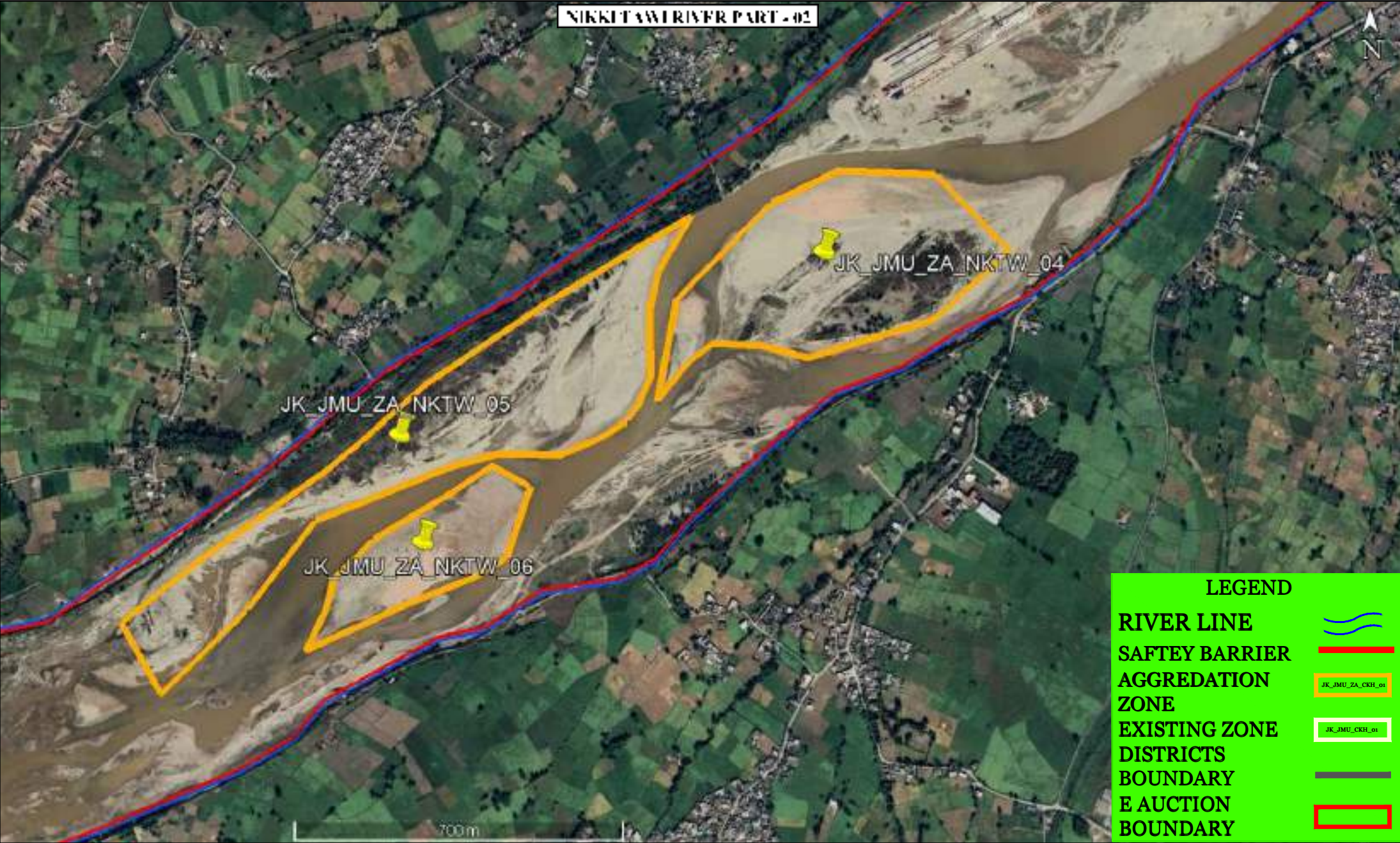
BLOCK NO - 13 J CHOUHARY POWER PROJECT PVT LTD

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

900 m

NIKKITAWI RIVER PART - 02



JK_JMU_ZA_NKTW_05

JK_JMU_ZA_NKTW_04

JK_JMU_ZA_NKTW_06

700m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

SIKRI LAKE RIVER PART - 03

JK_JMU_ZA_NKTW_10

JK_JMU_ZA_NKTW_09

JK_JMU_ZA_NKTW_07

BLOCK NO - (19/J) Sh. Sandeep Singh

JK_JMU_ZA_NKTW_08

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

NIKKTAWI RIVER PART - 04



JK_JMU_ZA_NKTW_12

JK_JMU_ZA_NKTW_11

JK_JMU_ZA_NKTW_13

900 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 1



JK_JMU_ZA_CHN_01

JK_JMU_ZA_CHN_03

JK_JMU_ZA_CHN_02

900 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 2



JK_JMU_ZA_CHN_04

JK_JMU_7A_CHN_05

JK_JMU_7A_CHN_06

JK_JMU_7A_CHN_09

JK_JMU_7A_CHN_08

JK_JMU_ZA_CHN_07

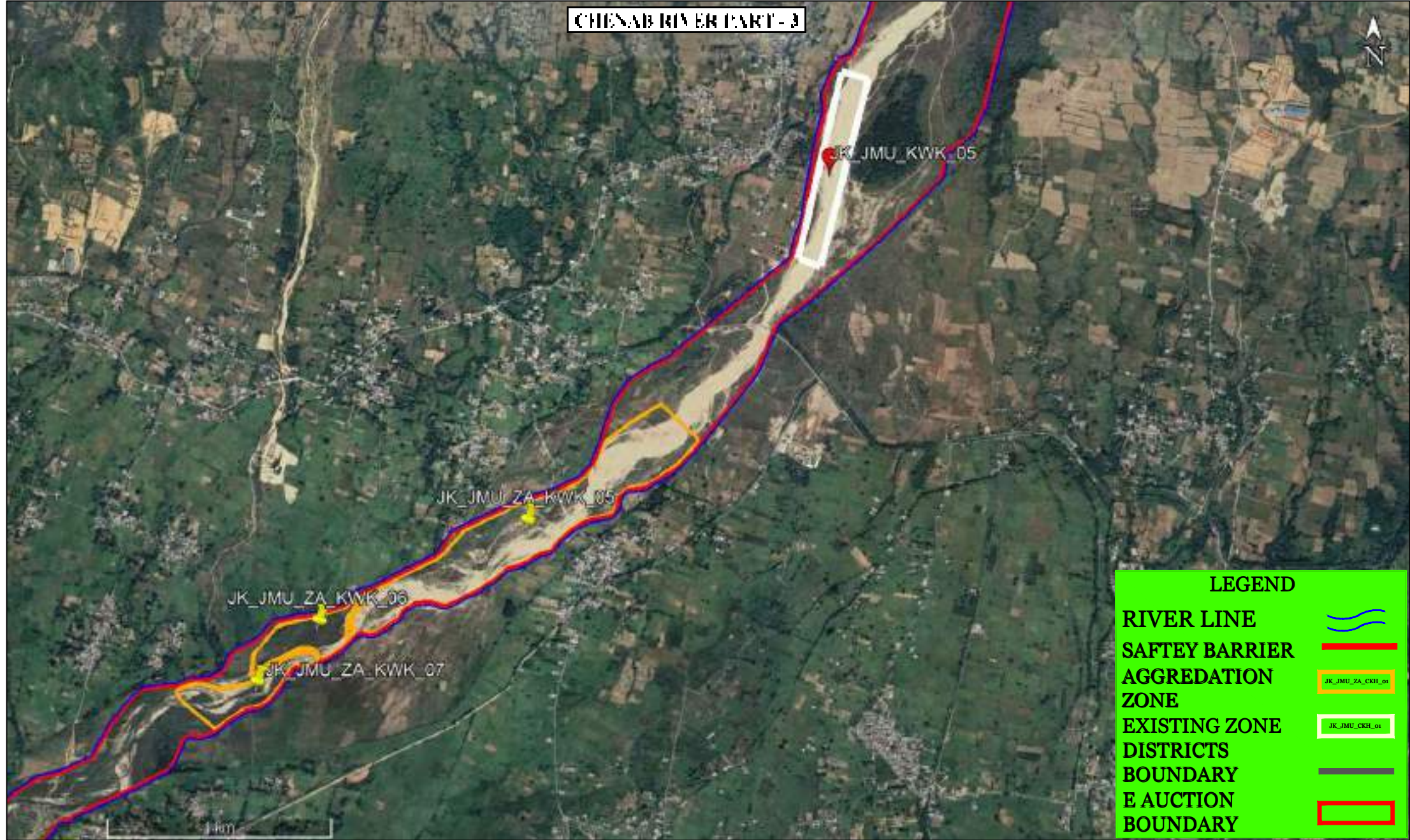
JK_JMU_ZA_CHN_10

1 km

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 3



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 4



JK_JMU_ZA_CHN_13

JK_JMU_ZA_CHN_14

JK_JMU_ZA_CHN_16

JK_JMU_ZA_CHN_15

600m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 5



JK_JMU_ZA_CKH_17

600m

LEGEND

RIVER LINE	
SAFTEY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 6



JK_JMU_CHN_01
JK_JMU_ZA_CHN_13
JK_JMU_CHN_02
JK_JMU_CHN_04
JK_JMU_CHN_03

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

500 m

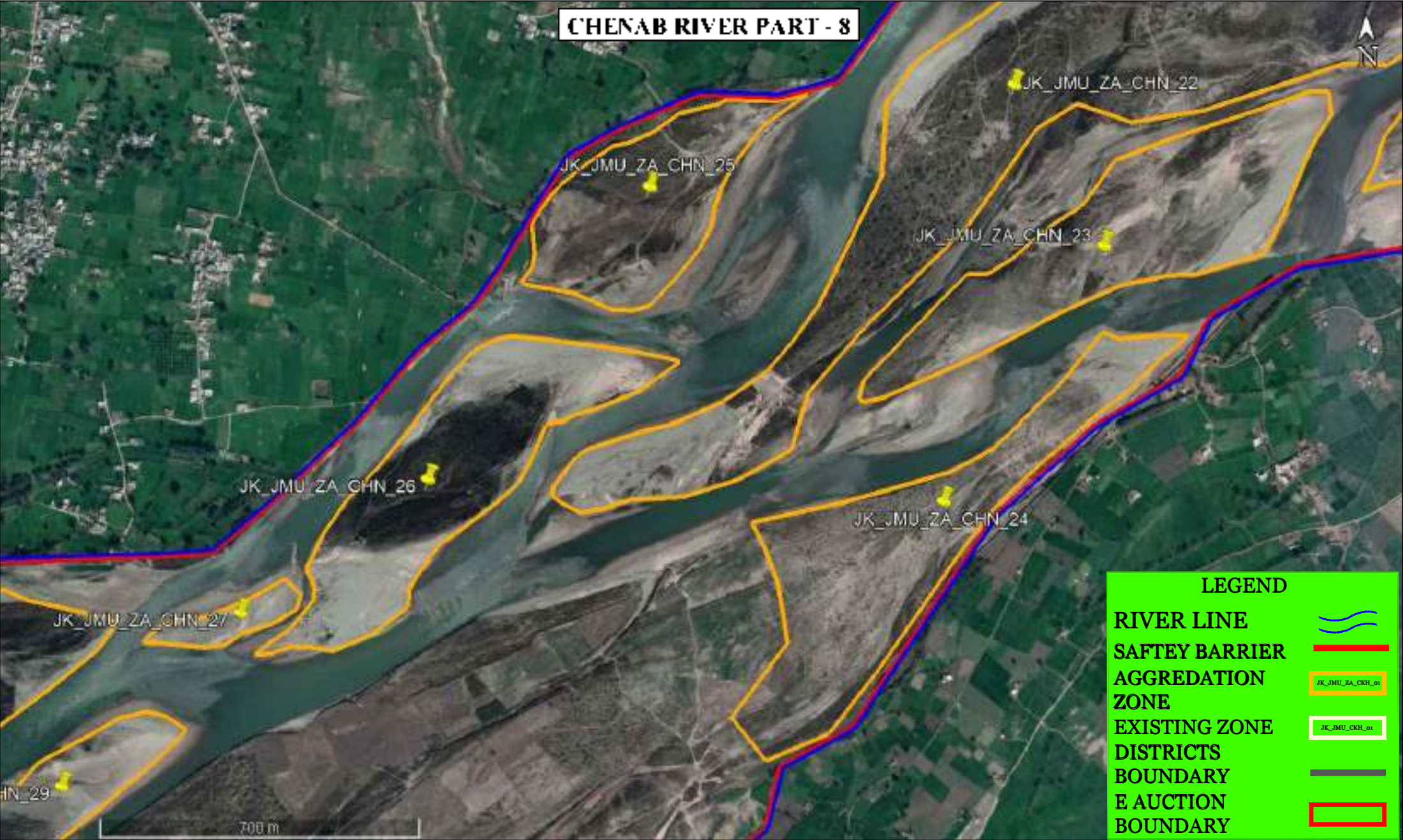
CHENAB RIVER PART - 7



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 8



LEGEND

RIVER LINE	
SAFTEY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 9



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

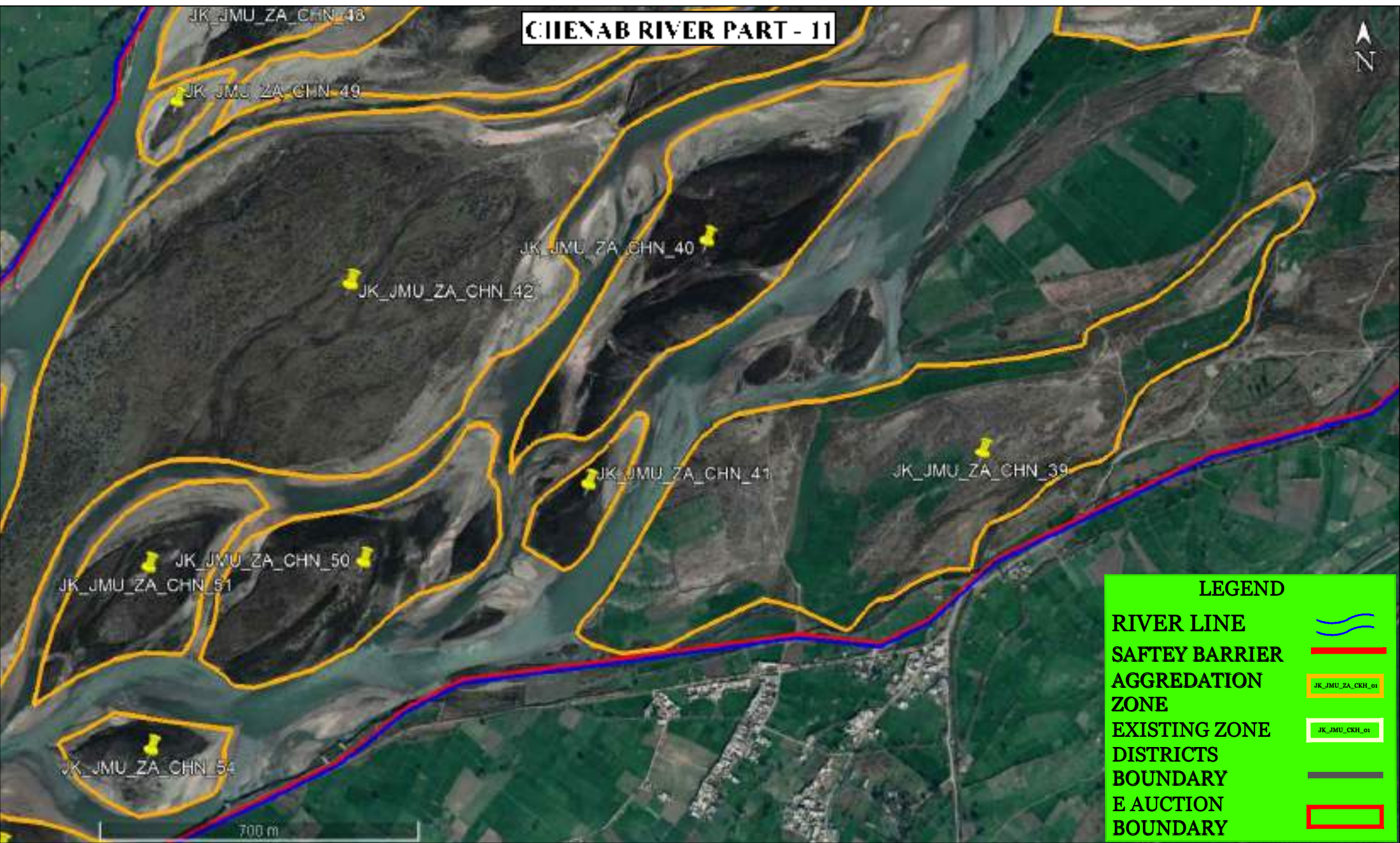
CHENAB RIVER PART - 10



LEGEND

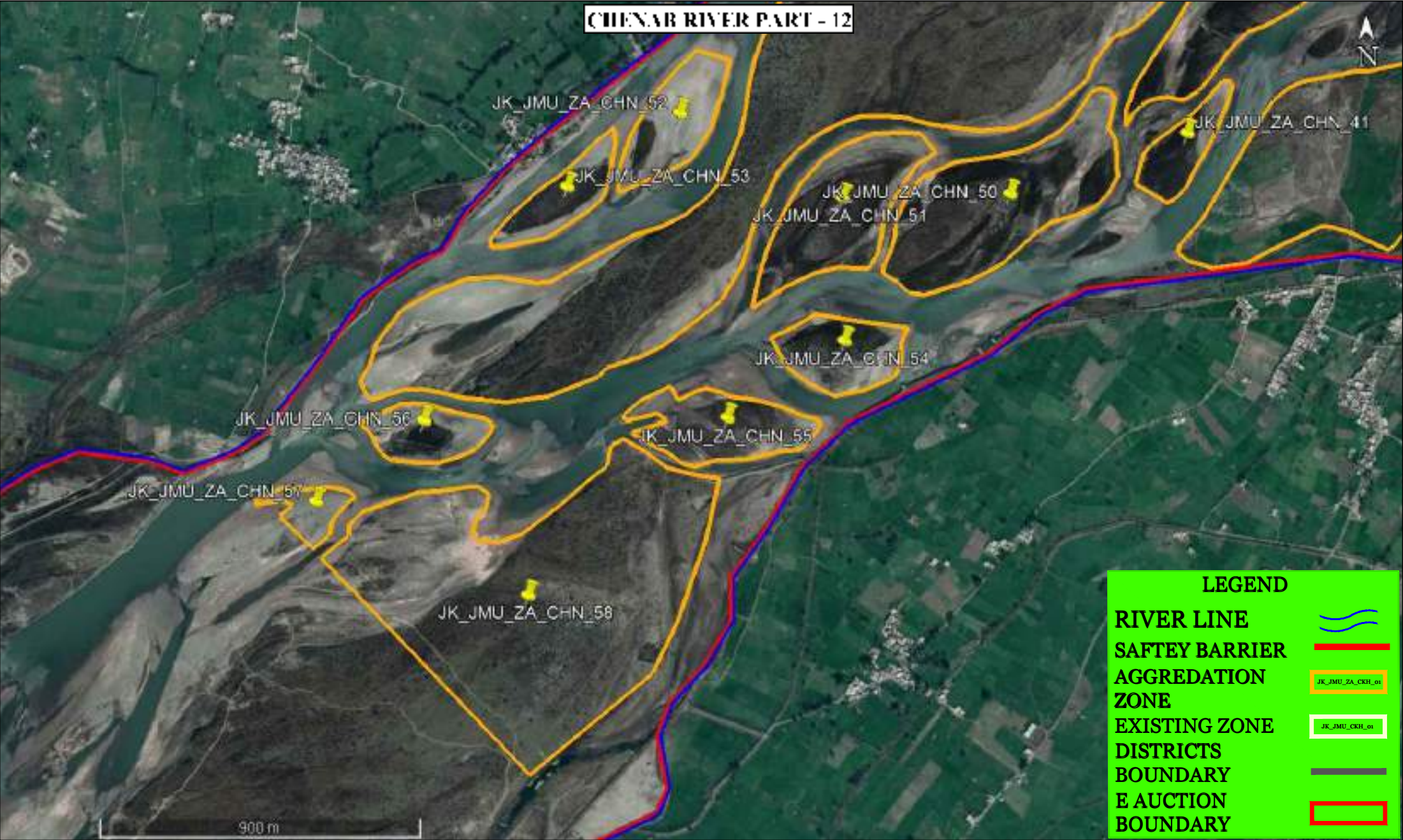
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 11



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 12



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

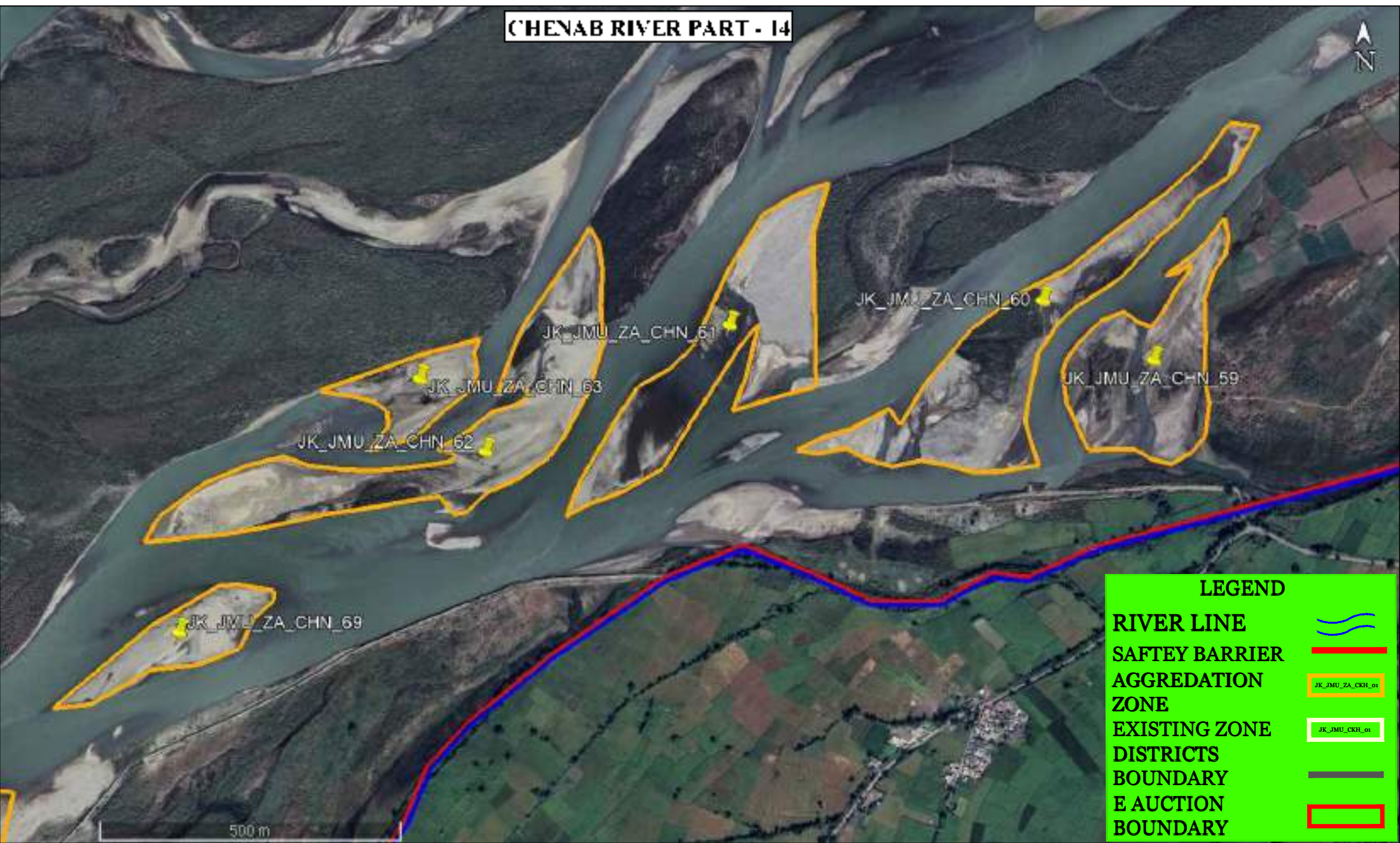
CHENAB RIVER PART - 13



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

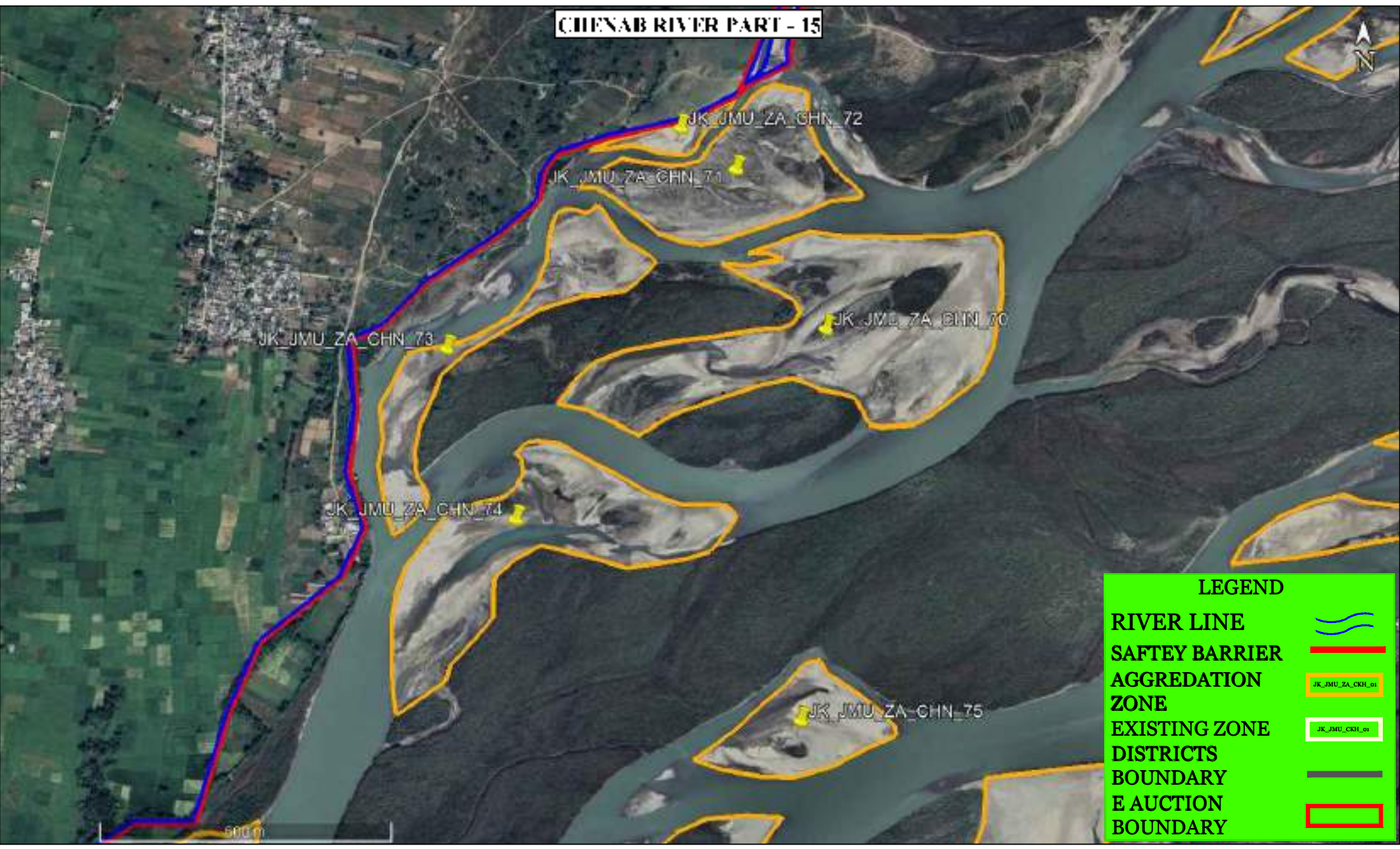
CHENAB RIVER PART - 14



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

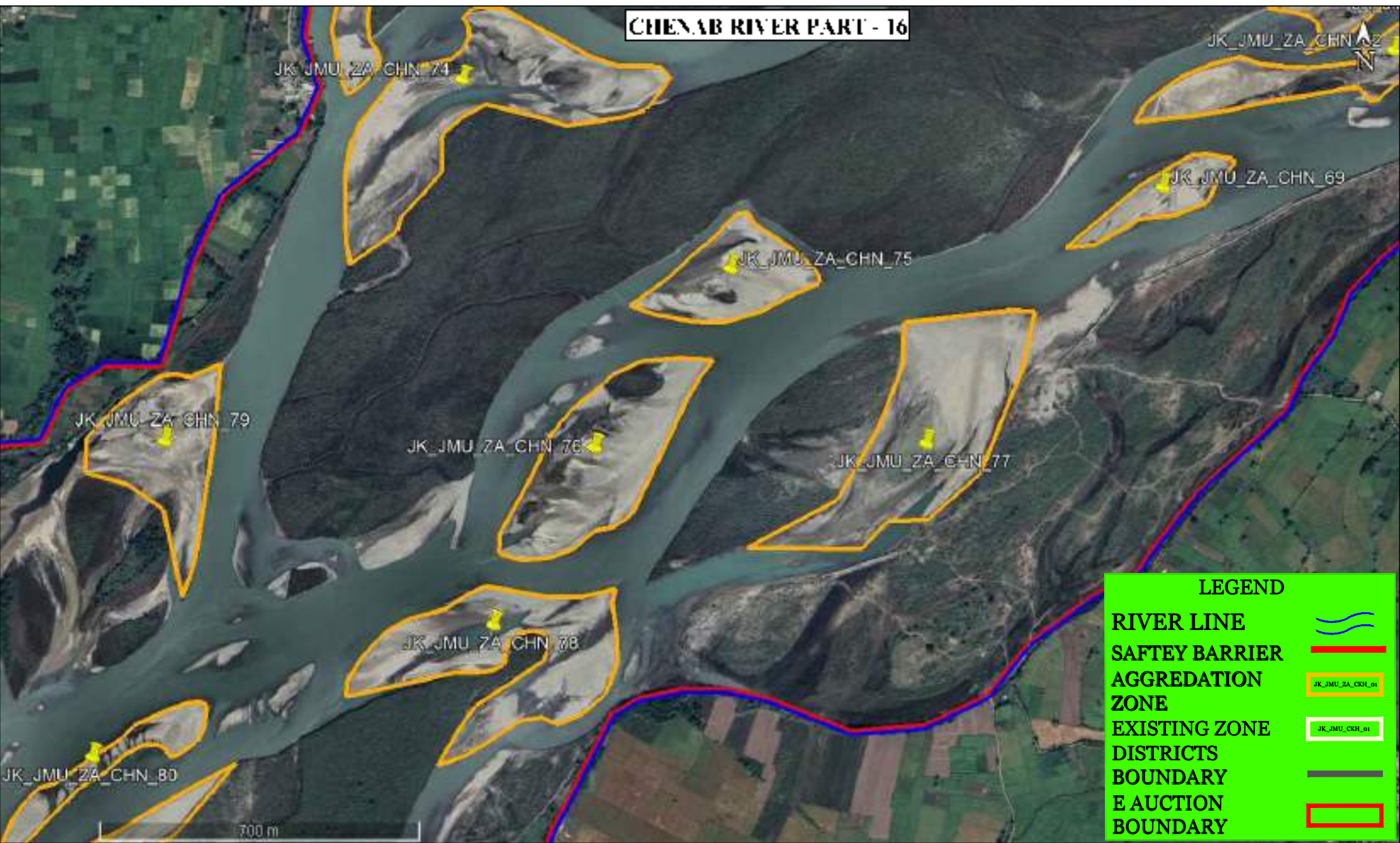
CHENAB RIVER PART - 15



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 16



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHENAB RIVER PART - 17

CHN_76

JK_JMU_ZA_CHN_77

JK_JMU_ZA_CHN_78

JK_JMU_ZA_CHN_80

JK_JMU_ZA_CHN_81

JK_JMU_ZA_CHN_82

JK_JMU_ZA_CHN_83

JK_JMU_ZA_CHN_84

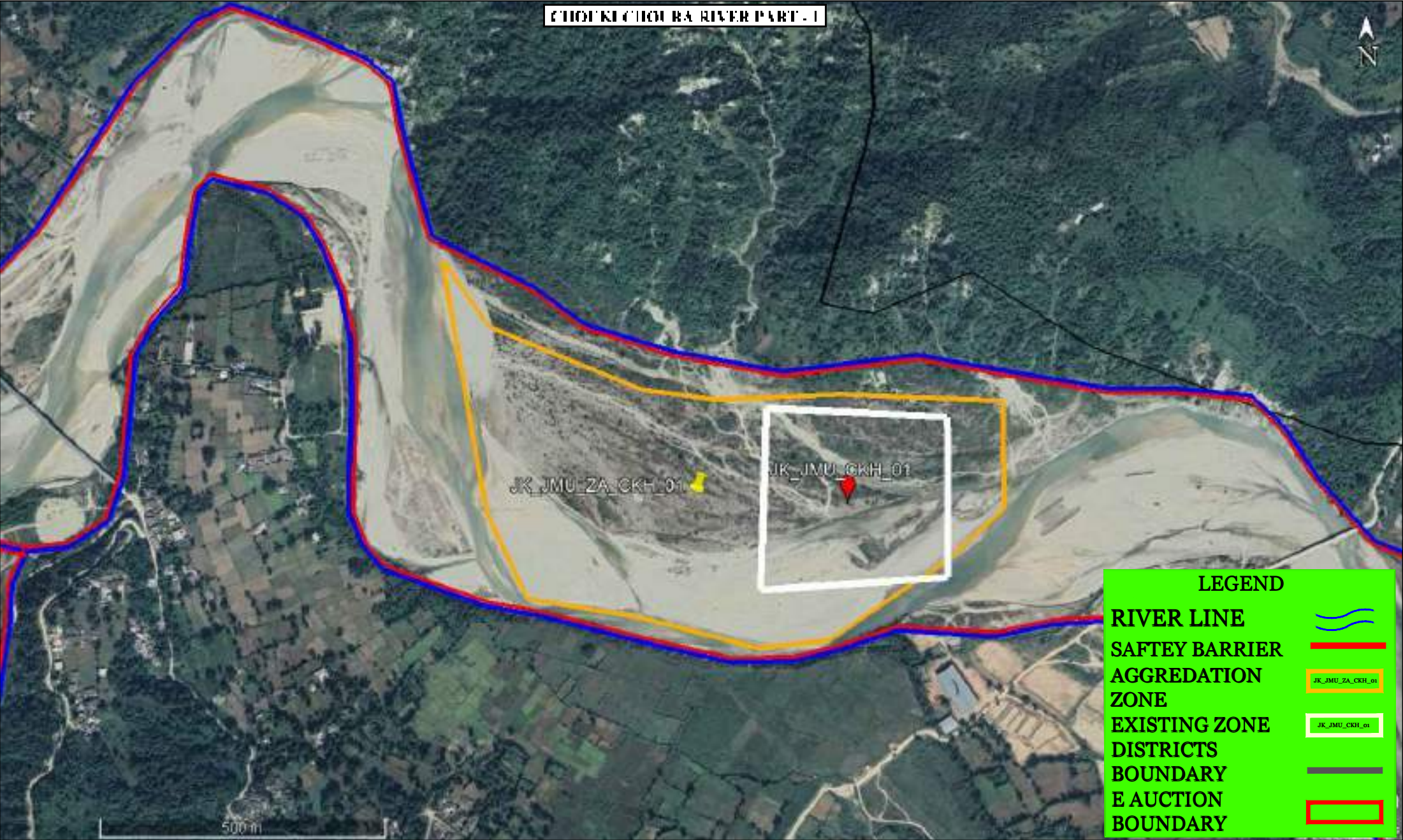
1 km



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

2101 KITCHI RA RIVER PART - I



JK_JMU_ZA_CKH_01

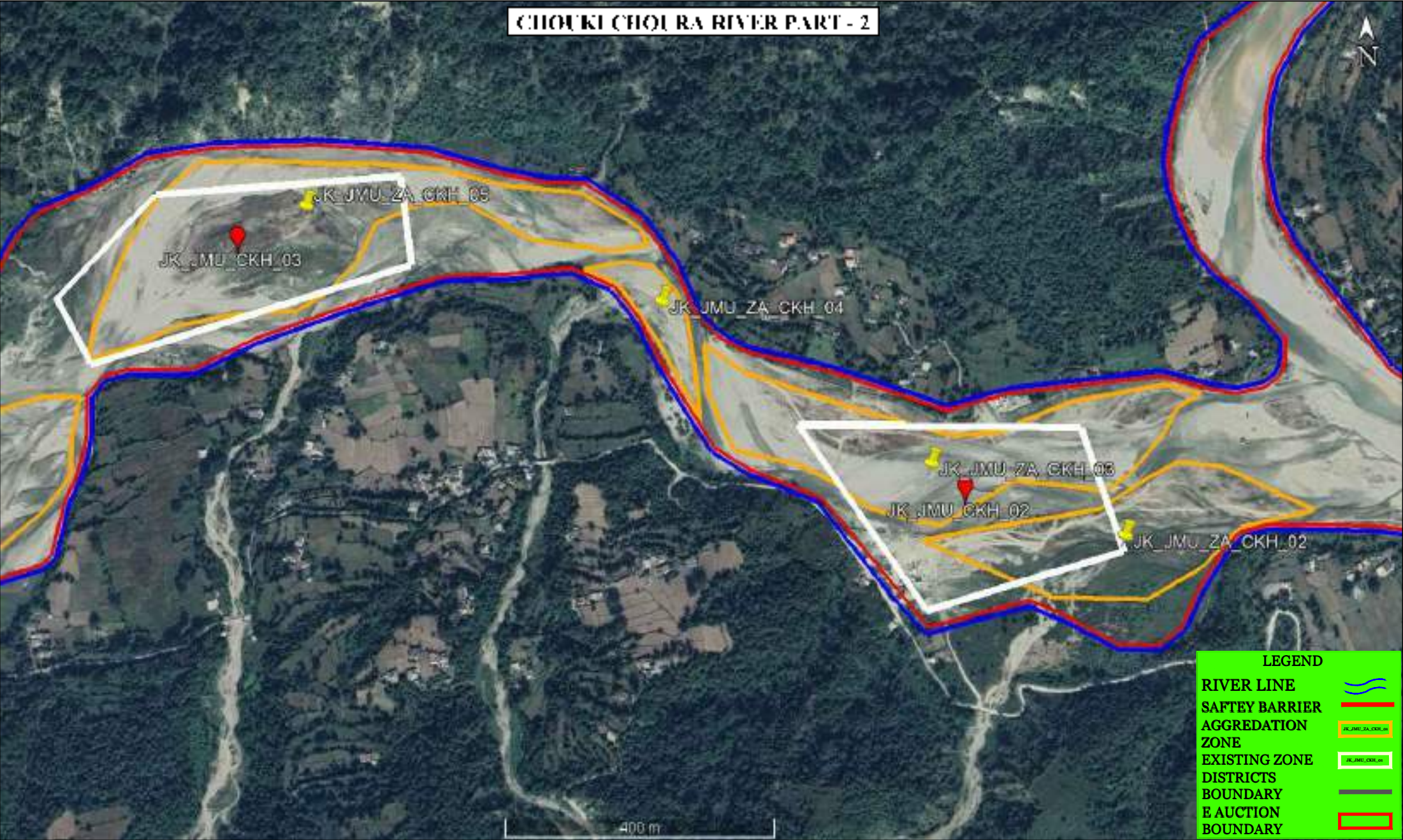
JK_JMU_CKH_01

500 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

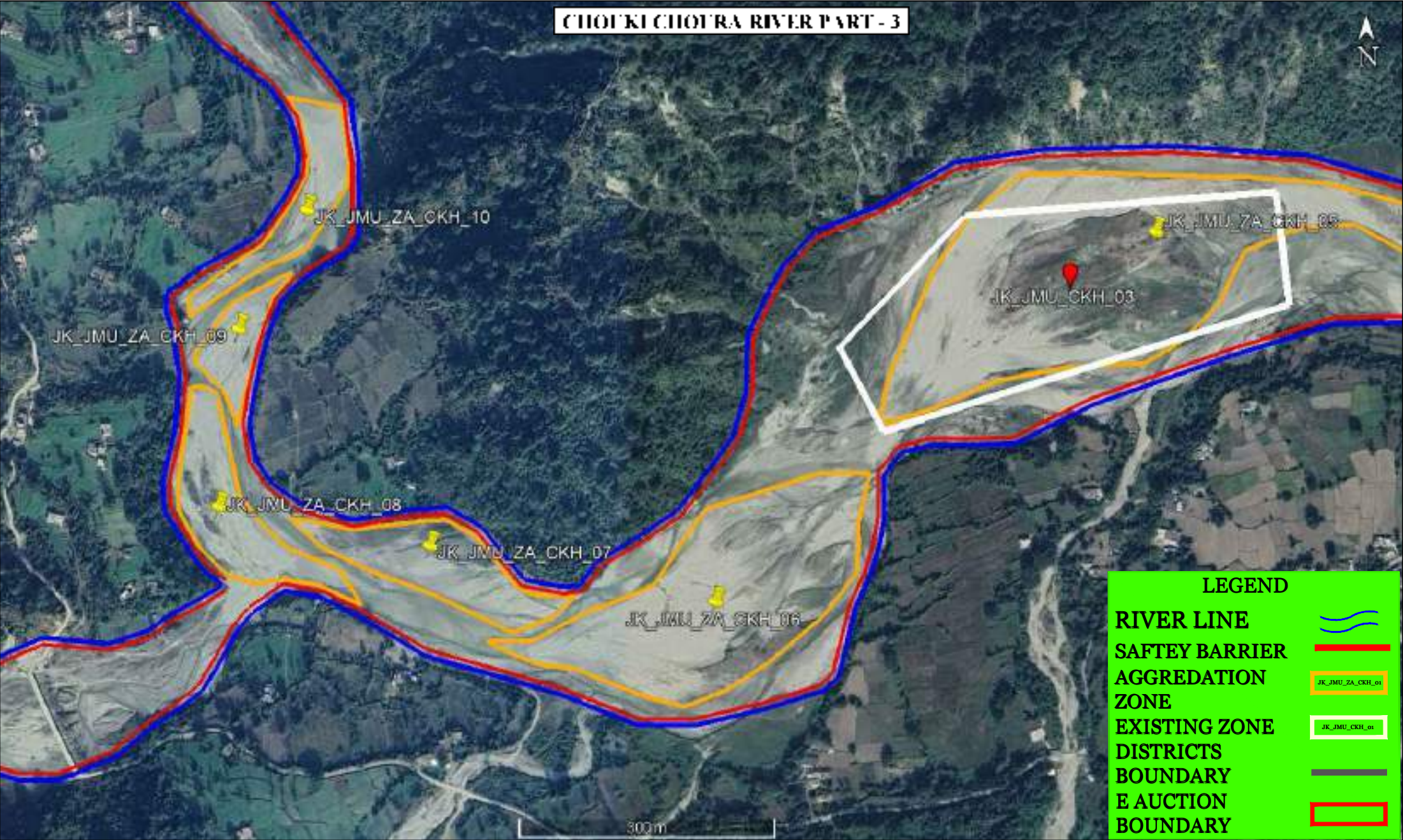
CHOUKI CHOU RA RIVER PART - 2



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHOIKI CHOTRA RIVER PART - 3

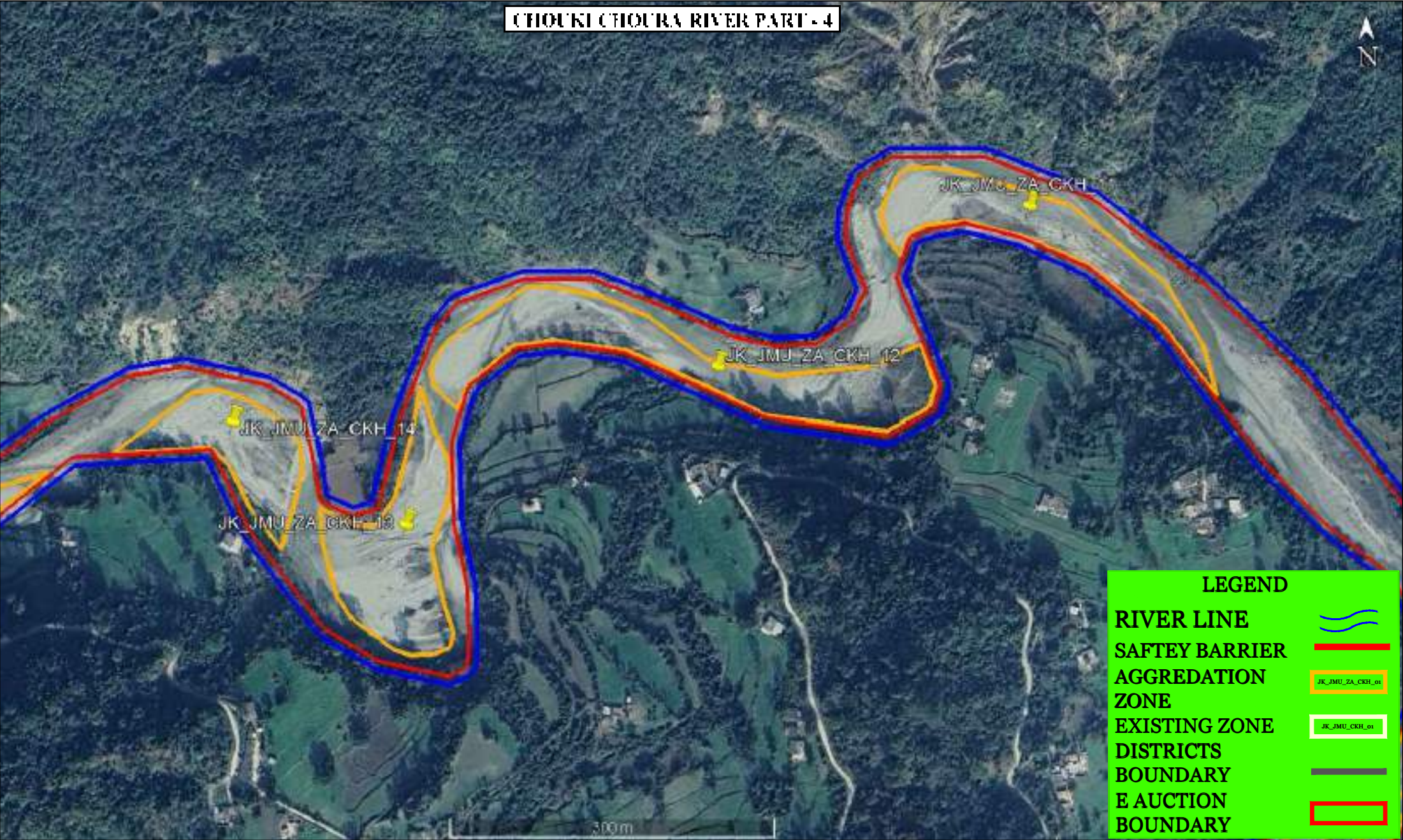


LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

300m

CHOUKI CHOURA RIVER PART - 4



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

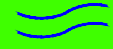
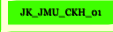


CHOU KI CHOU RA RIVER PART - 5



JK_JMU_ZA_CKH_14

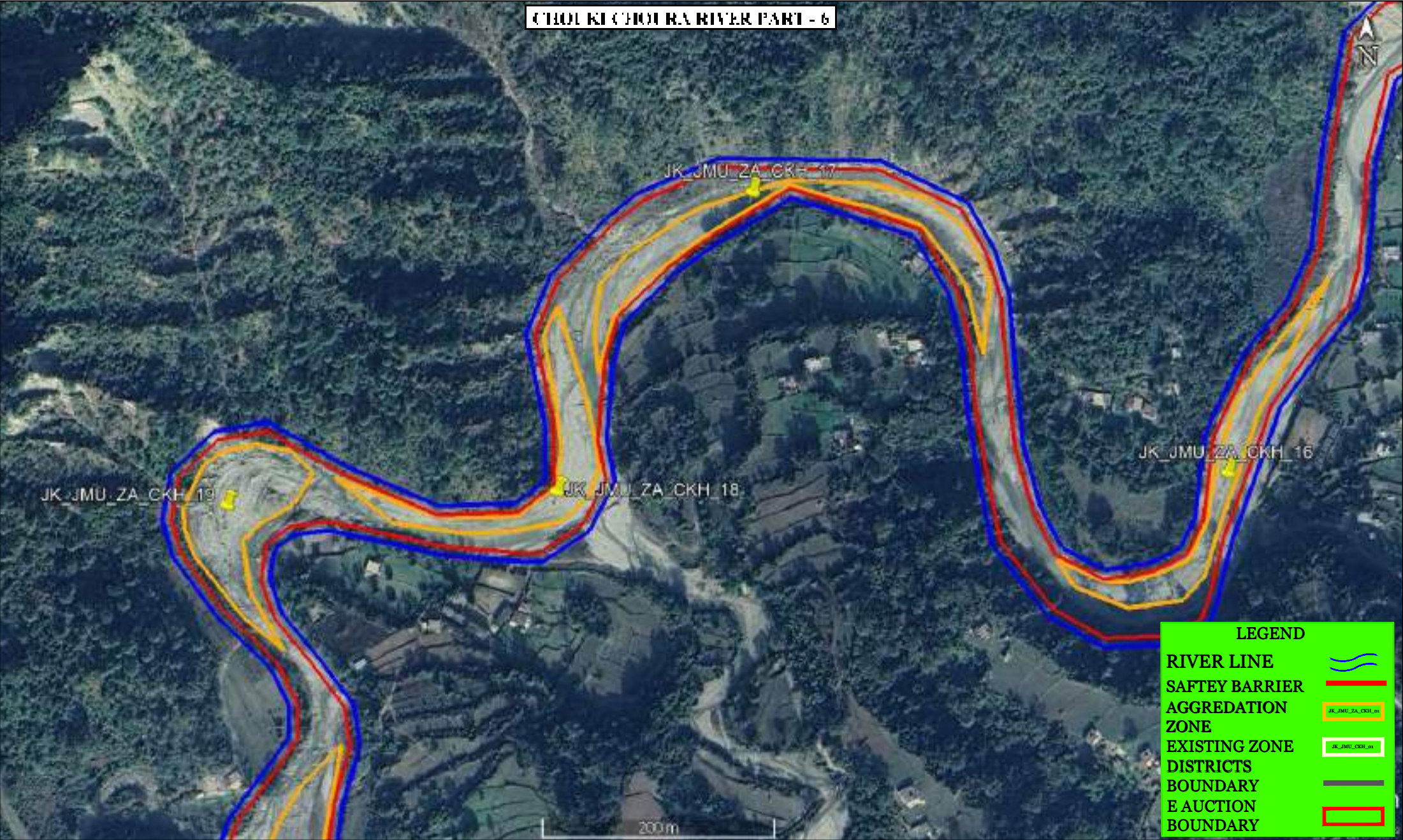
JK_JMU_ZA_CKH_15

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

100 m

CHOUKI CHOURA RIVER PART - 6



JK_JMU_ZA_CKH_19

JK_JMU_ZA_CKH_17

JK_JMU_ZA_CKH_16

JK_JMU_ZA_CKH_18

LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

200m

CONSTRUCTION BY RIVER PART - 7



JK JMU ZA CKH 22

JK JMU ZA CKH 20

JK JMU CKH 04

JK JMU ZA CKH 21

200 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHOIKI CHOURA RIVER PART - 8



JK JMU ZA CKH 22

JK JMU ZA CKH 23

200 m

LEGEND

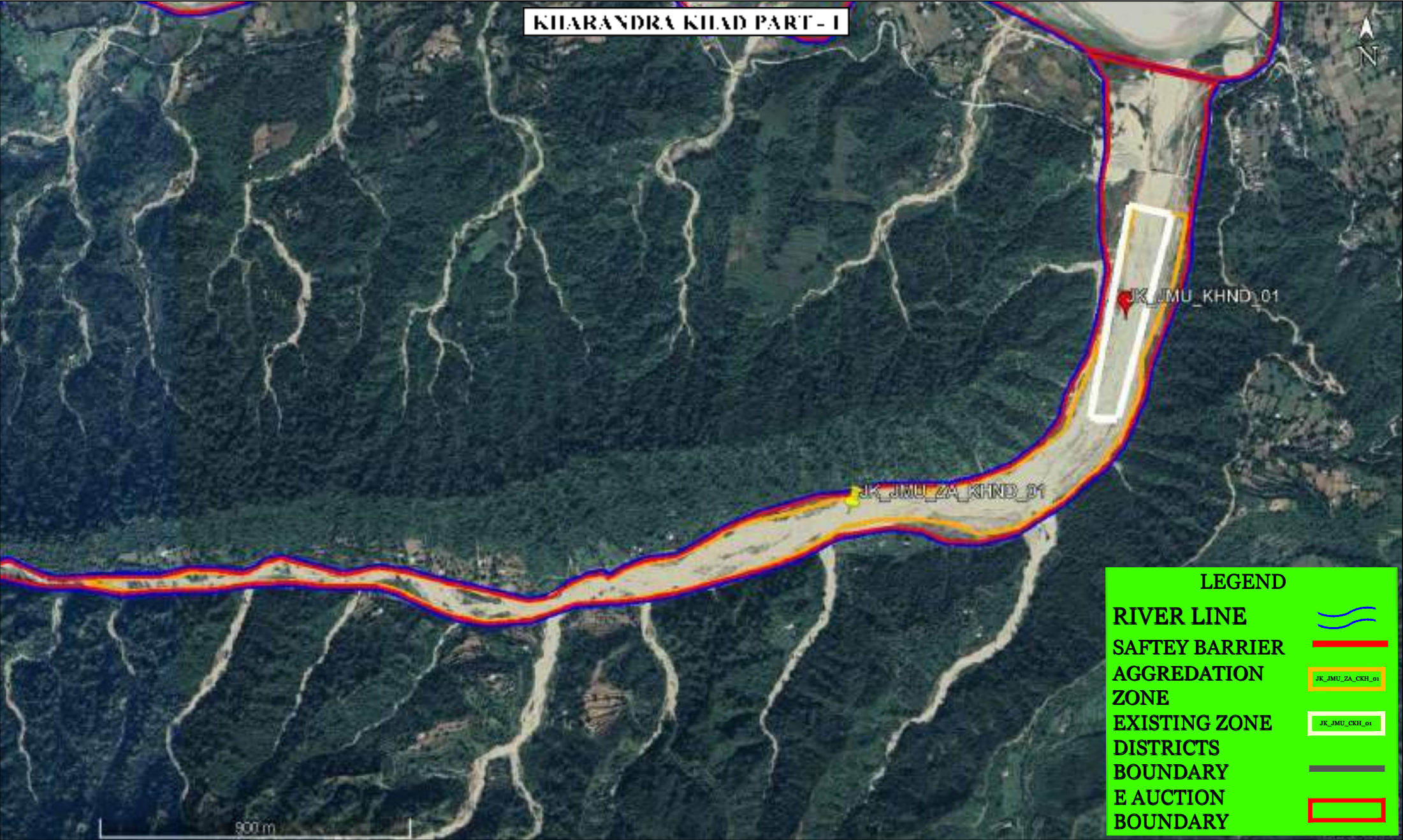
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHOUKI CHOURA RIVER PART - 9



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

KIARANDRA KIHAD PART - I



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

900 m

JAD KHAD PART - 1



JK_JMU_ZA_JD_01

LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

300 m

JAD KULAD PART - 2



JK_JMU_ZA_JD_02

JK_JMU_JD_01

LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

400 m

JAD KHAD PART - 3



JK_JMU_ID_02

JK_JMU_ZA_ID_03

JK_JMU_ID_03

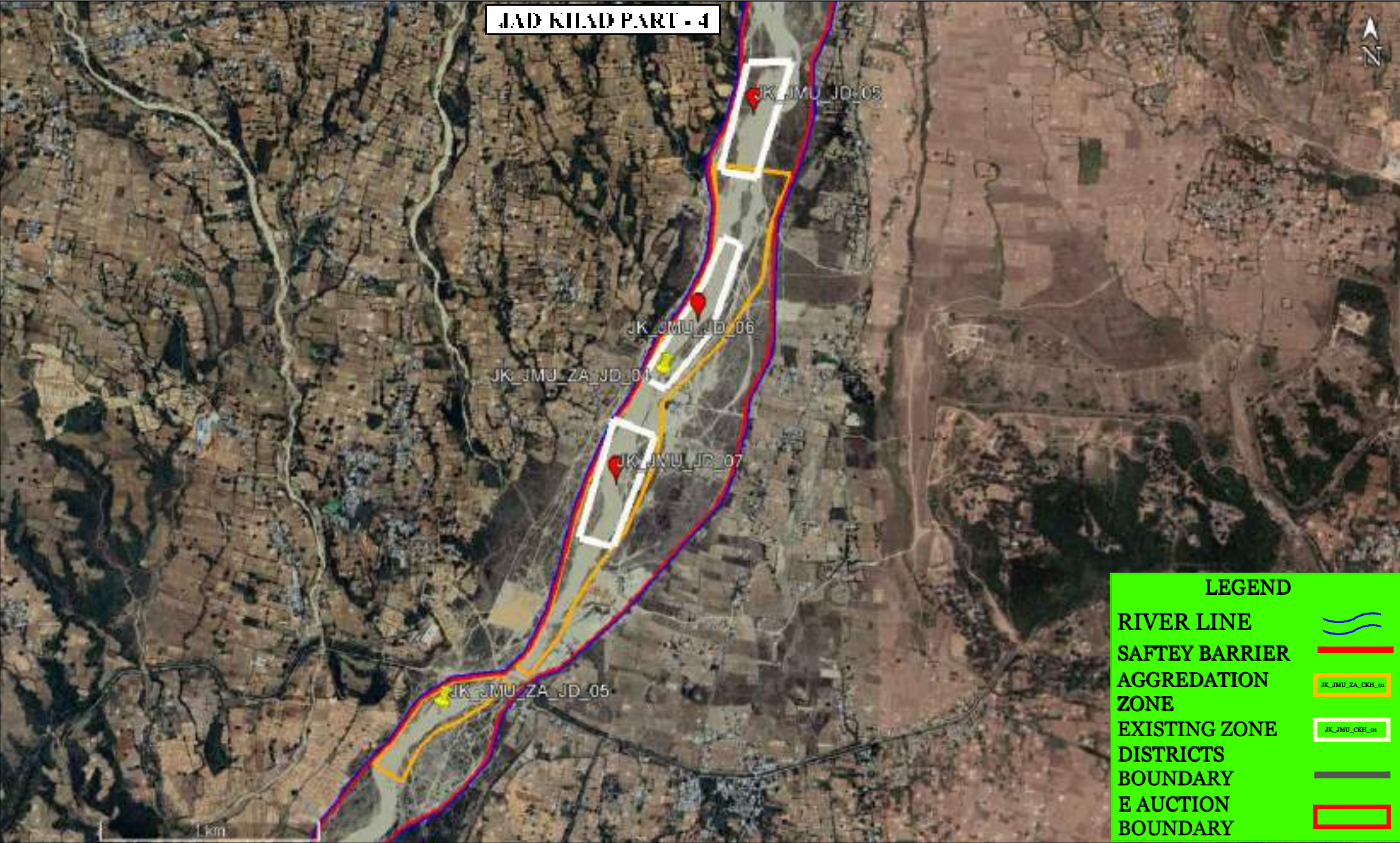
JK_JMU_ID_04

900 m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

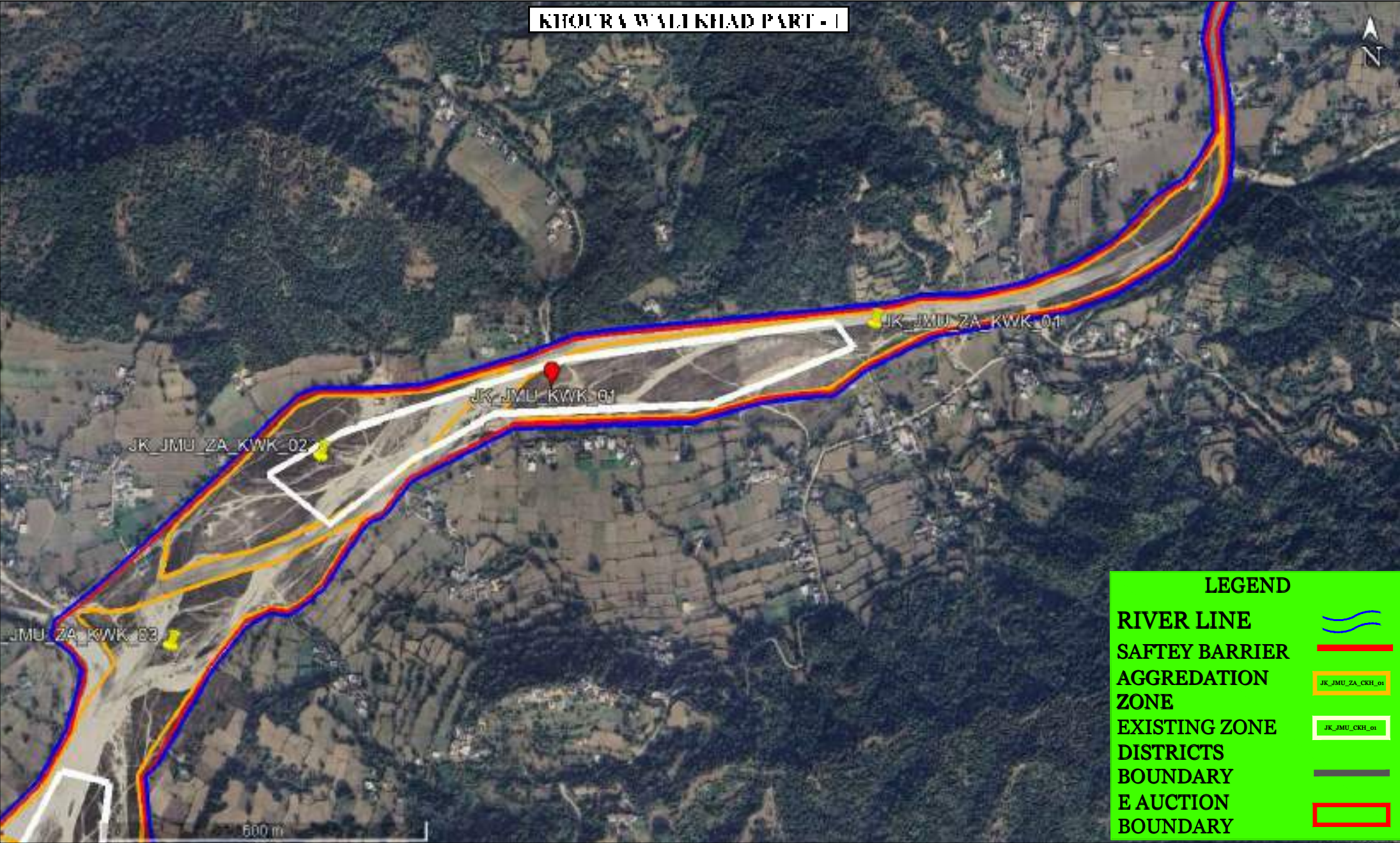
JAD KILAD PART - 4



LEGEND

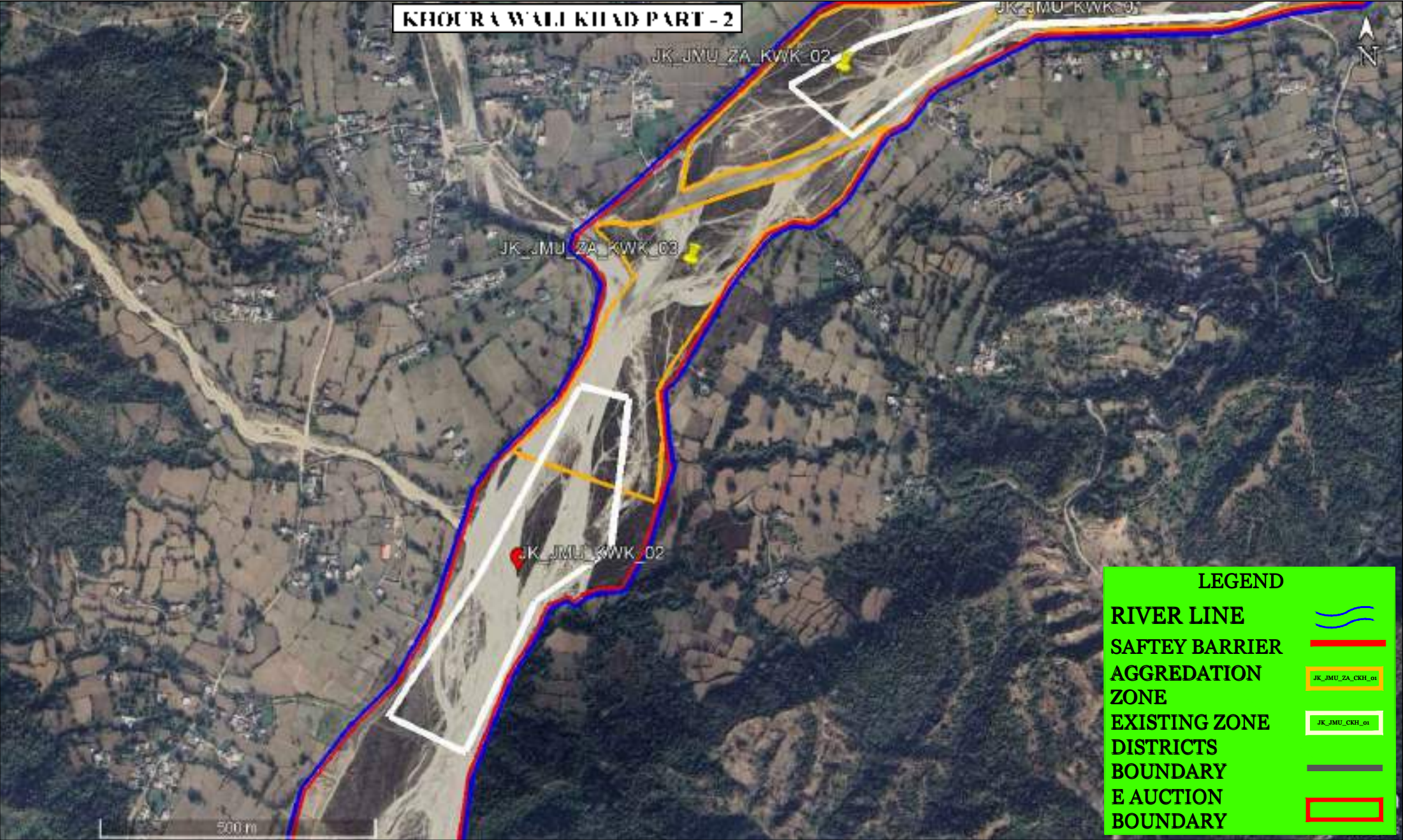
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

KHOURA WALKHAD PART - 1



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

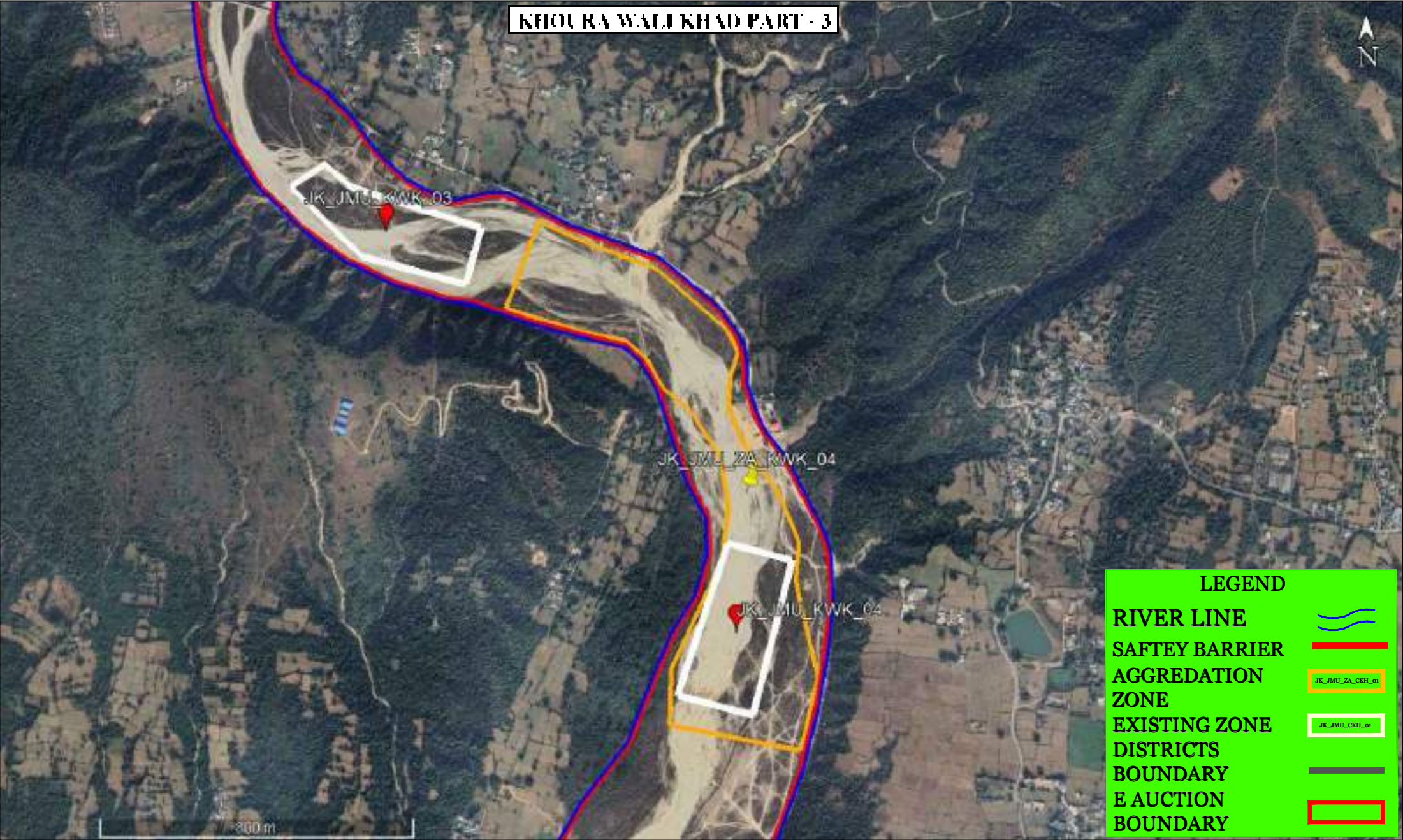
KHOURA WALI KHAD PART - 2



LEGEND

RIVER LINE	
SAFTEY BARRIER	
AGGREDATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

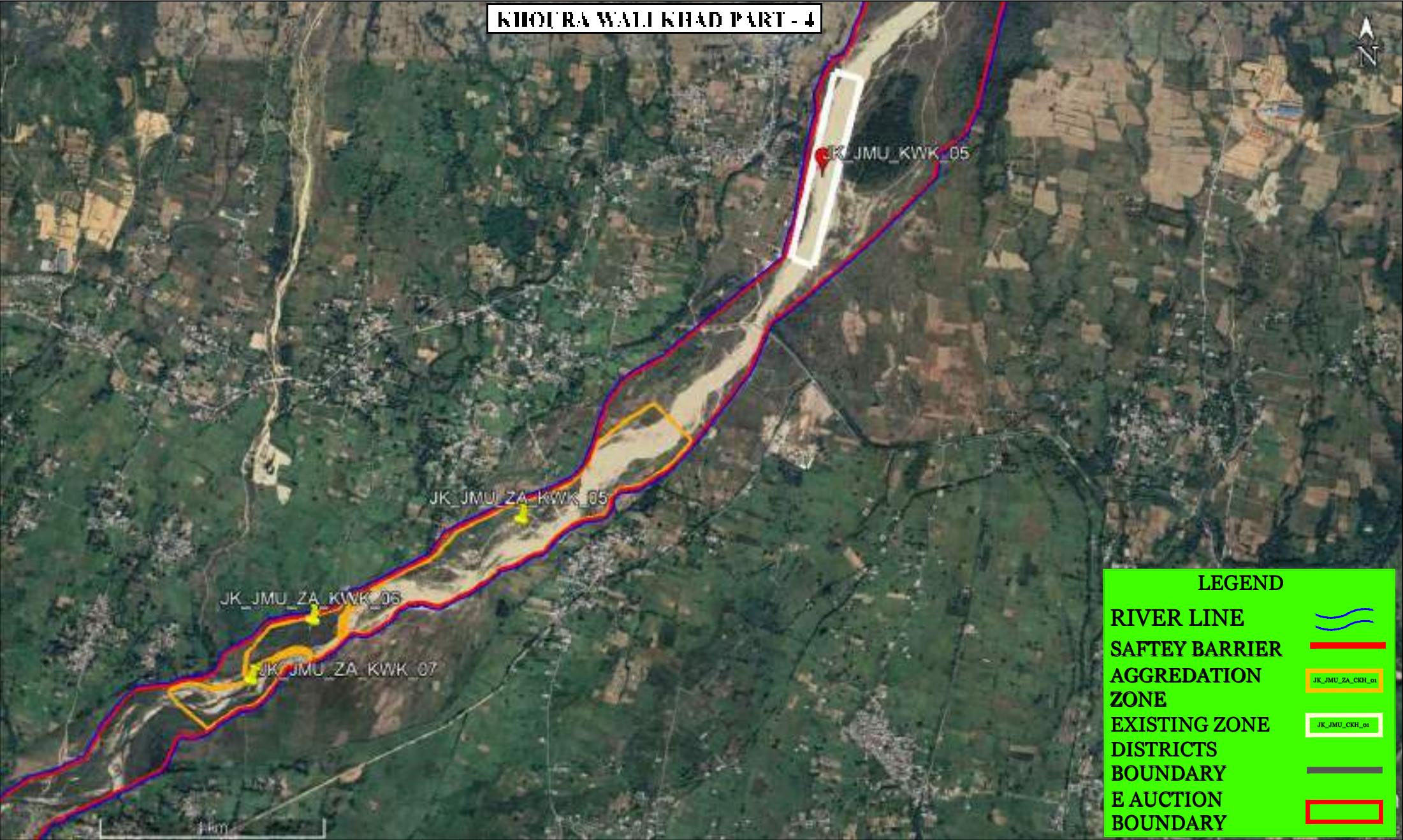
KHOURA WADI KHAD PART - 3



LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

KHOURA WADI KHAD PART - 4



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHIBBE WALL ROAD PART - I



JK_JMU_ZA_CW_01

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

500 m

JK_JMU_ZA_CW_02
Google Earth
Image © 2024 Microsoft Corporation

CHIBBE WALI KHAD PART - 2



JK_JMU_ZA_CW_02

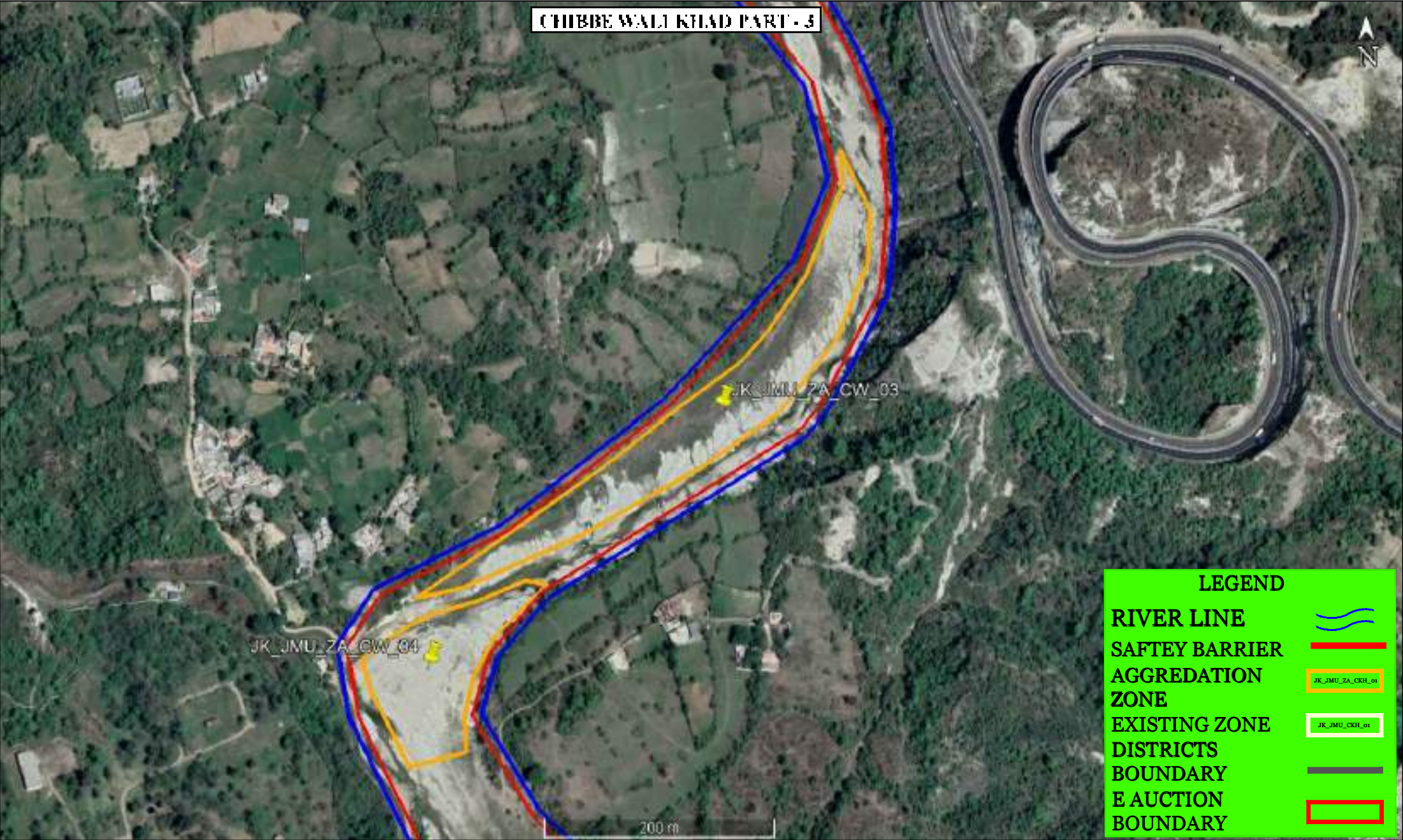
JK_JMU_EW_01

400m

LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

CHIBBE WALI KHALD PART - 3



LEGEND	
RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

200 m

CHIBBE WALI HEAD PART - 4



JK_JMU_ZA_CW_05

JK_JMU_ZA_CW_06

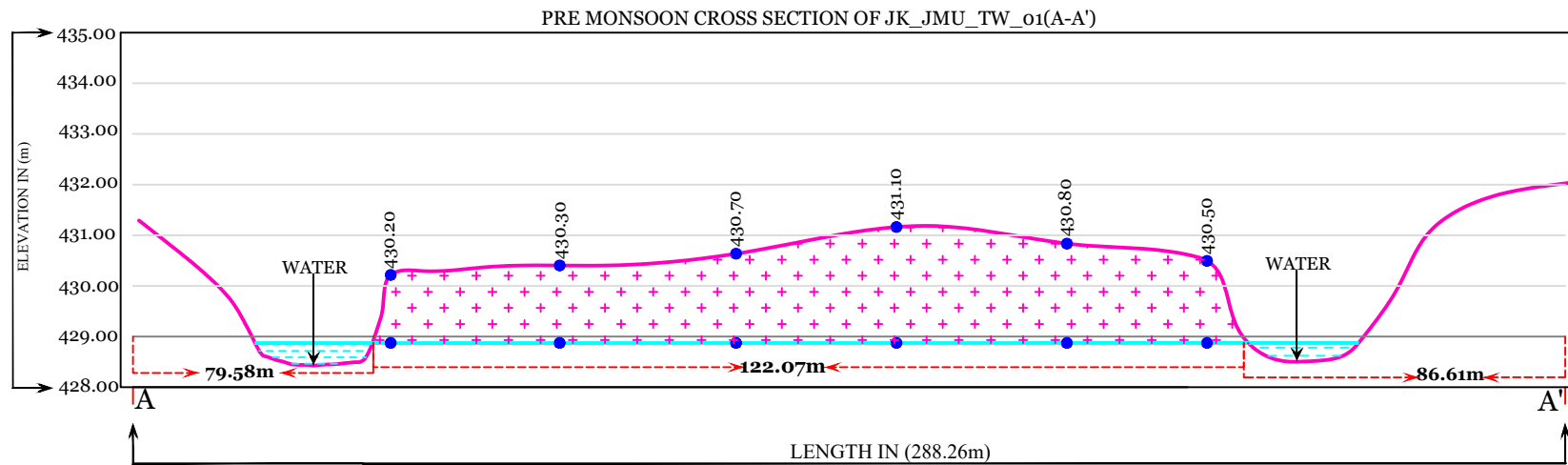
LEGEND

RIVER LINE	
SAFETY BARRIER	
AGGREGATION ZONE	
EXISTING ZONE	
DISTRICTS BOUNDARY	
E AUCTION BOUNDARY	

400 m

ANNEXURE-IX

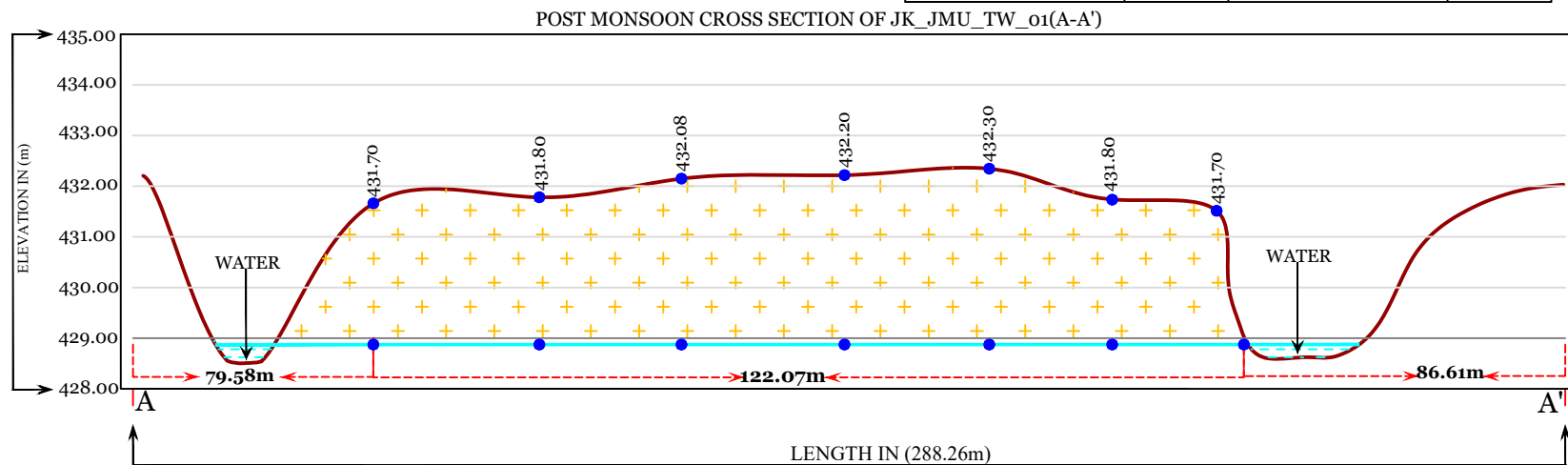
CROSS-SECTION AND L SECTION OF FINAL PROPOSED ZONES



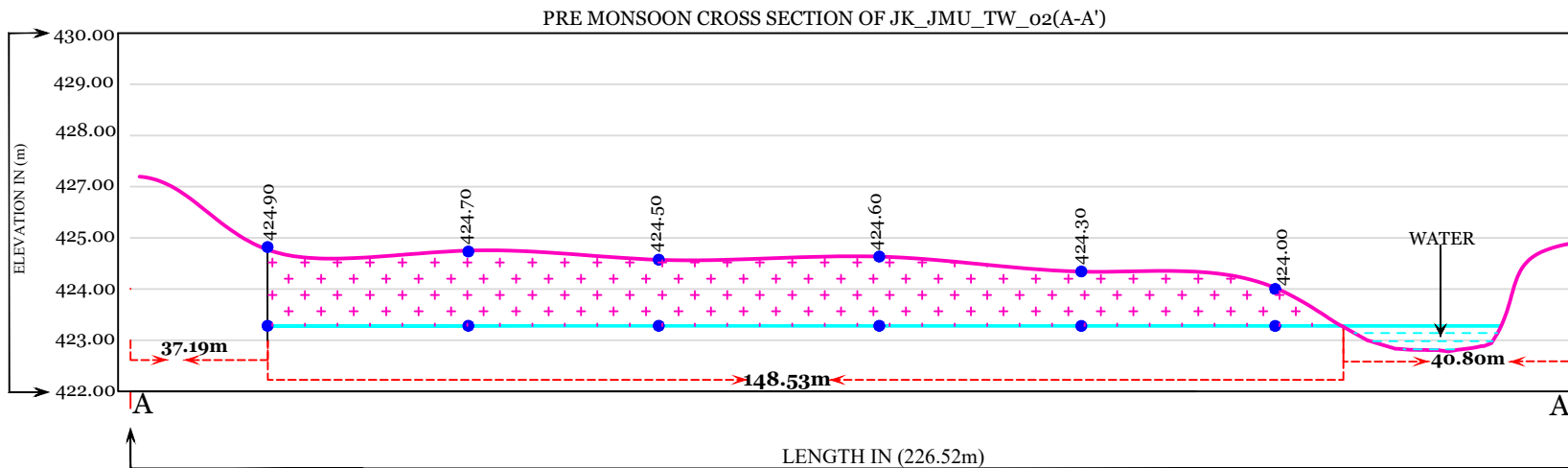
Ave Depth = $(1.3+1.4+1.8+2.2+1.9+1.6/6) = 1.7(M)$
 VOLUME = $50900 \times 1.7 = 86530(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



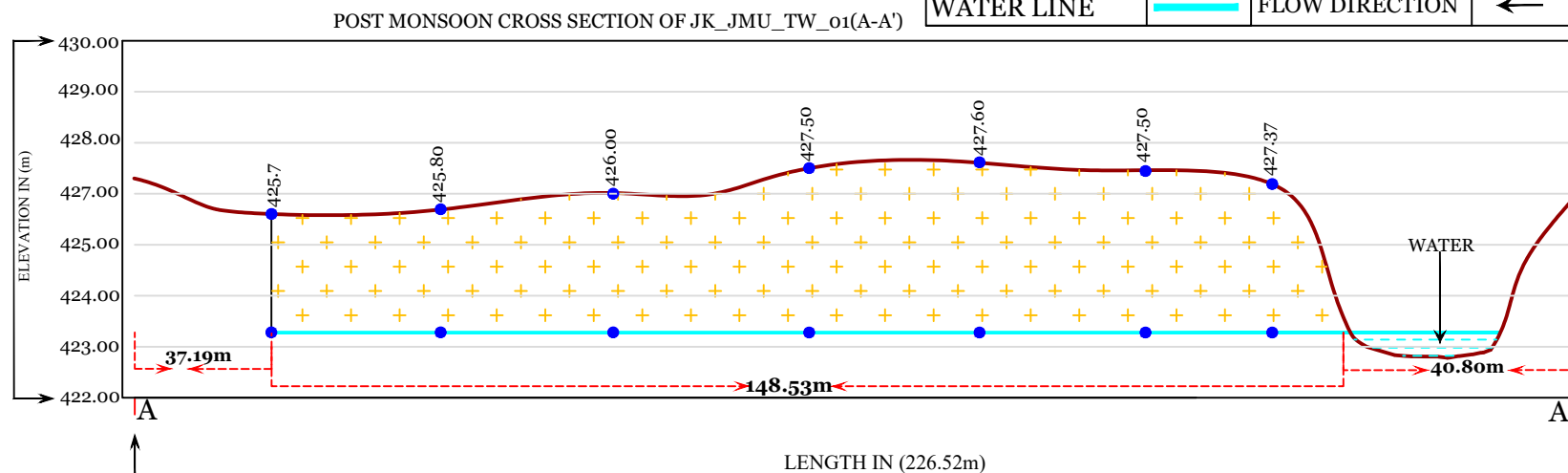
Ave Depth = $(2.8+2.9+3.18+3.3+3.4+2.9+2.8/7) = 3.04(M)$
 VOLUME = $50900 \times 3.04 = 154736(CUM)$



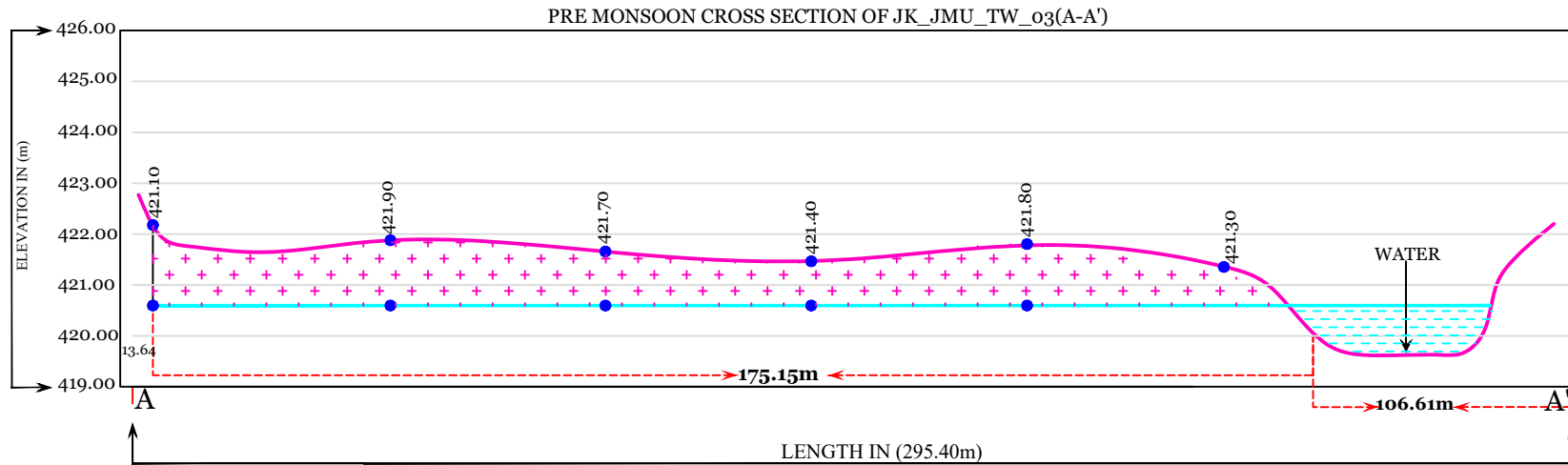
Ave Depth = $(1.7+1.5+1.3+1.4+1.1+.8/6)= 1.3(M)$
 VOLUME = $92000 \times 1.3 = 119600(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



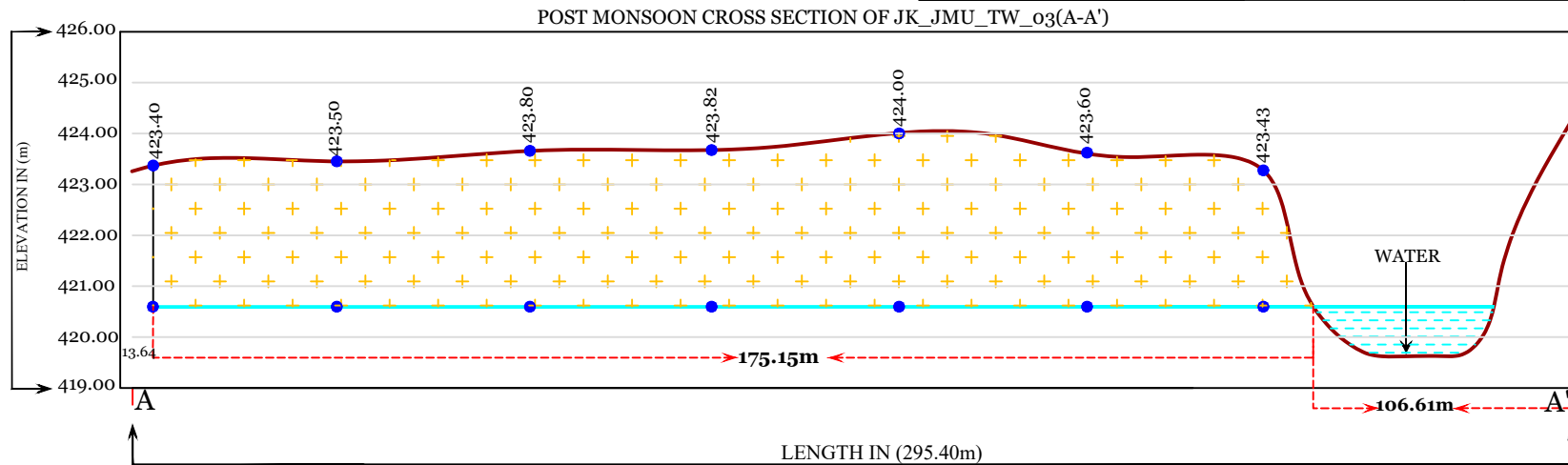
Ave Depth = $(2.5+2.6+2.8+3.3+3.4+3.3+3.17/7)= 3.01(M)$
 VOLUME = $92000 \times 3.01 = 276920(CUM)$



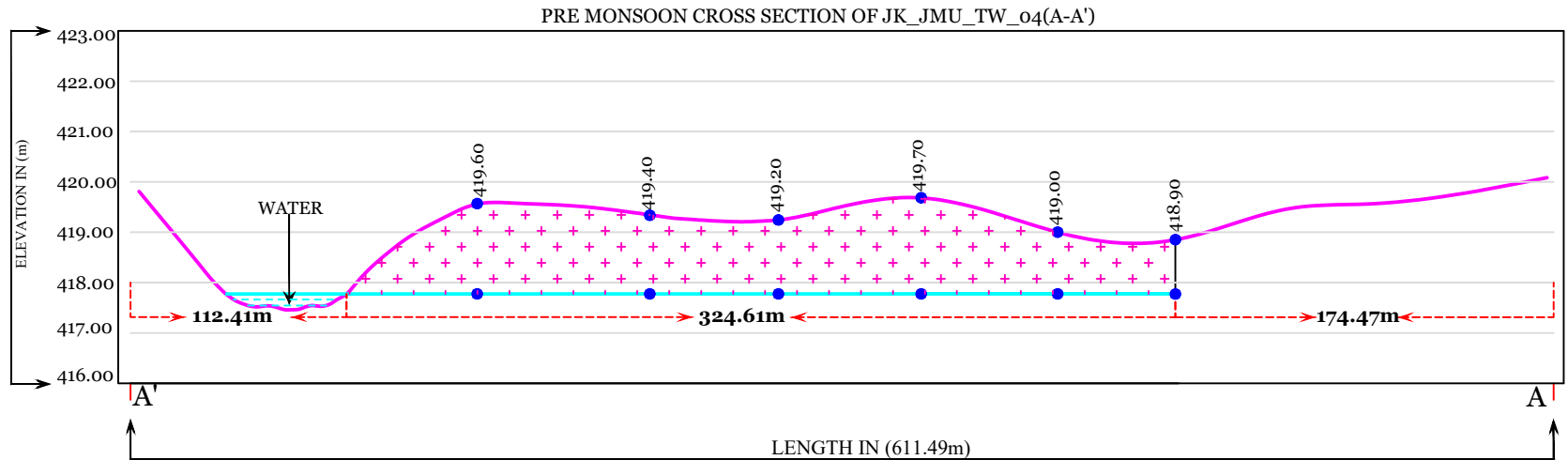
Ave Depth = $(1.5+1.3+1.1+0.8+1.2+0.7/6) = 1.1(\text{M})$
 VOLUME = $69000 \times 1.1 = 75900(\text{CUM})$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

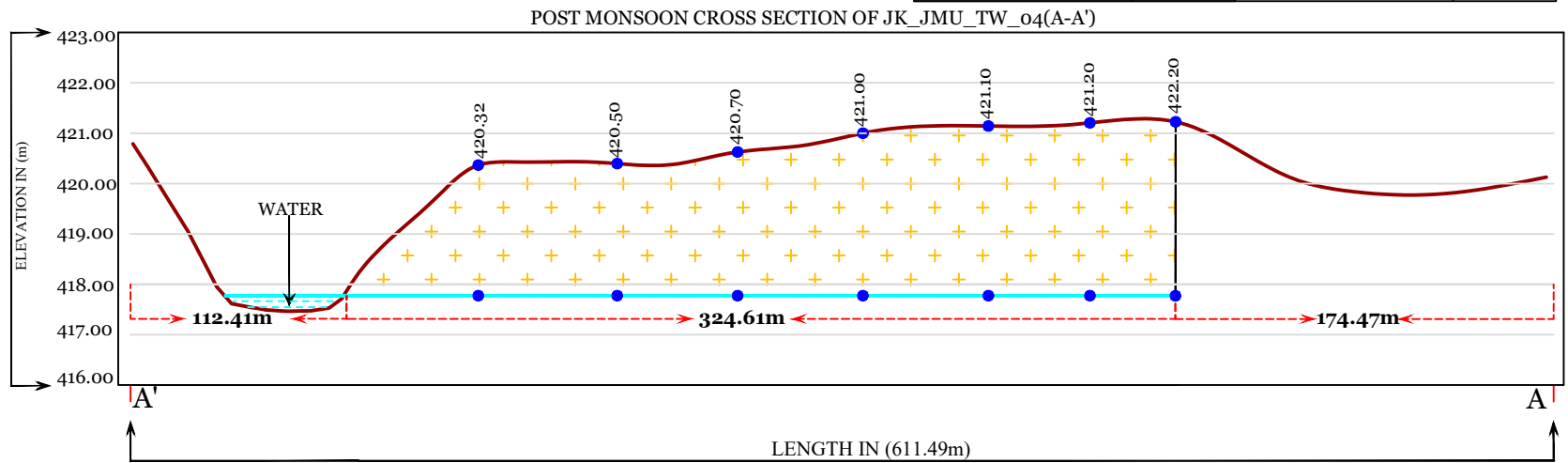


Ave Depth = $(2.8+2.9+3.2+3.22+3.4+3+2.83/7) = 3.05(\text{M})$
 VOLUME = $69000 \times 3.05 = 210450(\text{CUM})$

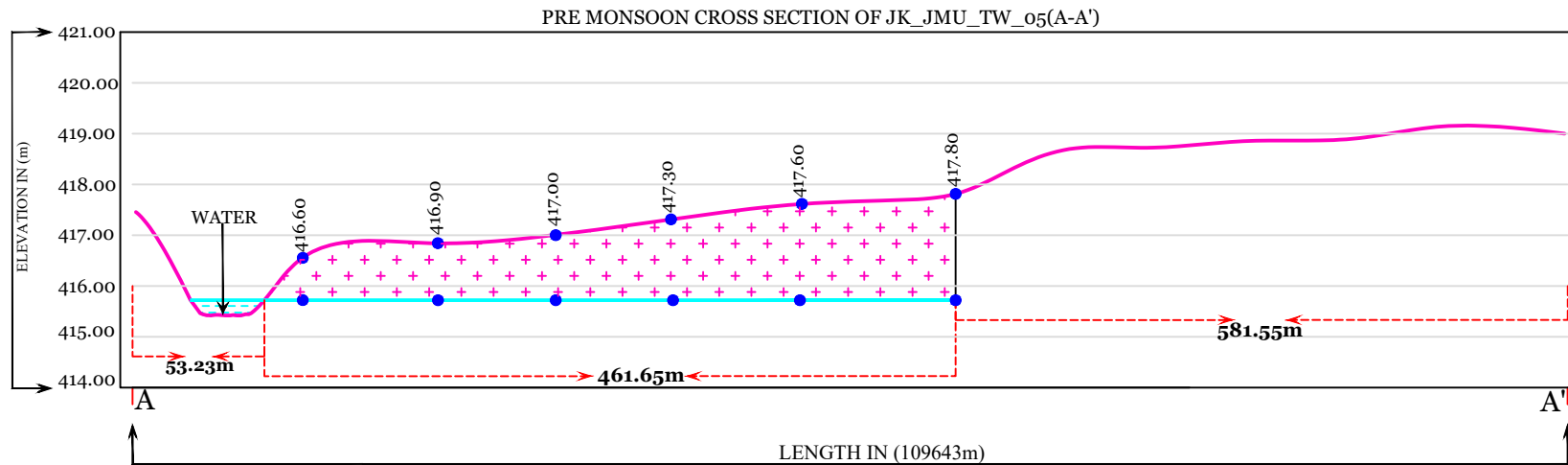


Ave Depth = $(1.8+1.6+1.4+1.9+1.2+1.1/6) = 1.5(M)$
 VOLUME = $98000 \times 1.5 = 147000(CUM)$

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



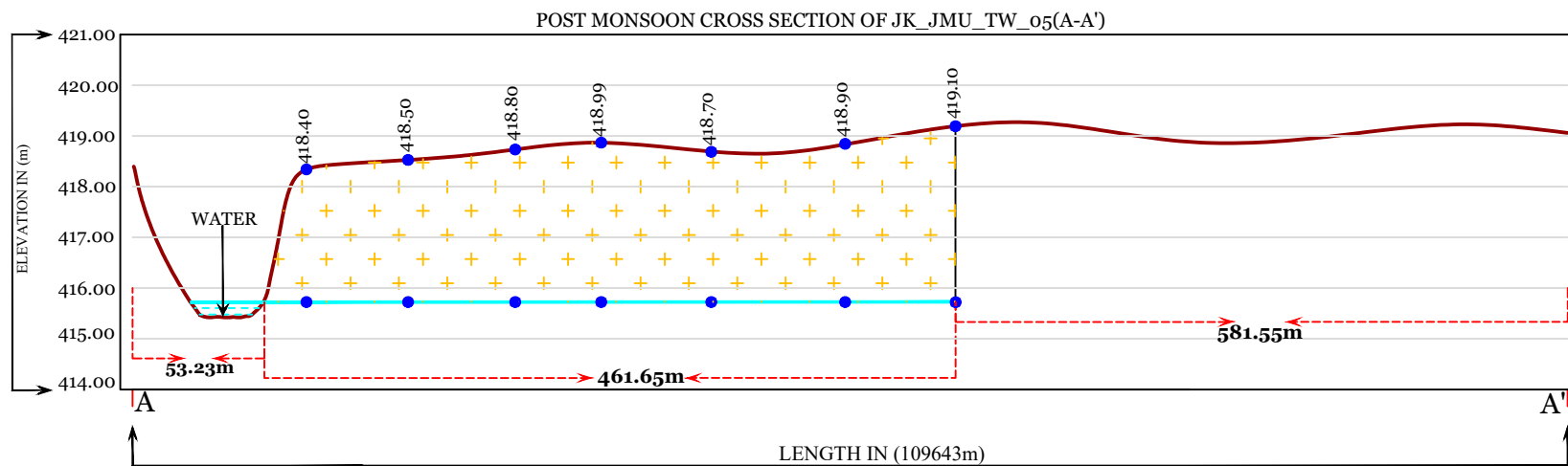
Ave Depth = $(2.52+2.7+2.9+3.2+3.3+3.4+3.4/7) = 3.06(M)$
 VOLUME = $98000 \times 3.06 = 299880(CUM)$



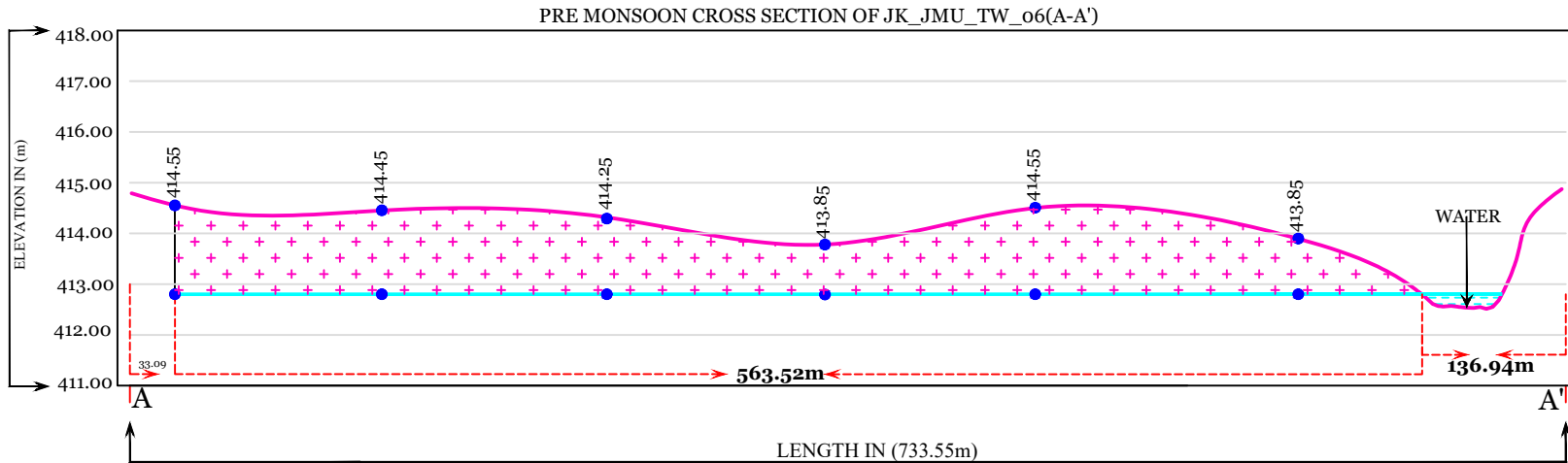
Ave Depth = $(0.9+1.2+1.3+1.6+1.9+2.1/6) = 1.5(M)$
 VOLUME = $99000 \times 1.5 = 148500(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



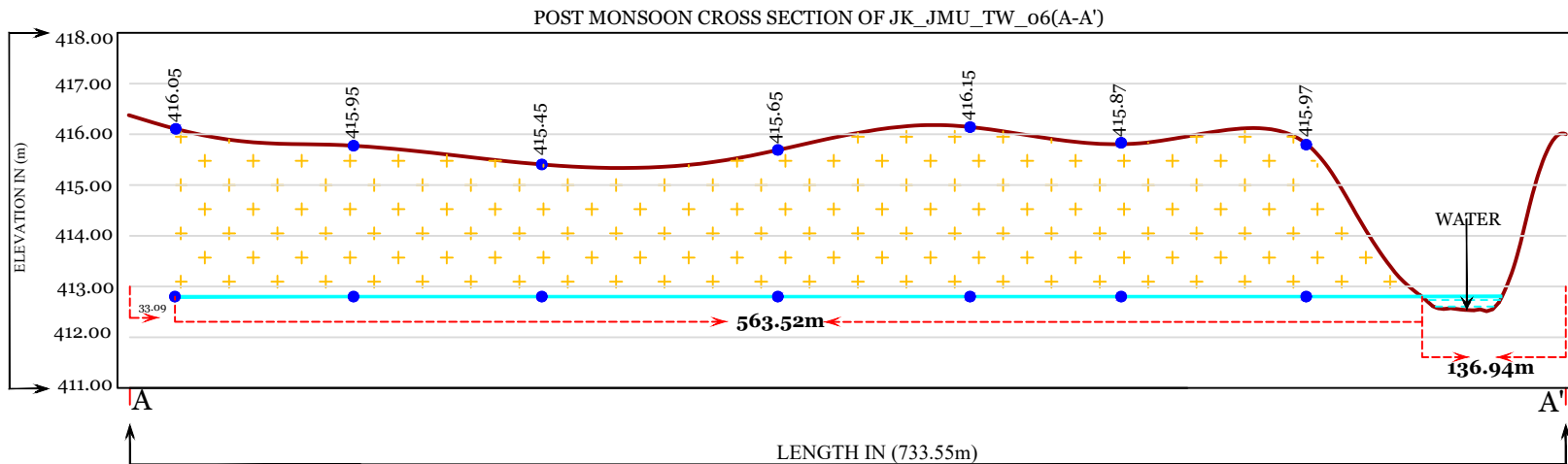
Ave Depth = $(2.7+2.8+3.1+3.29+3+3.2+3.4/7) = 3.07(M)$
 VOLUME = $99000 \times 3.07 = 303930(CUM)$



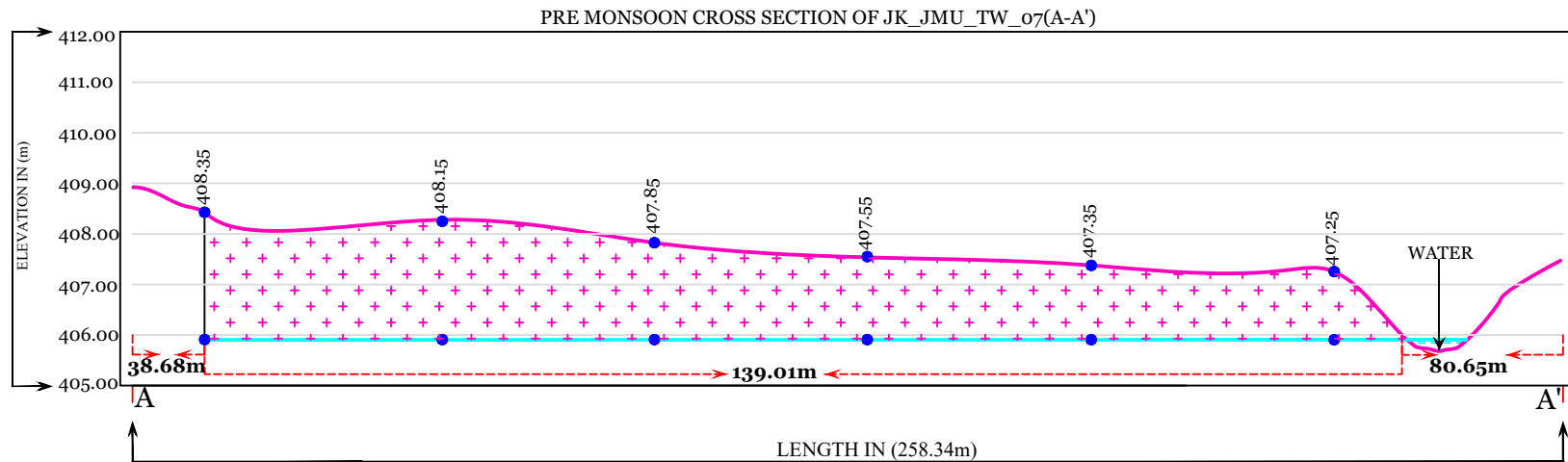
LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

Ave Depth = $(1.7+1.6+1.4+1+1.7+1/6) = 1.4(M)$
 VOLUME = $77000 \times 1.4 = 107800(CUM)$



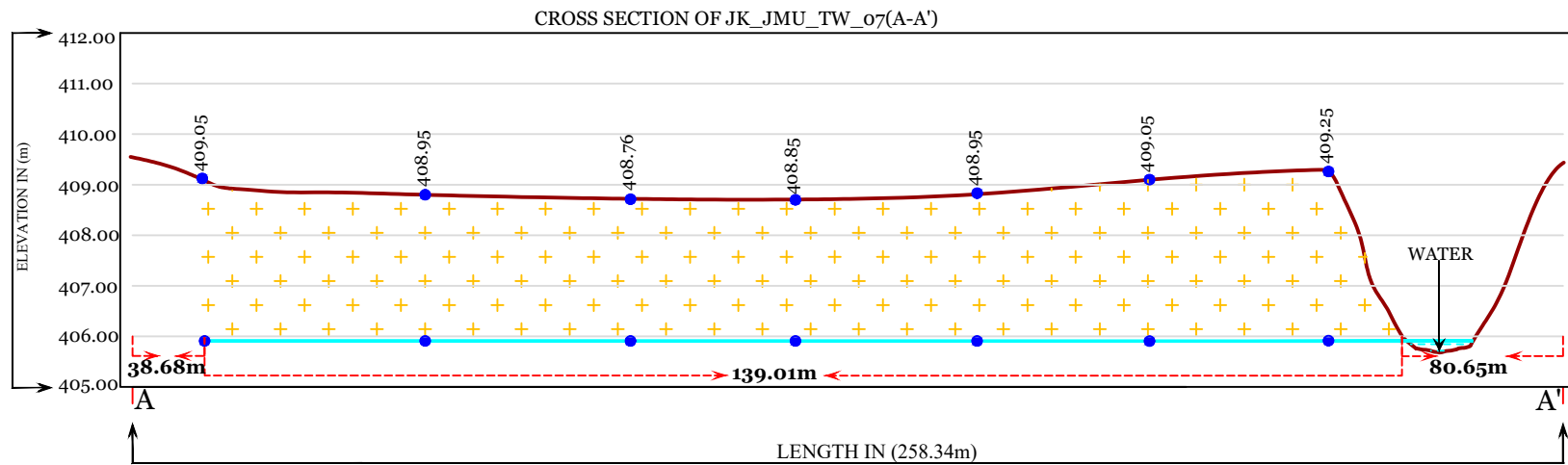
Ave Depth = $(3.2+3.1+2.6+2.8+3.3+3.02+3.12/7) = 3.02(M)$
 VOLUME = $77000 \times 3.02 = 232540(CUM)$



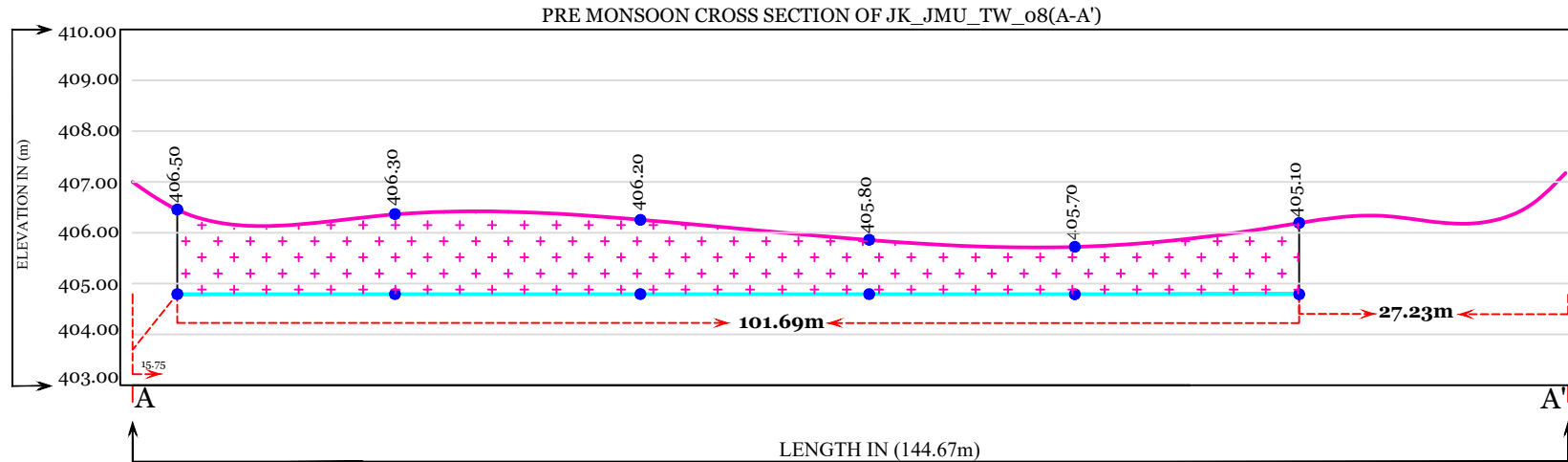
Ave Depth = $(2.4+2.2+1.9+1.6+1.4+1.3/6) = 1.8(M)$
 VOLUME = $64000 \times 1.8 = 115200(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



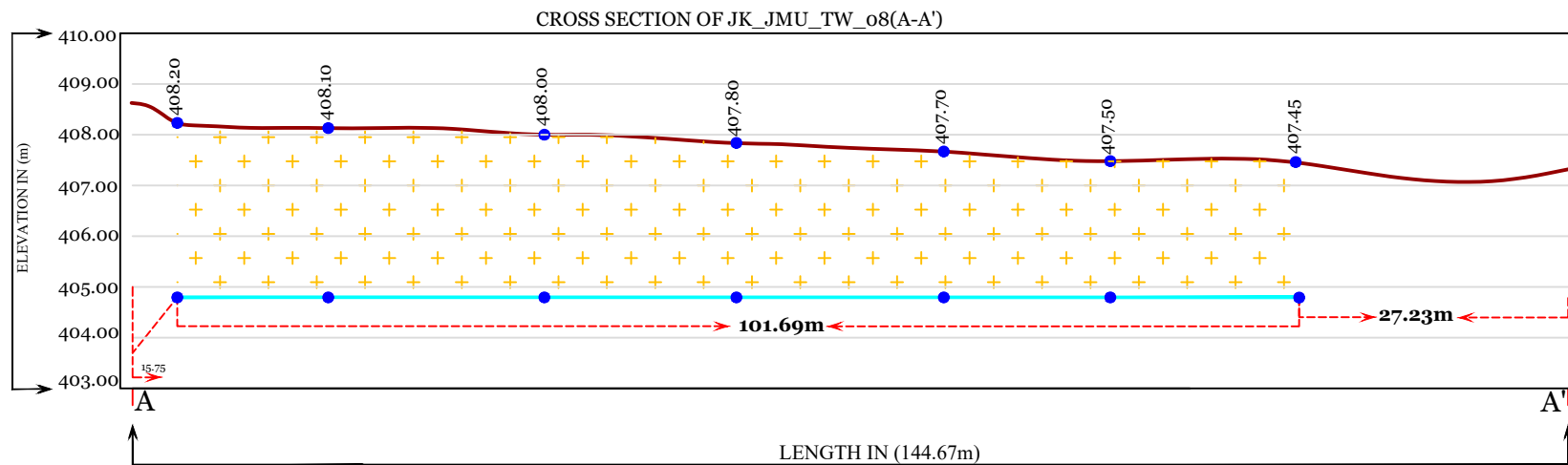
Ave Depth = $(3.1+3+2.81+2.9+3+3.1+3.3/7) = 3.03(M)$
 VOLUME = $64000 \times 3.03 = 193920(CUM)$



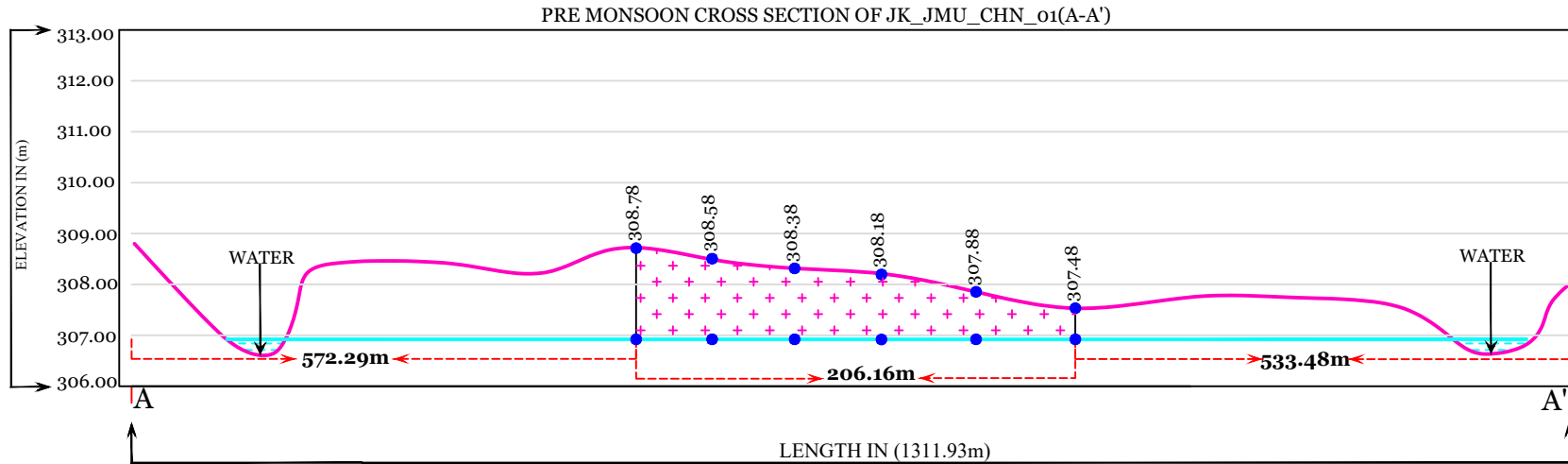
Ave Depth = $(1.7+1.5+1.4+1+0.9+1.3/6) = 1.3(M)$
 VOLUME = $82000 \times 1.3 = 106600(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

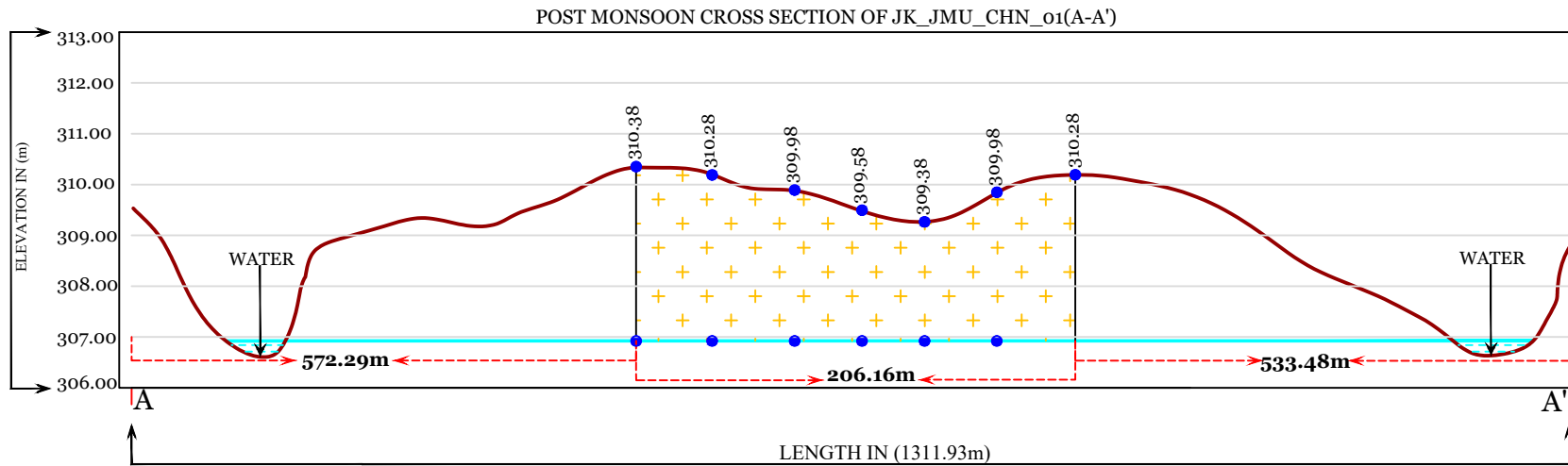


Ave Depth = $(3.4+3.3+3.2+3+2.9+2.7+2.5/7) = 3(M)$
 VOLUME = $82000 \times 3 = 246000(CUM)$

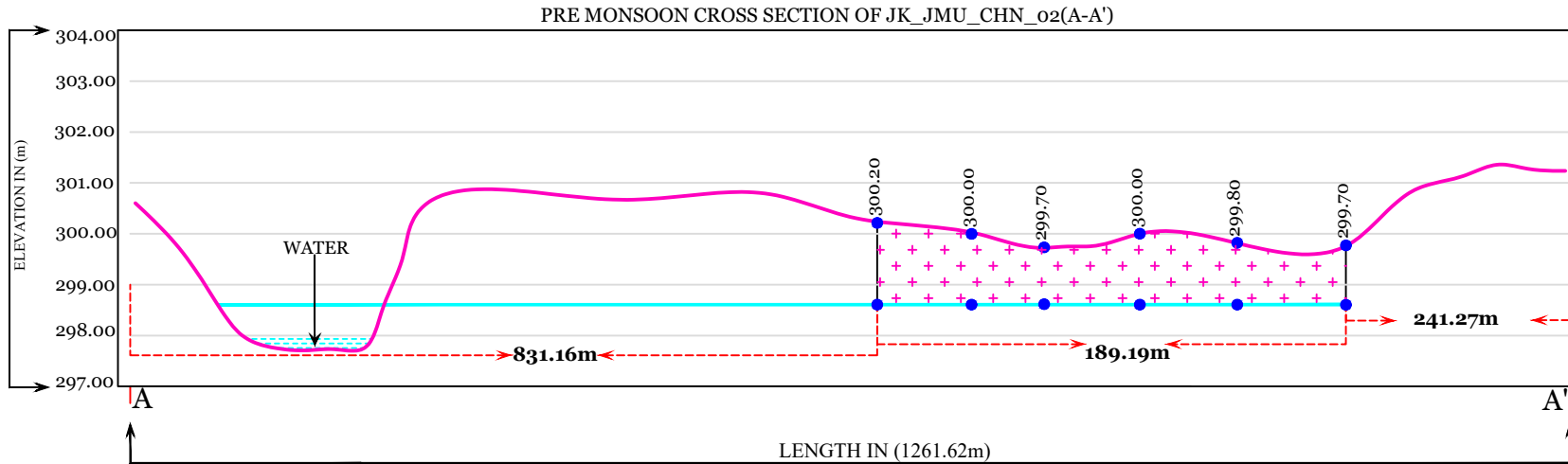


Ave Depth = $(1.8+1.6+1.4+1.2+0.9+1.5/6)= 1.4(M)$
 VOLUME = $96000 \times 1.4 = 134400 (CUM)$

LEGEND			
POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



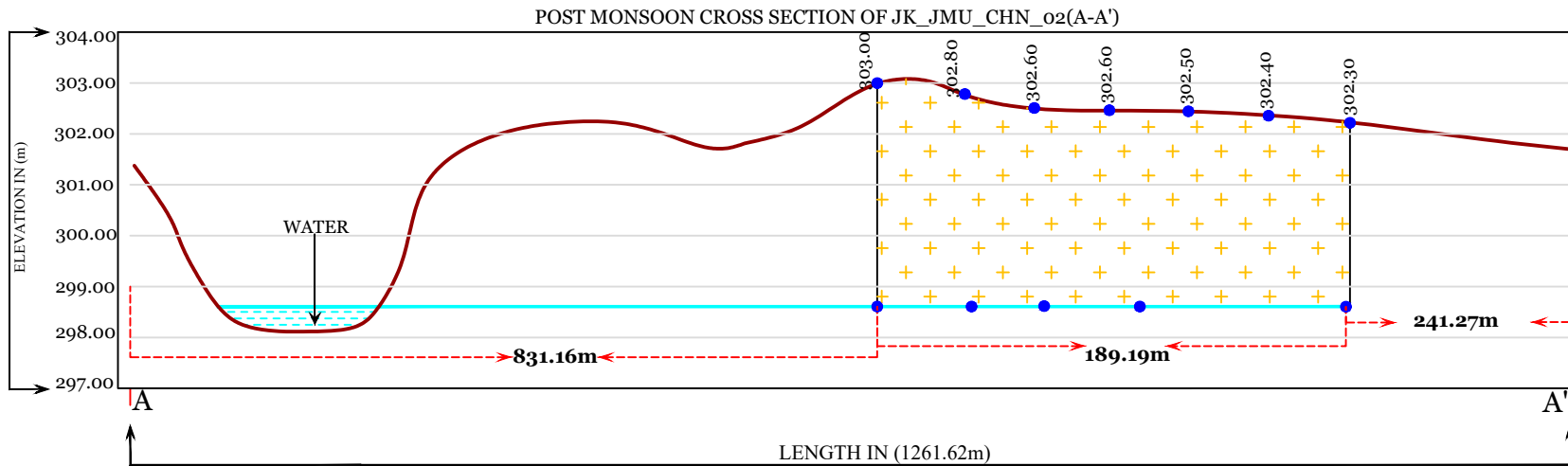
Ave Depth = $(3.4+3.3+3+2.6+2.4+3+3.3/7)= 3(M)$
 VOLUME = $96000 \times 3 = 288000 (CUM)$



LEGEND

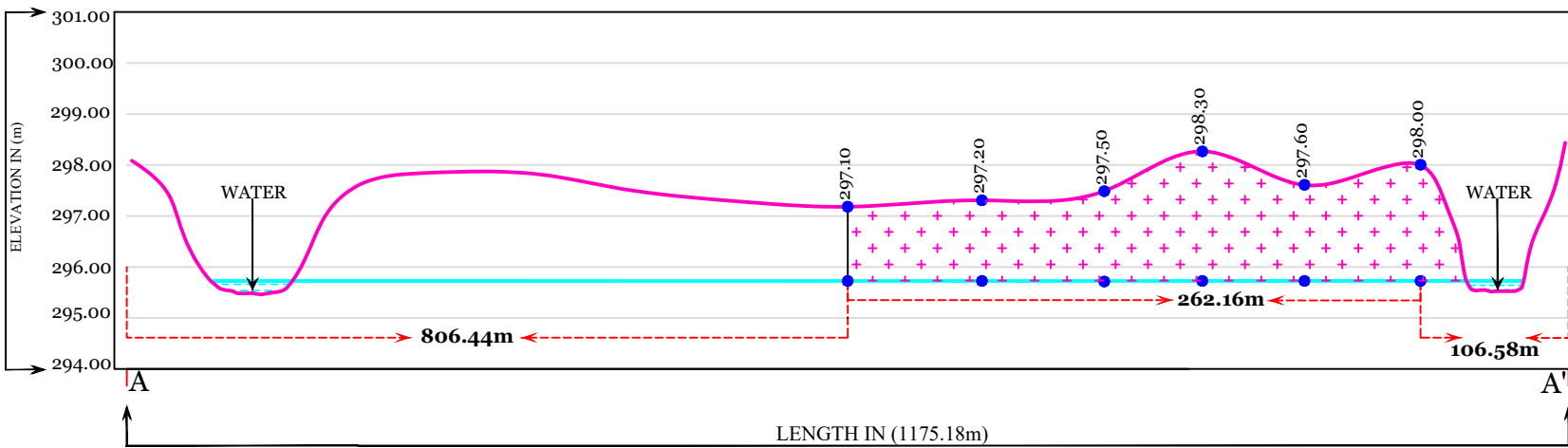
POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

Ave Depth = $(1.6+1.4+1.1+1.4+1.2+1.1/6) = 1.3(M)$
 VOLUME = $92000 \times 1.3 = 119600 (CUM)$



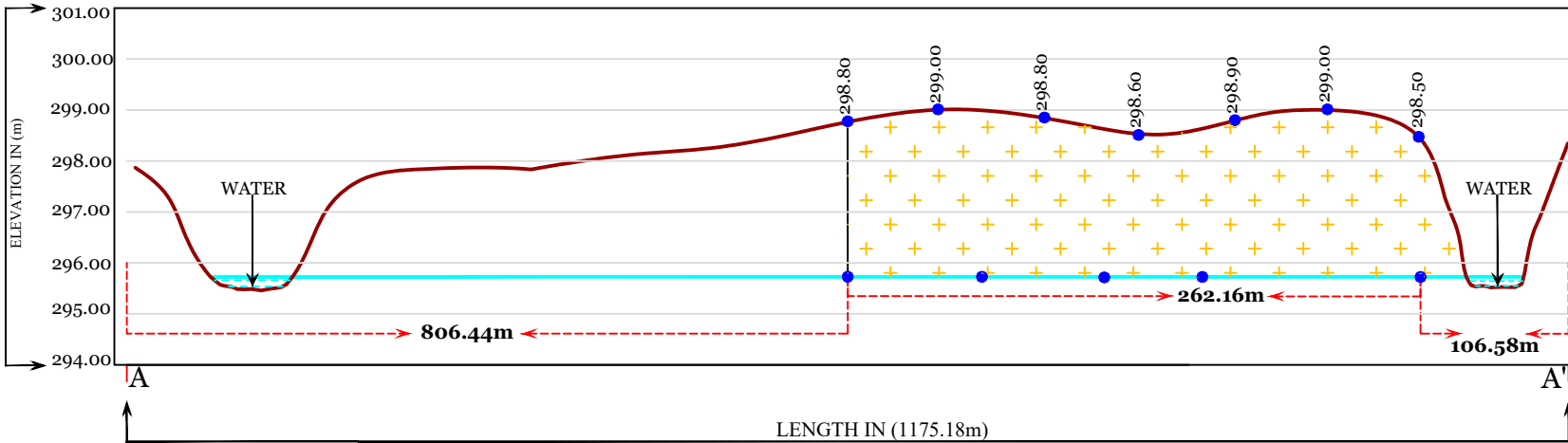
Ave Depth = $(3.4+3.2+3+3++2.9+2.8+2.7/7) = 3(M)$
 VOLUME = $92000 \times 3 = 276000 (CUM)$

PRE MONSOON CROSS SECTION OF JK_JMU_CHN_o3(A-A')

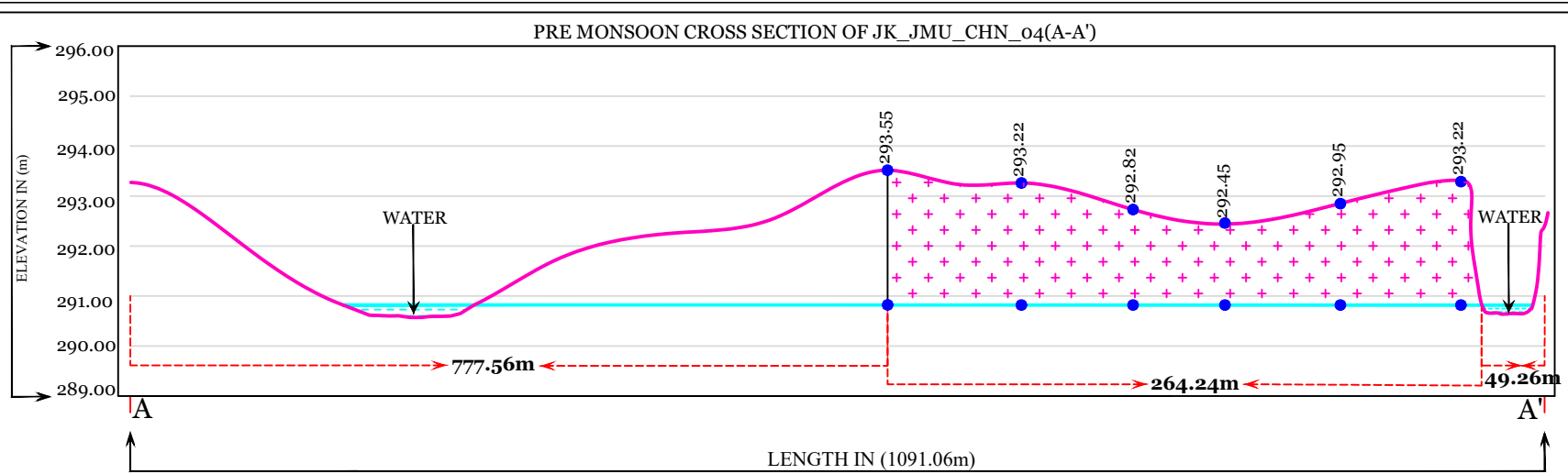


Ave Depth = $(1.3+1.5+1.8+2.6+1.9+2.3/6)= 1.9(M)$
 VOLUME = $99000 \times 1.9 = 188100 (CUM)$

POST MONSOON CROSS SECTION OF JK_JMU_CHN_o3(A-A')



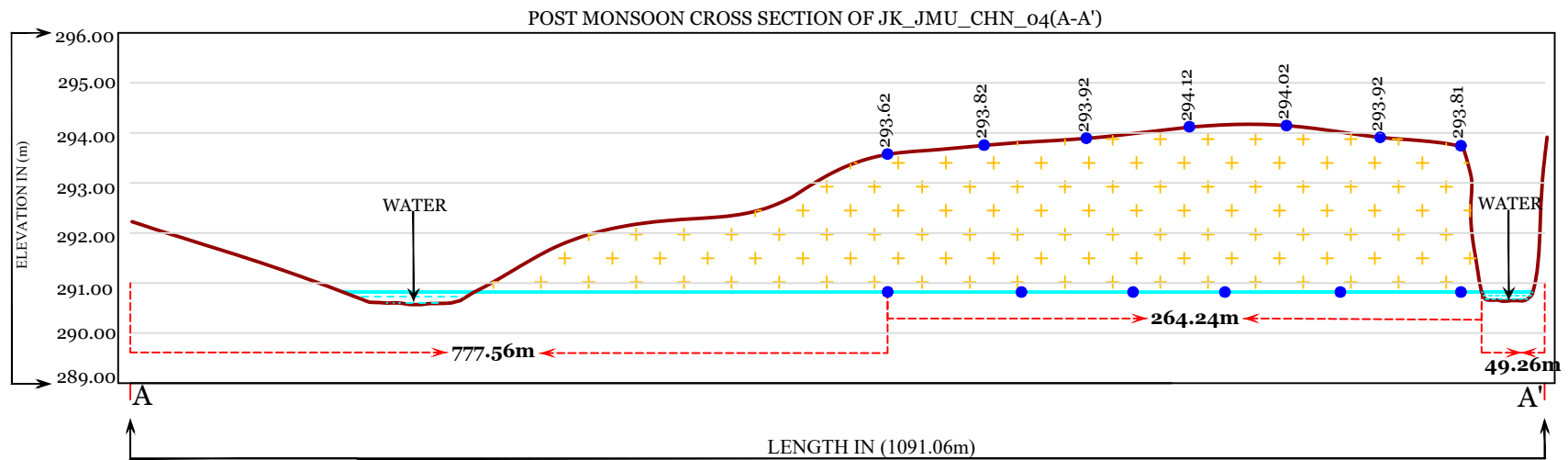
Ave Depth = $(3.1+3.3++3.1+2.9+3.2+3.3+2.8/7)= 3.1(M)$
 VOLUME = $99000 \times 3.1 = 306900 (CUM)$



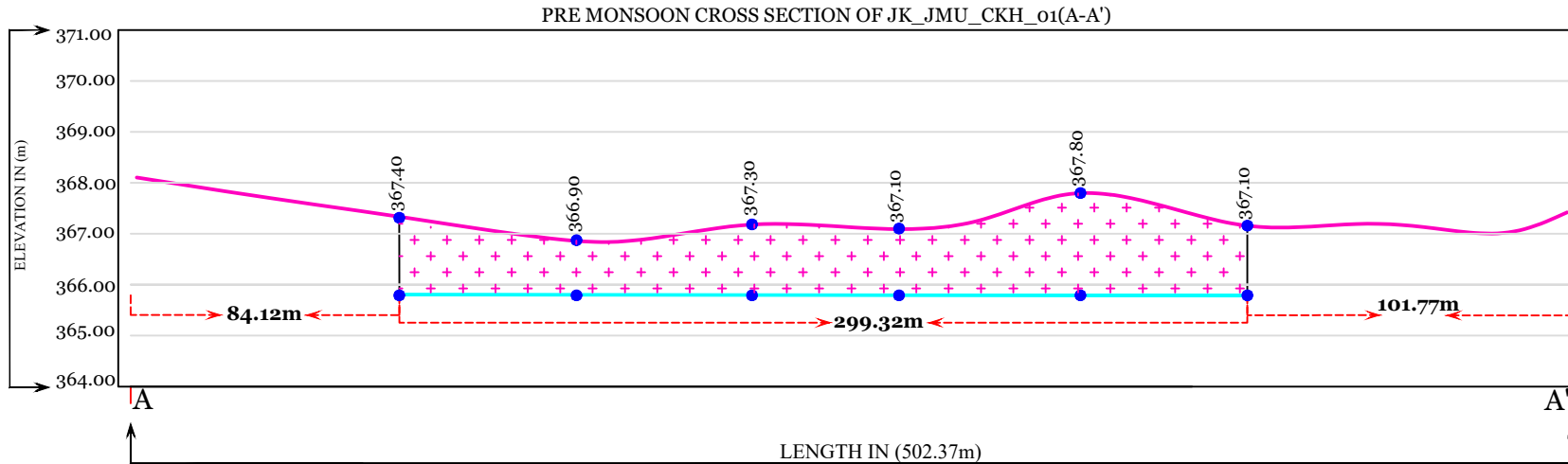
Ave Depth = $(2.7+2.4+2+1.6+2.1+2.4/6)= 2.2(M)$
 VOLUME = $93000 \times 2.2 = 204600 (CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



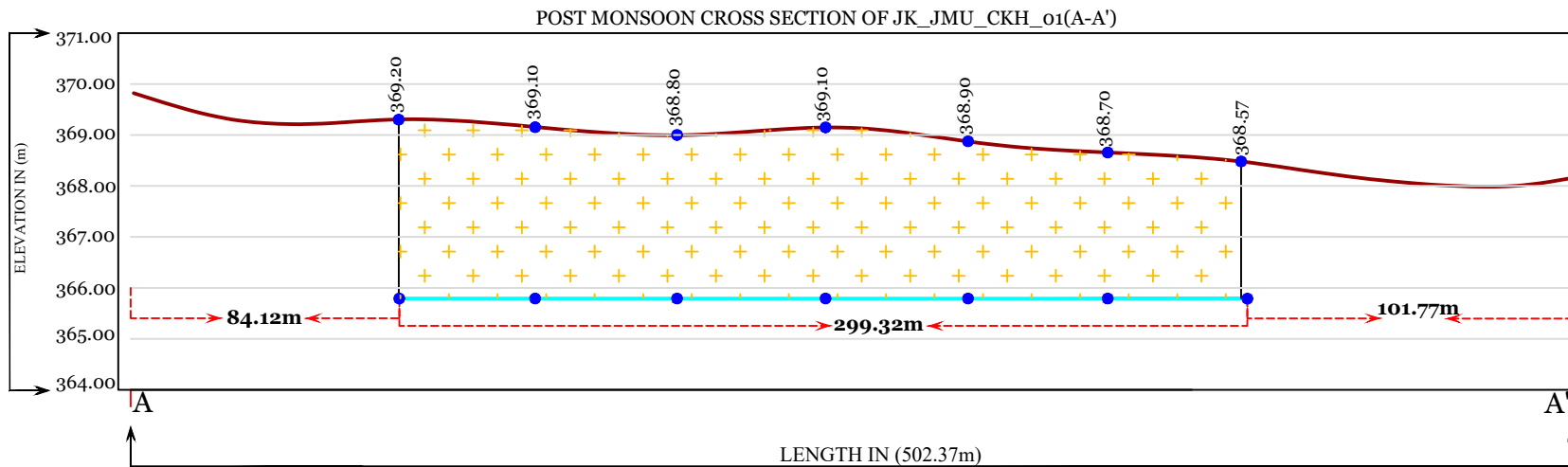
Ave Depth = $(2.8+3+3.1+3.3+3.2+3.1+2.99/7)= 3.07(M)$
 VOLUME = $93000 \times 3.07 = 285510 (CUM)$



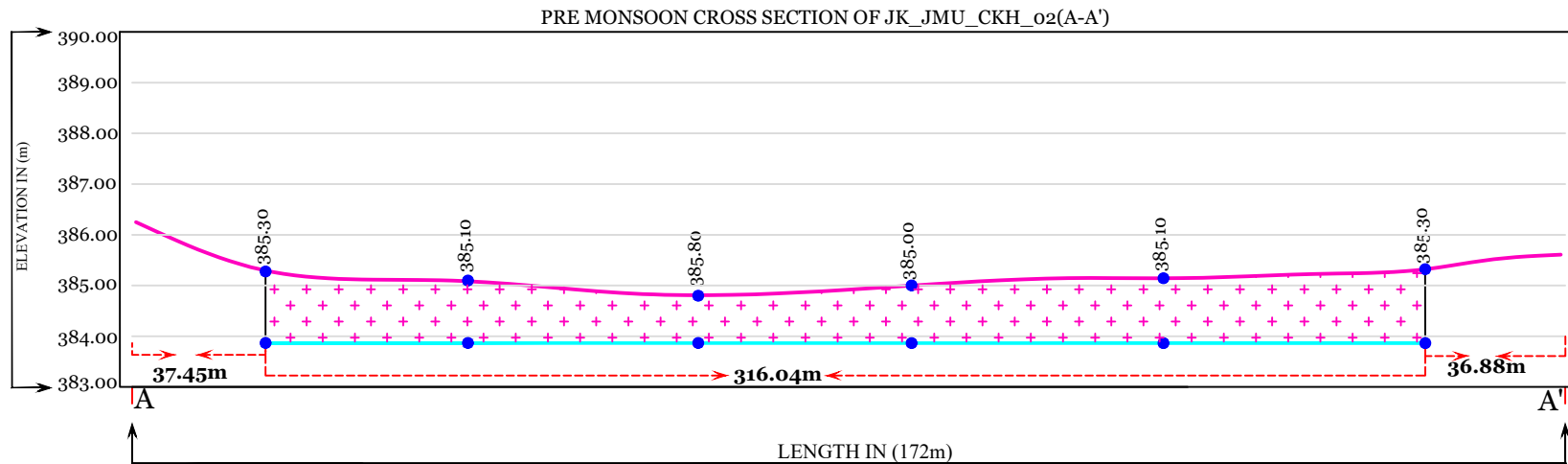
Ave Depth = $(1.6+1.1+1.5+1.3+1+1.3/6)= 1.3(M)$
 VOLUME = $95000 \times 1.3 = 123500(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



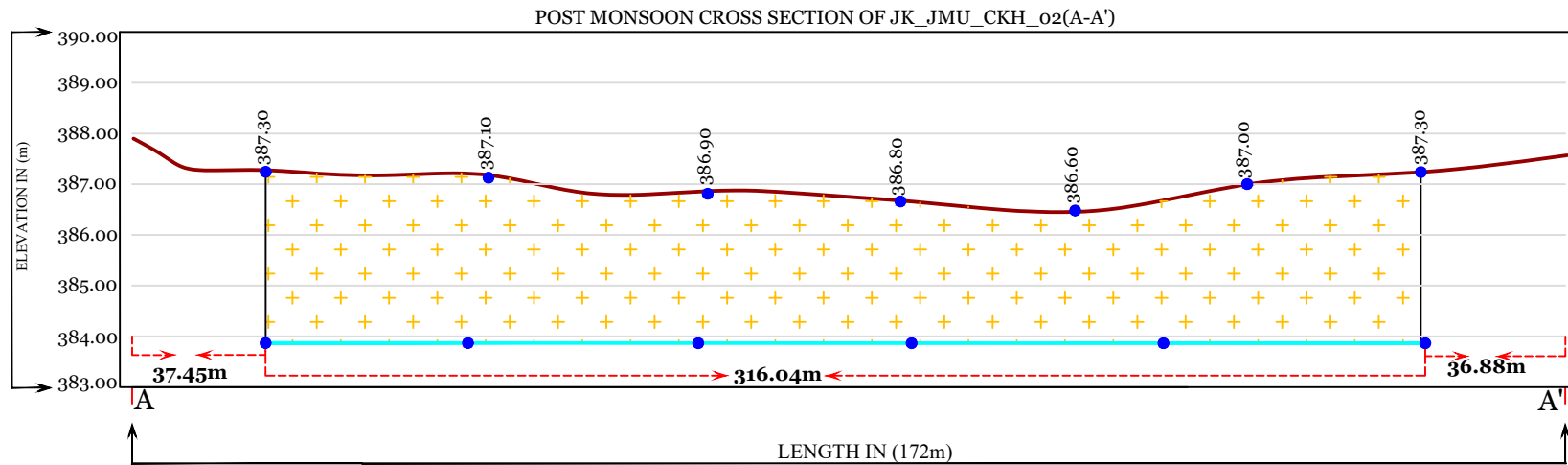
Ave Depth = $(3.4+3.3+3+3.3+3.1+2.9+2.77/7)= 3.11(M)$
 VOLUME = $95000 \times 3.11 = 295450(CUM)$



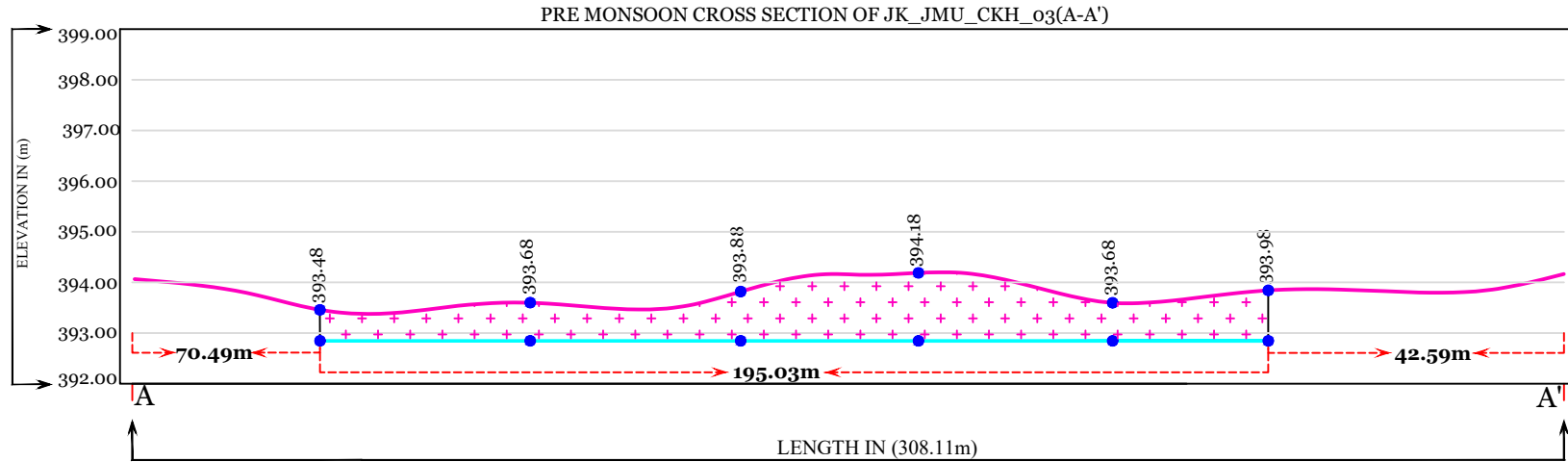
Ave Depth = $(1.4+1.2+0.9+1.1+1.2+1.4/6) = 1.2(M)$
 VOLUME = $86000 \times 1.2 = 103200(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



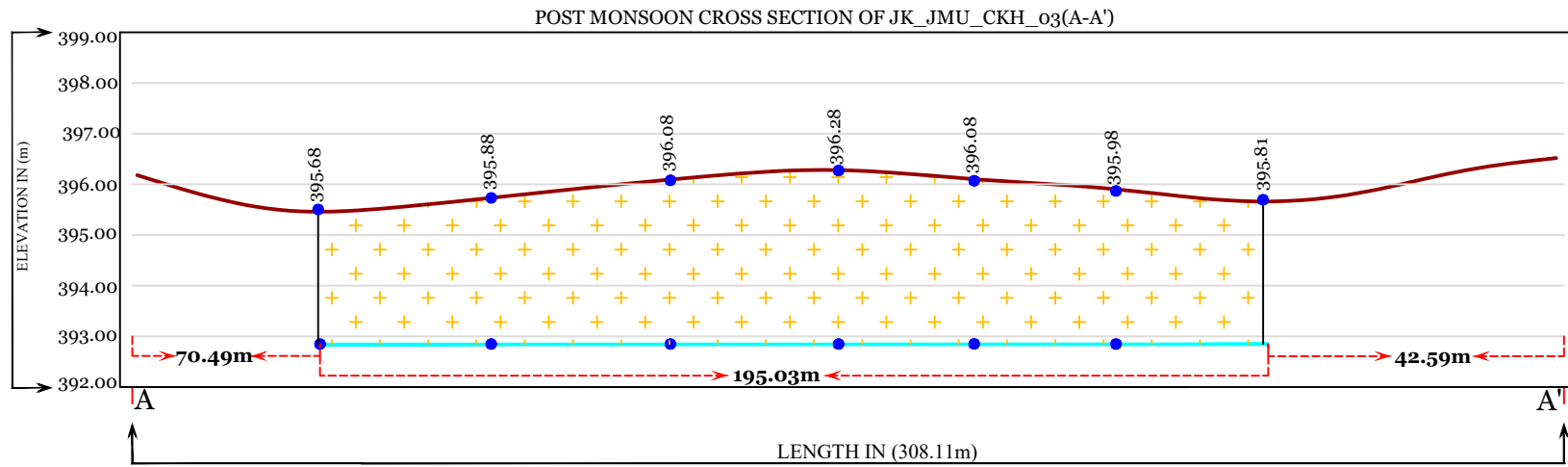
Ave Depth = $(3.4+3.2+3+2.9+2.7+3.1+3.4/7) = 3.10(M)$
 VOLUME = $86000 \times 3.10 = 266600(CUM)$



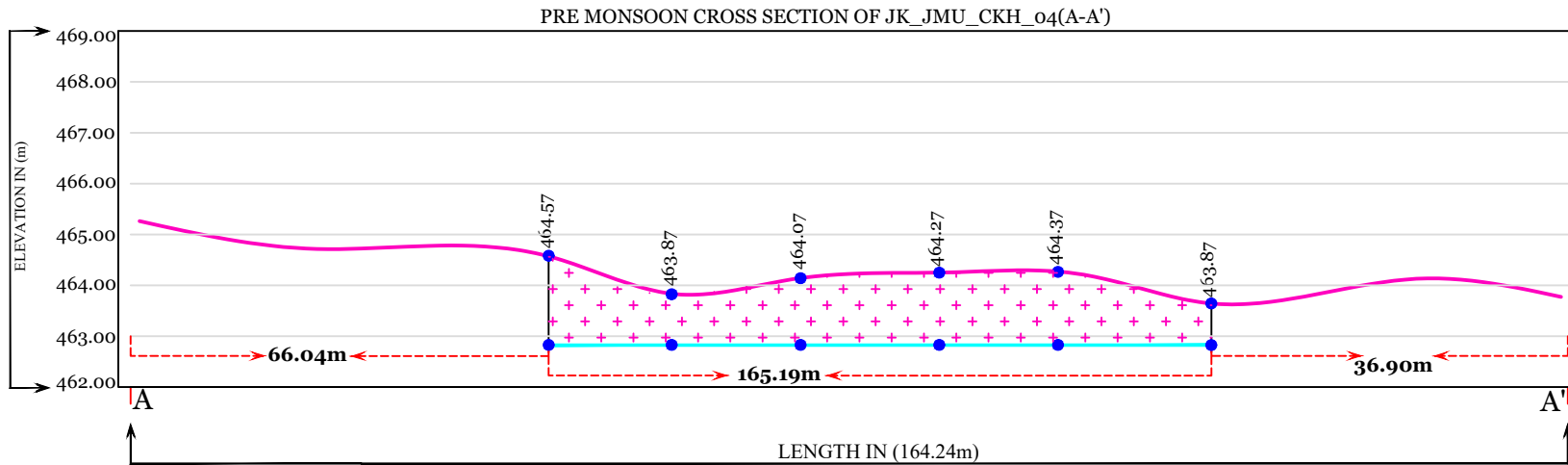
Ave Depth = $(0.6+0.8+1+1.3+1.2+1.1/6)= 1(M)$
 VOLUME = $87000 \times 1 = 87000(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



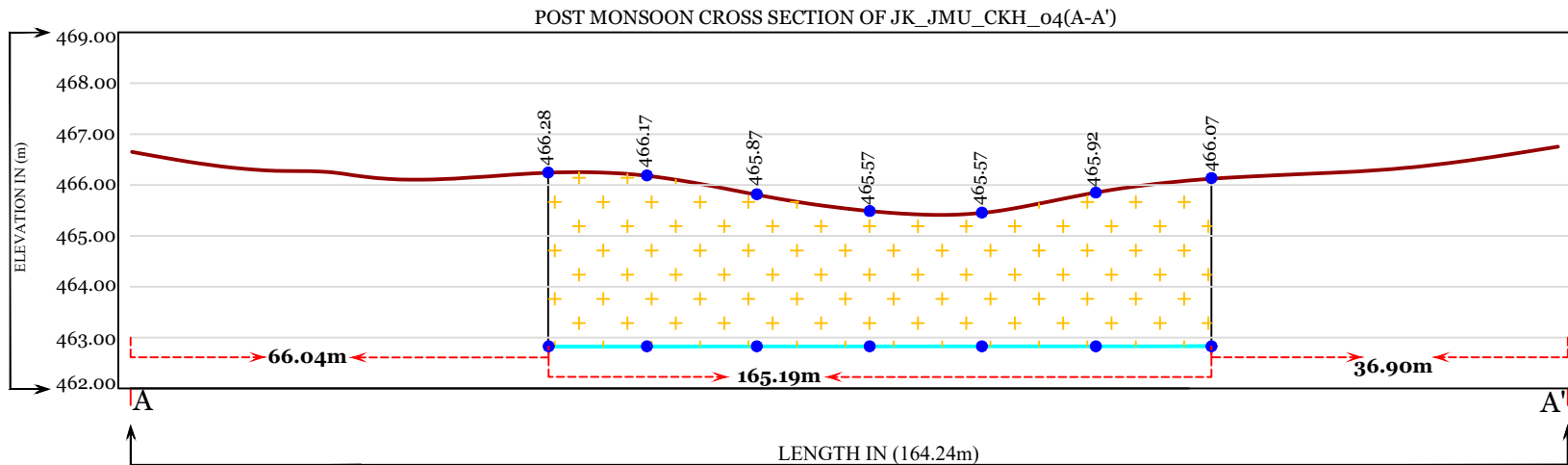
Ave Depth = $(2.8+3+3.2+3.4+3.2+3.1+2.93/7)= 3.09(M)$
 VOLUME = $87000 \times 3.09 = 268830(CUM)$



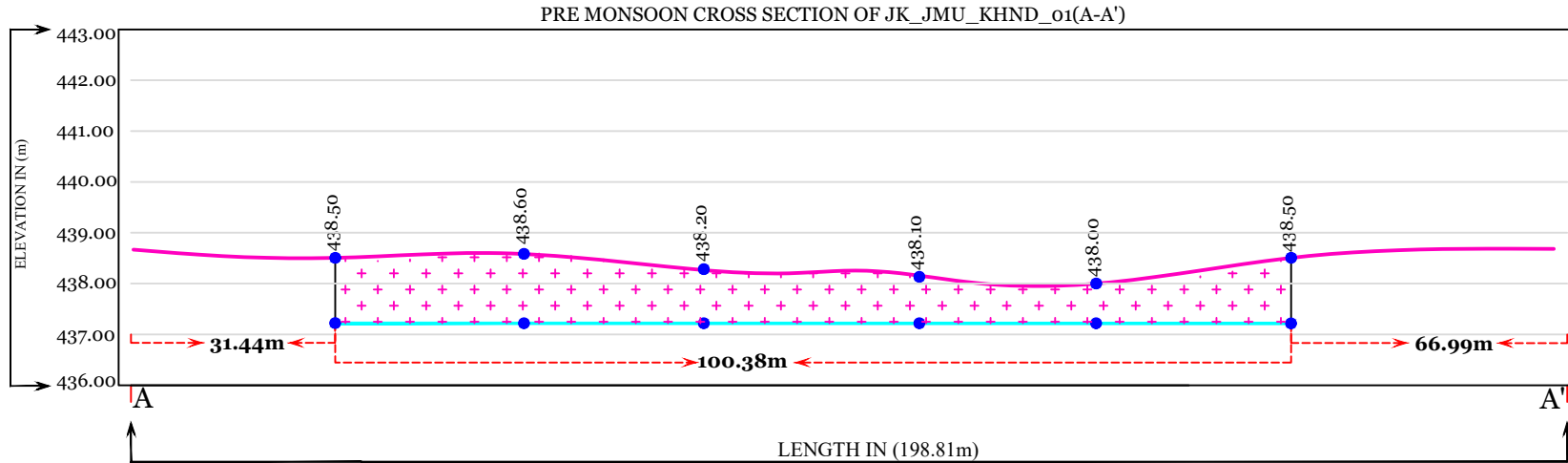
Ave Depth = $(1.7+1+1.2+1.4+1.5+1/6) = 1.3(M)$
 VOLUME = $53000 \times 1.3 = 68900(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

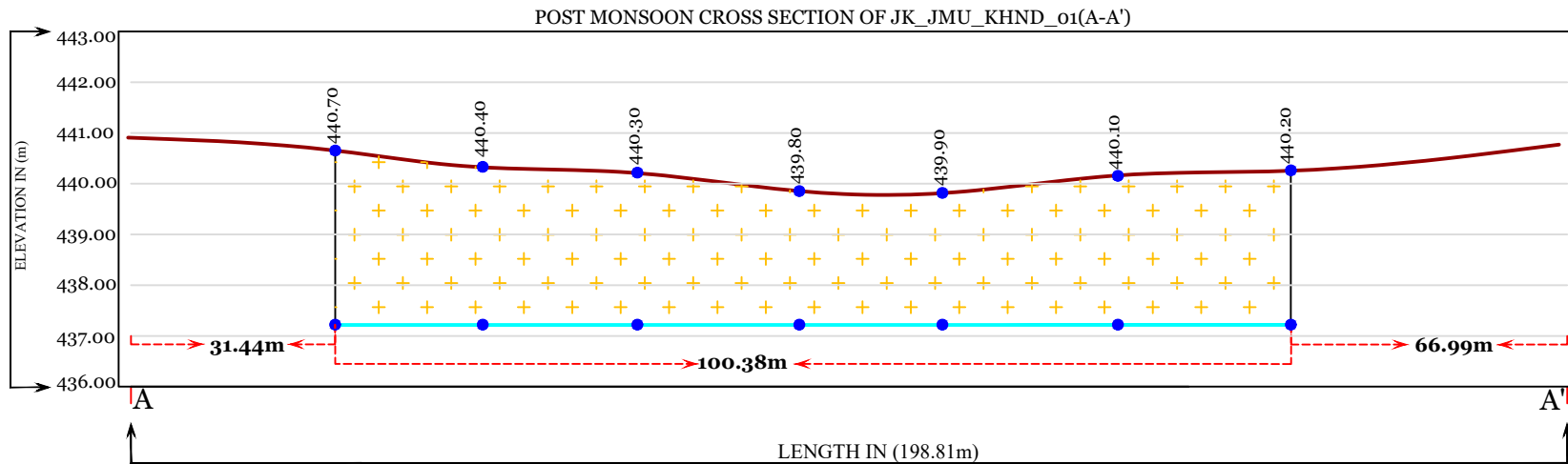


Ave Depth = $(3.4+3.3+3+2.7+2.7+3.05+3.2/7) = 3.05(M)$
 VOLUME = $53000 \times 3.05 = 161650(CUM)$

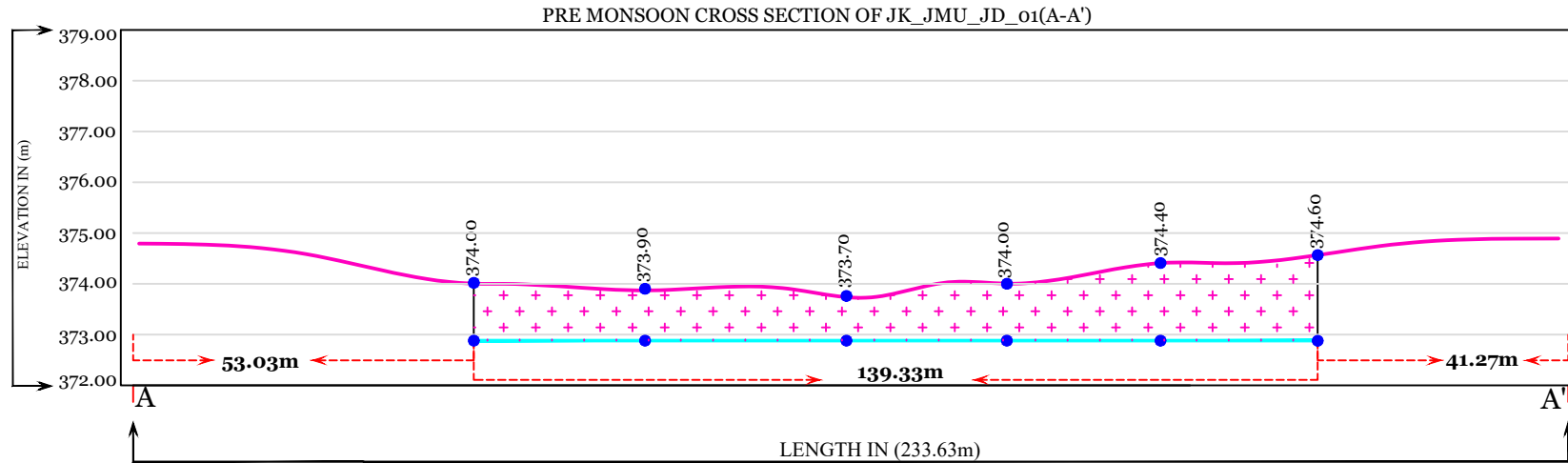


Ave Depth = $(1.3+1.4+1+0.9+0.8+1.3/6)= 1.1(M)$
 VOLUME = 63000 x 1.1 = 69000(CUM)

LEGEND			
POST MONSOON RBM	+	PRE MONSOON RBM	+
WATER	~	SECTION LINE	—
POST MONSOON ELEVATION	—	PRE MONSOON ELEVATION	—
WATER LINE	←	FLOW DIRECTION	←



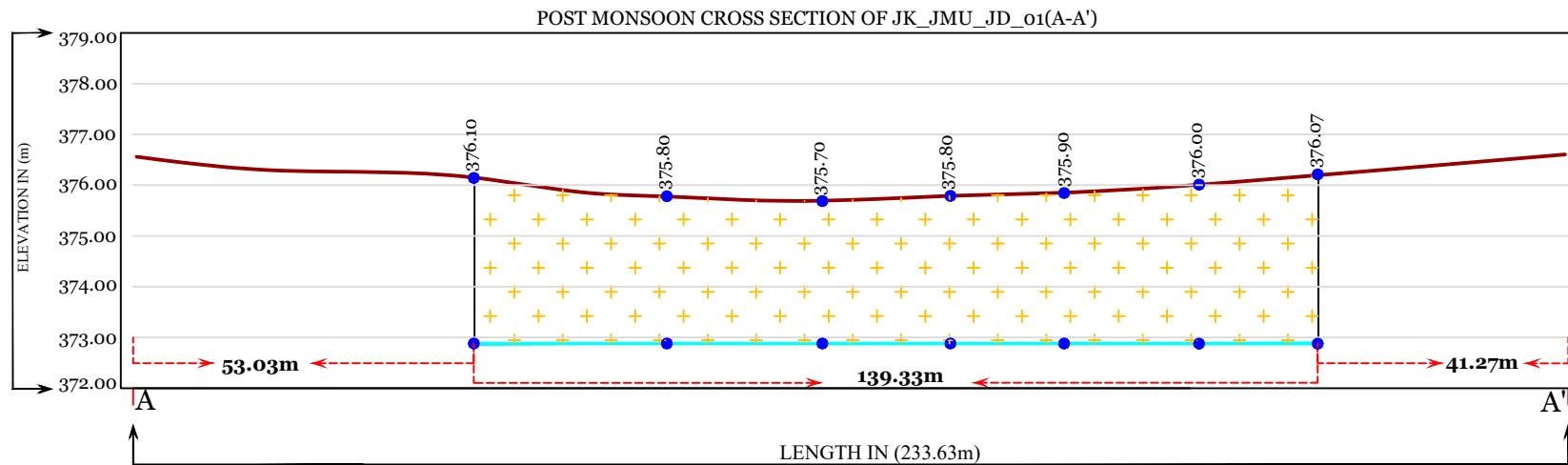
Ave Depth = $(3.5+3.2+3.1+2.6+2.7+2.9+3/7)= 3(M)$
 VOLUME = 63000 x 3 = 189000(CUM)



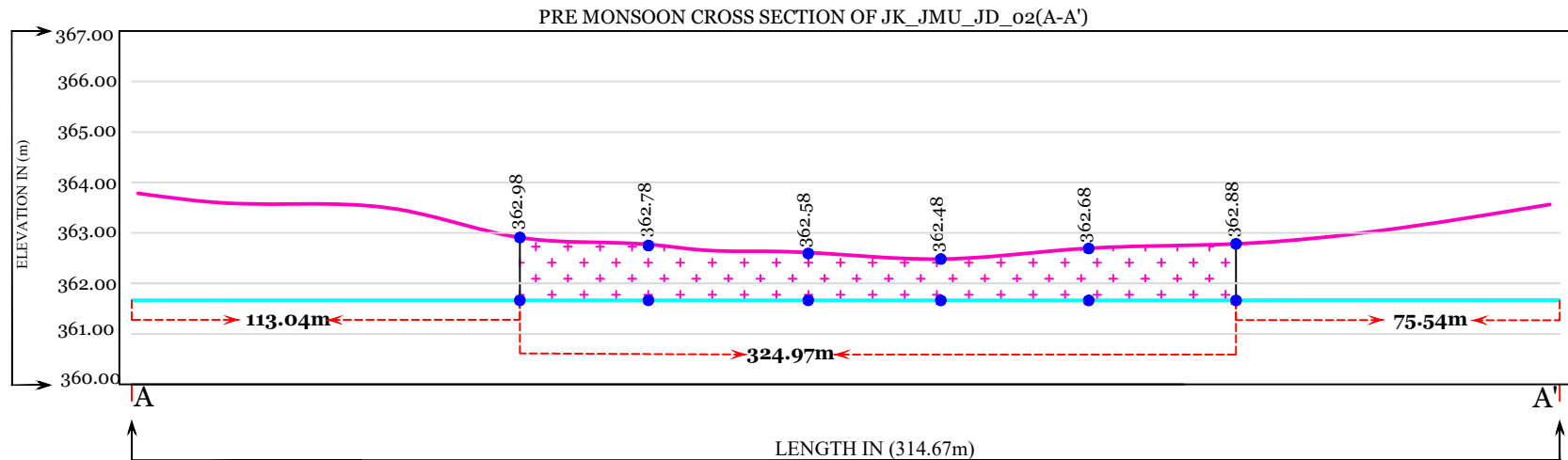
Ave Depth = $(1.1+1+0.8+1.1+1.5+1.7/6) = 1.2(M)$
 VOLUME = $46000 \times 1.2 = 55200 (CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



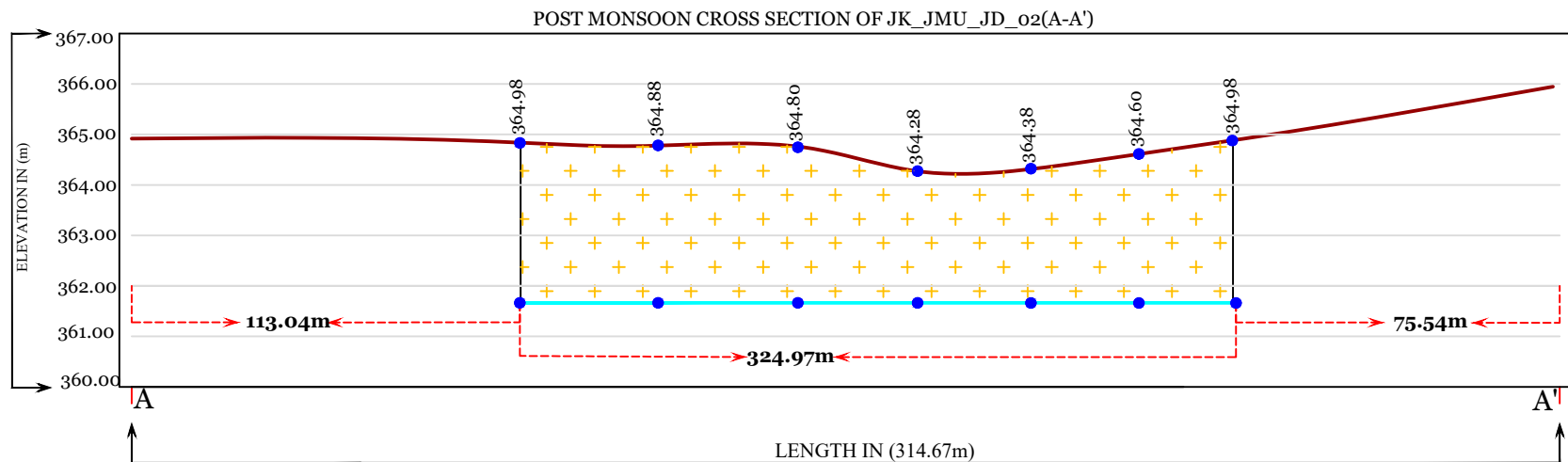
Ave Depth = $(3.2+2.9+2.8+2.9+3+3.1+3.17/7) = 3.01(M)$
 VOLUME = $46000 \times 3.01 = 138460 (CUM)$



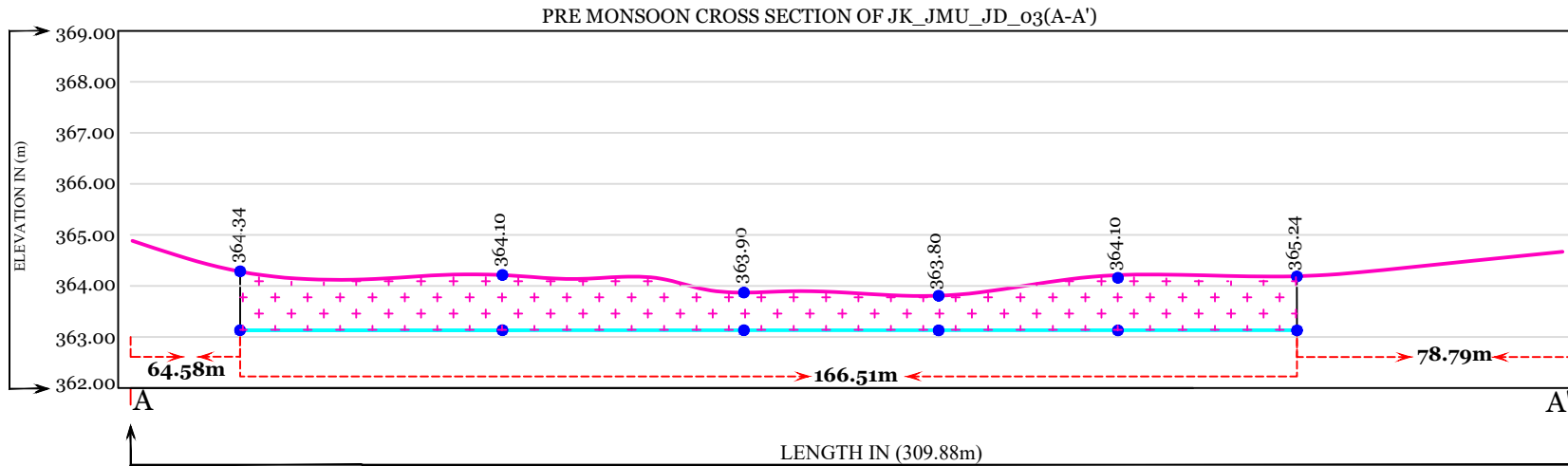
LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

Ave Depth = $(1.3+1.1+0.9+0.8+1+1.2/6) = 1.05(M)$
 VOLUME = $80000 \times 1.05 = 84000(CUM)$



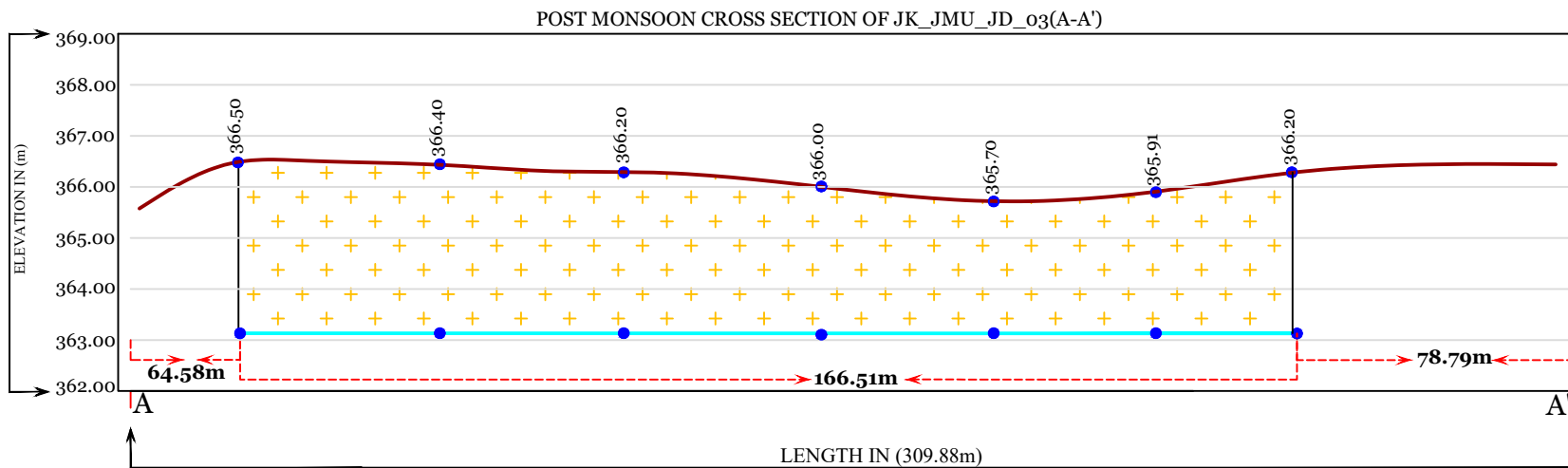
Ave Depth = $(3.3+3.2+3.12+2.6+2.7+2.92+3.3/6) = 3.02(M)$
 VOLUME = $80000 \times 3.02 = 241600(CUM)$



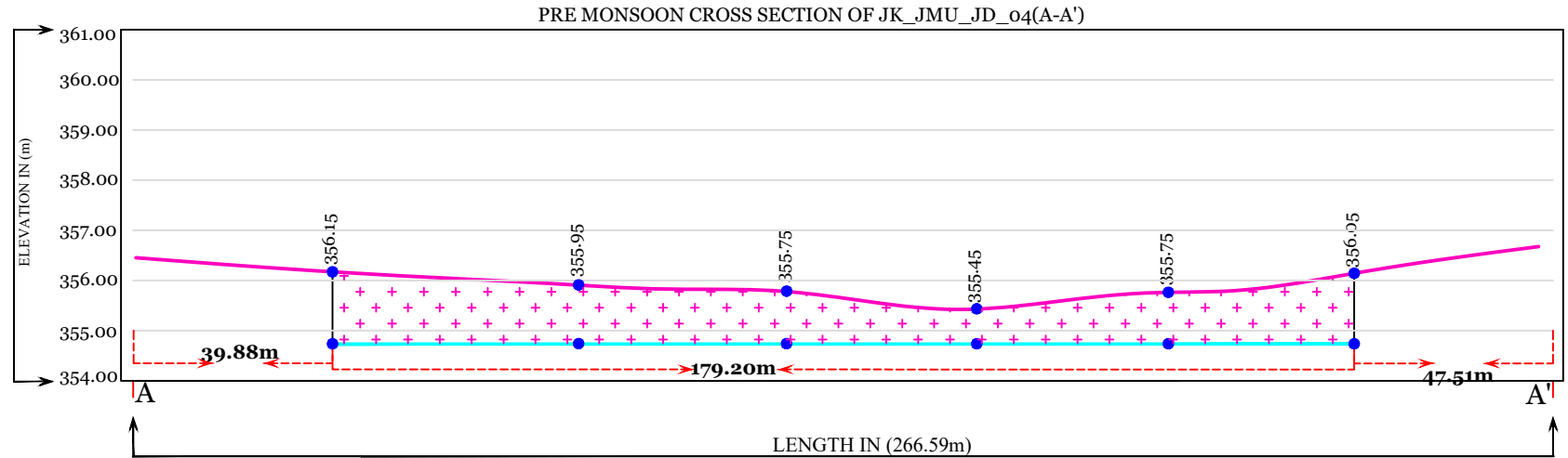
LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

Ave Depth = $(1.24+1+0.8+0.7+1+1.14/6) = 0.98(M)$
 VOLUME = $94000 \times 0.98 = 92120 (CUM)$

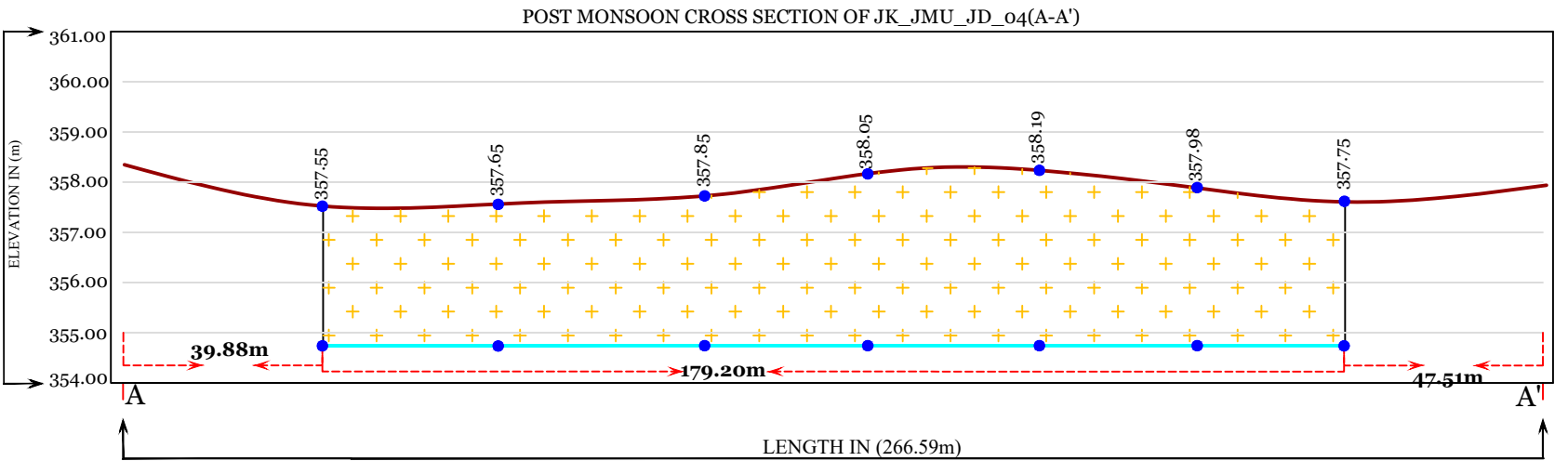


Ave Depth = $(3.4+3.3+3.1+2.9+2.6+2.81+3.1/7) = 3.03(M)$
 VOLUME = $94000 \times 3.03 = 284820 (CUM)$

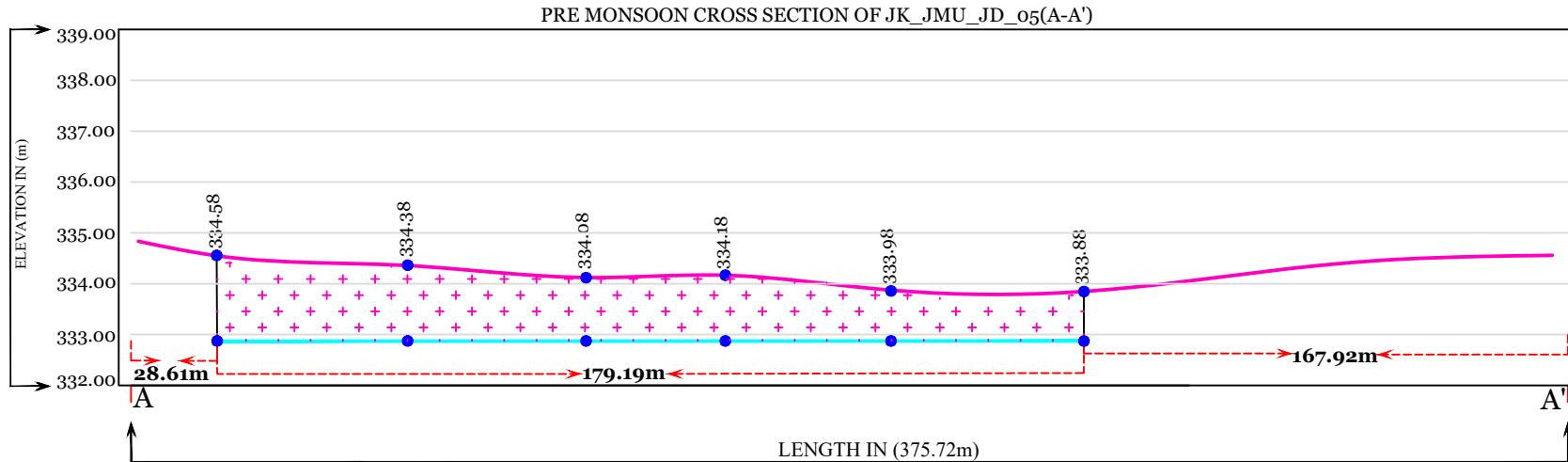


Ave Depth = $(1.3+1.1+0.9+0.6+0.9+1.2/6) = 1(M)$
 VOLUME = $62000 \times 1 = 62000(CUM)$

LEGEND			
POST MONSOON RBM	+	PRE MONSOON RBM	+
WATER	—	SECTION LINE	—
POST MONSOON ELEVATION	—	PRE MONSOON ELEVATION	—
WATER LINE	—	FLOW DIRECTION	←



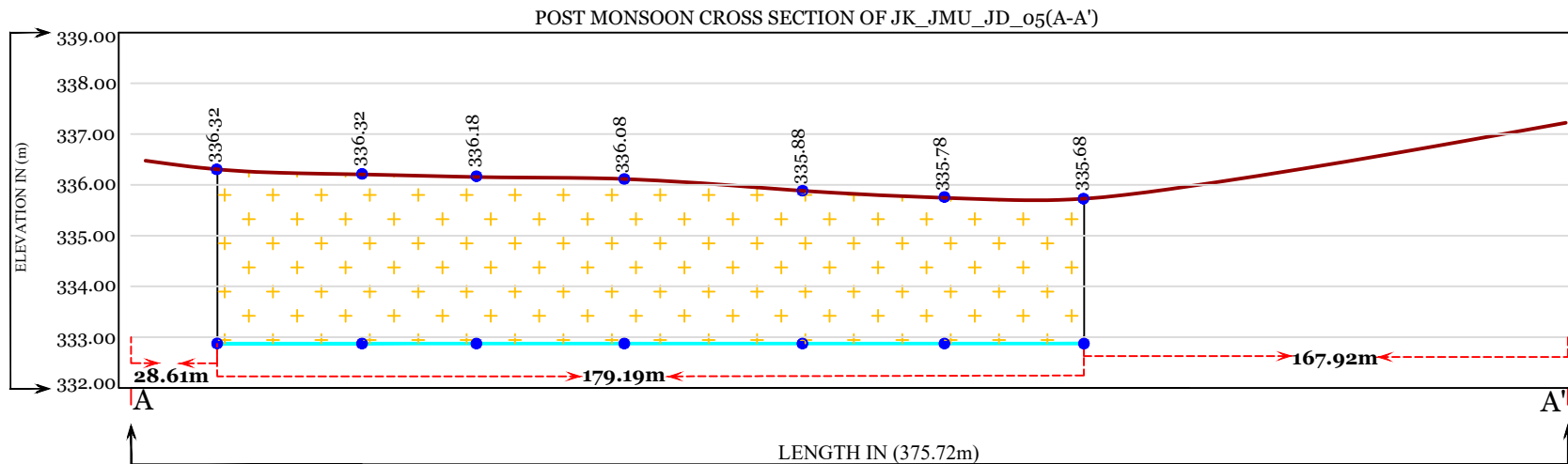
Ave Depth = $(2.7+2.8+3+3.2+3.3+3.1+2.9/7) = 3(M)$
 VOLUME = $62000 \times 3 = 186000(CUM)$



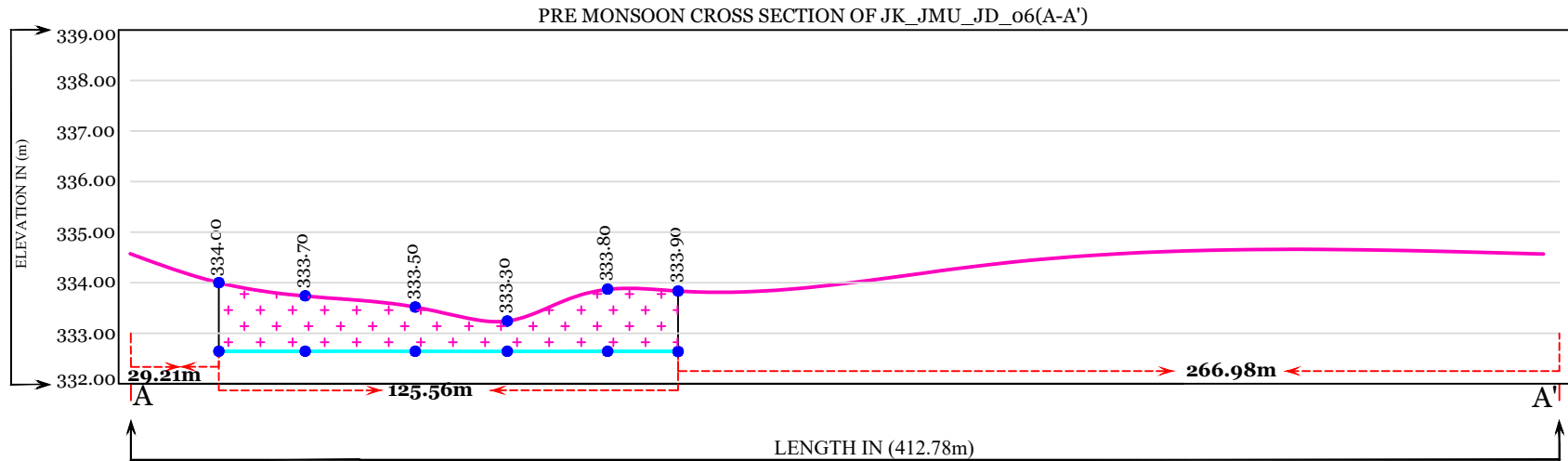
Ave Depth = $(1.6+1.4+1.1+1.2+1+0.9/6) = 1.2(M)$
 VOLUME = $94000 \times 1.2 = 112800(CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



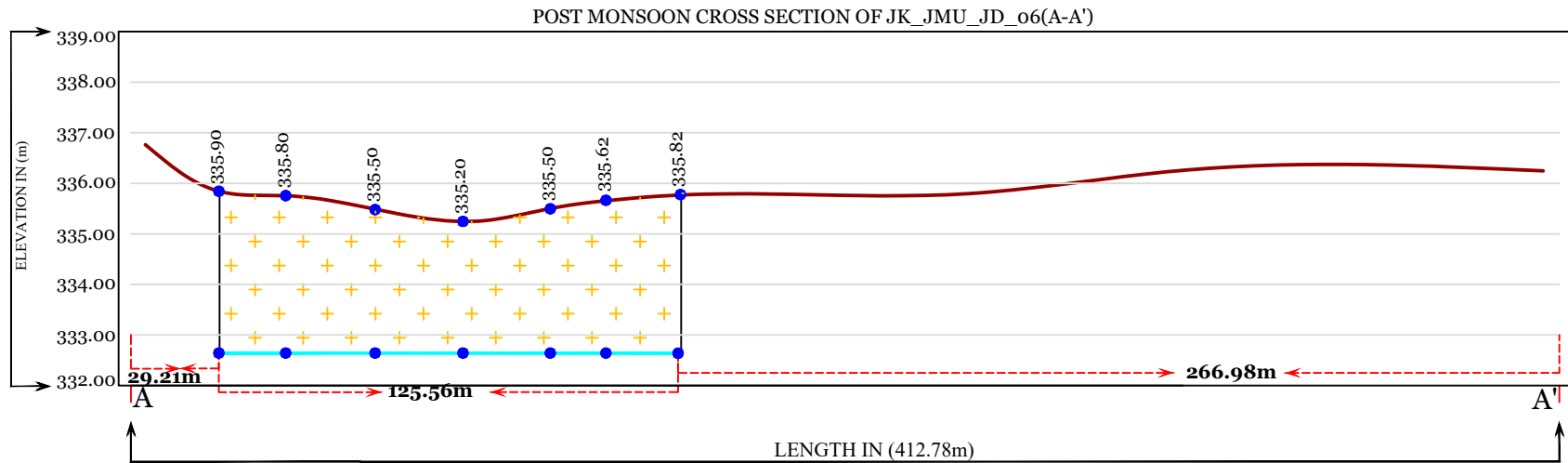
Ave Depth = $(3.34+3.34+3.2+3.1+2.9+2.8+2.7/7) = 3.04(M)$
 VOLUME = $94000 \times 3.04 = 285760(CUM)$



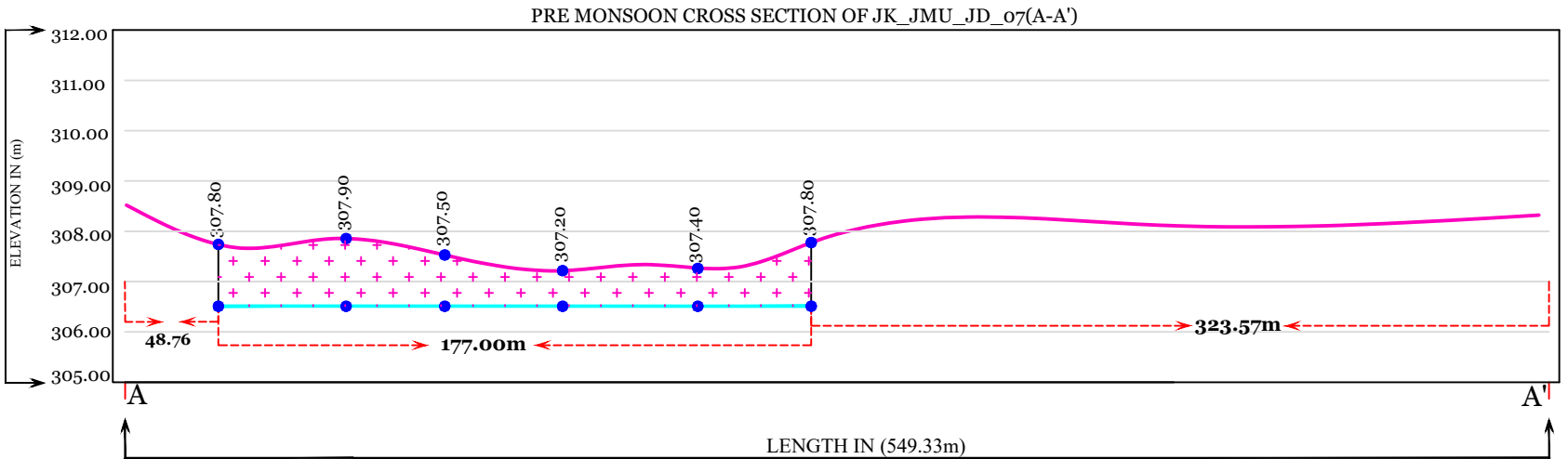
LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

Ave Depth = $(1.4+1.1+0.9+0.7+1.2+1.3/6) = 1.1(M)$
 VOLUME = $87000 \times 1.1 = 95700(CUM)$

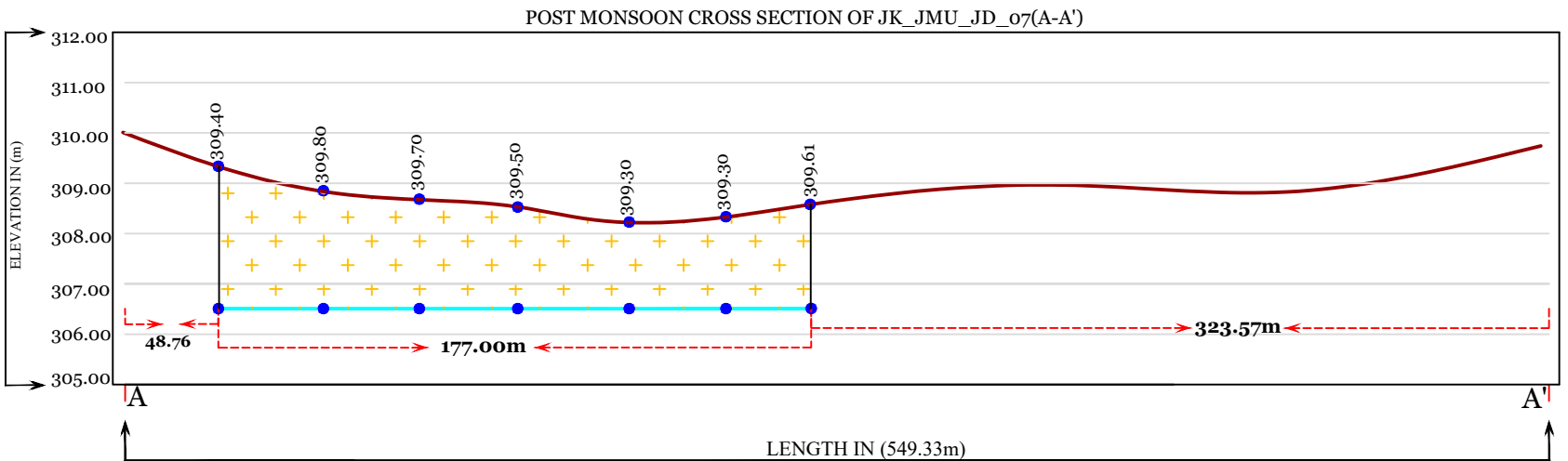


Ave Depth = $(3.3+3.2+2.9+2.6+2.9+3.02+3.22/7) = 3.02(M)$
 VOLUME = $87000 \times 3.02 = 262740(CUM)$

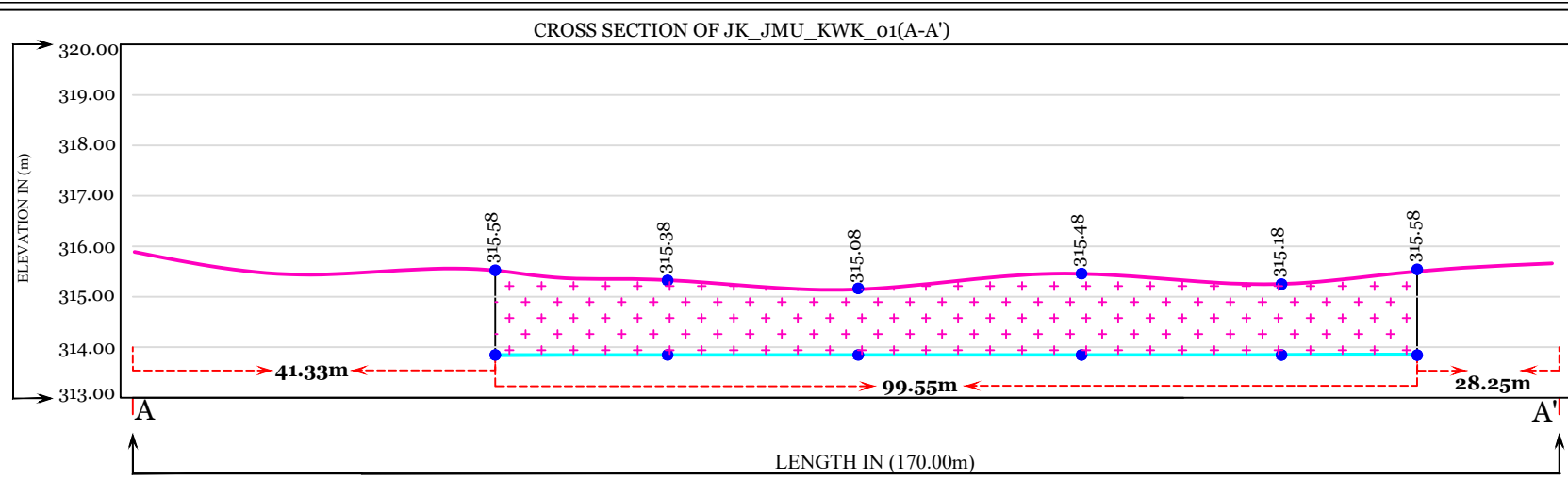


Ave Depth = $(1.3+1.4+1+0.7+0.9+1.3/6) = 1.1(M)$
 VOLUME = $100000 \times 1.1 = 110000(CUM)$

LEGEND			
POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



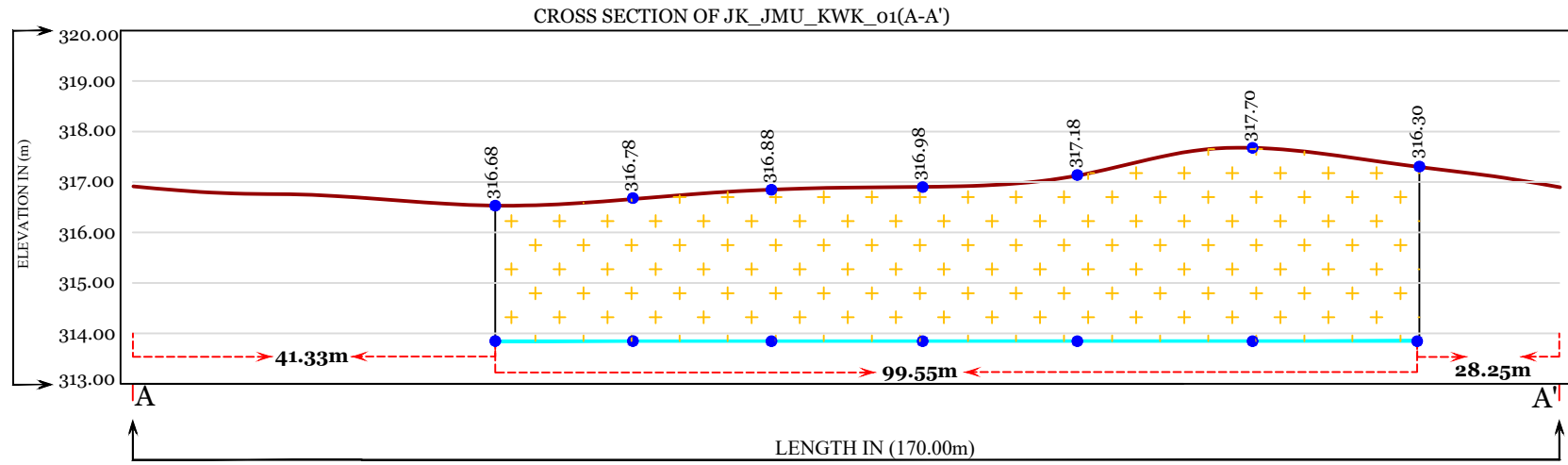
Ave Depth = $(3+3.3+3.2+3+2.8+2.8+3.11/7) = 3.03(M)$
 VOLUME = $100000 \times 3.03 = 303000(CUM)$



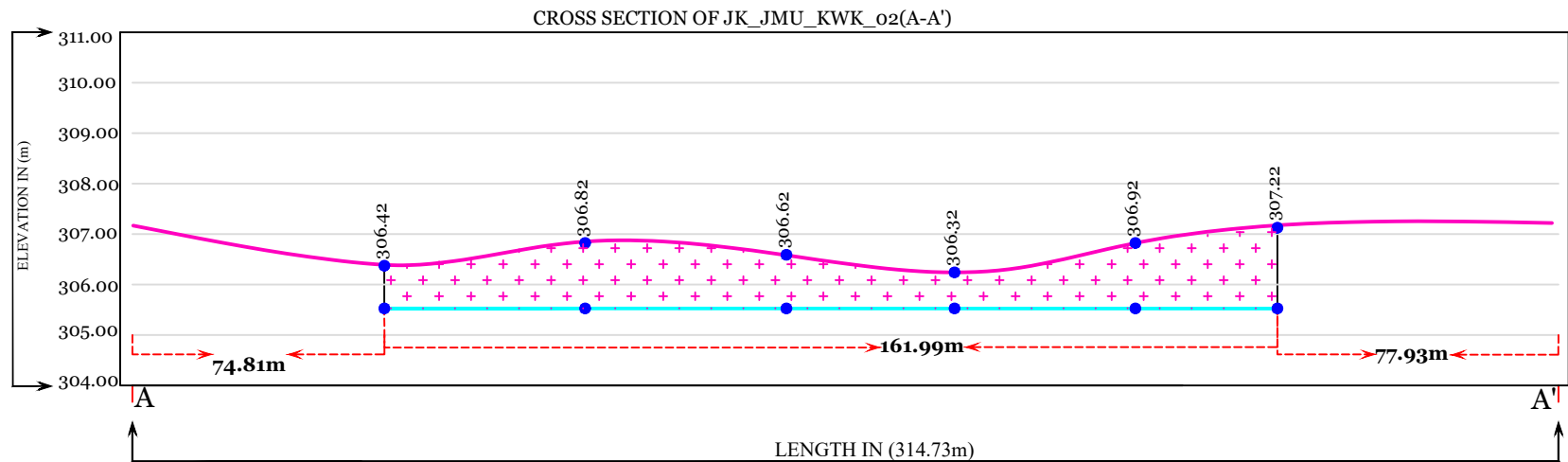
Ave Depth = $(1.7+1.5+1.2+1.6+1.3+1.7/6)= 1.5(M)$
 VOLUME = $99000 \times 1.5 = 148500 (CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

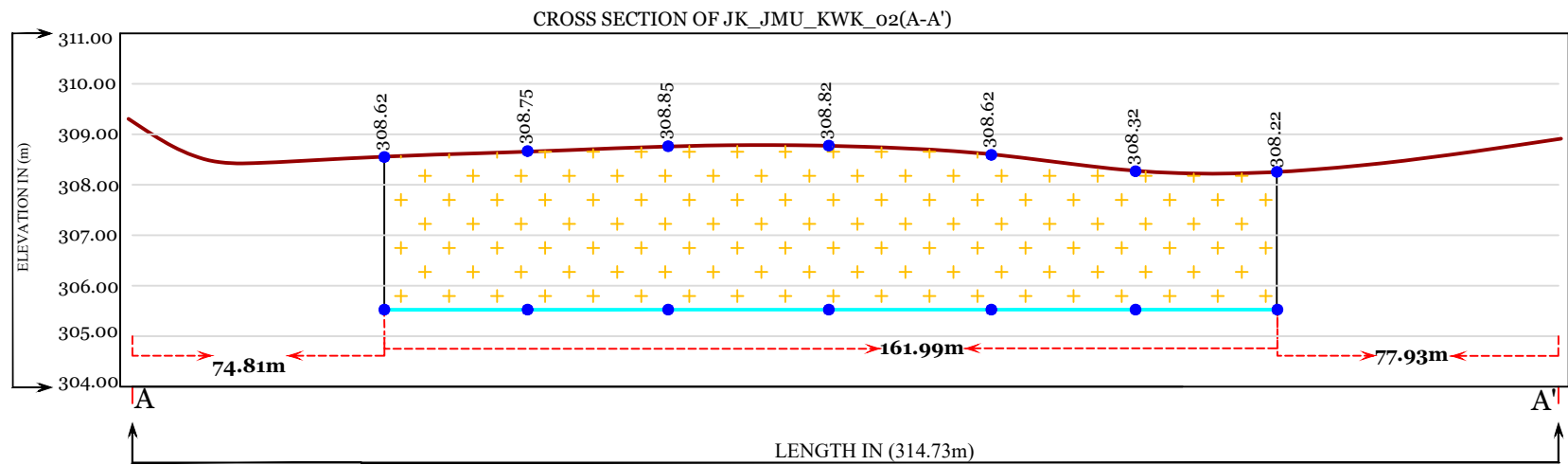


Ave Depth = $(2.8+2.9+3+3.1+3.3+3.32+3.42/7)= 3.12(M)$
 VOLUME = $99000 \times 3.12 = 308880 (CUM)$

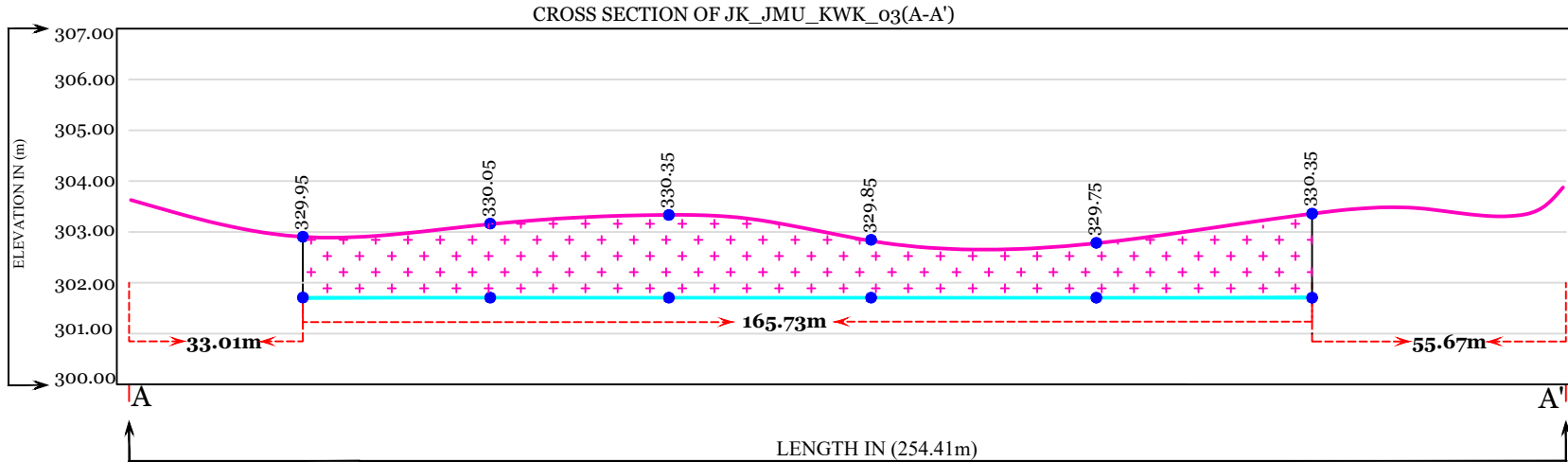


Ave Depth = $(0.9+1.3+1.1+0.8+1.4+1.7/6)= 1.2(M)$
 VOLUME = $96000 \times 1.2 = 115200 (CUM)$

LEGEND			
POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

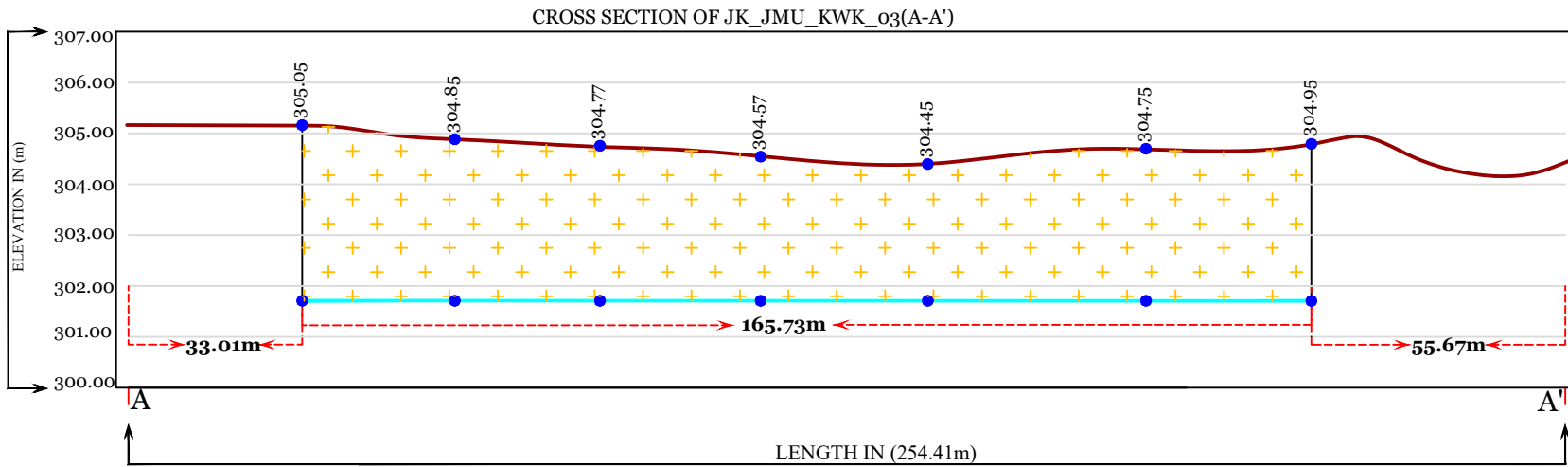


Ave Depth = $(3.1+3.23+3.33+3.3+3.1+2.8+2.7/7)= 3.08(M)$
 VOLUME = $96000 \times 3.08 = 295680 (CUM)$

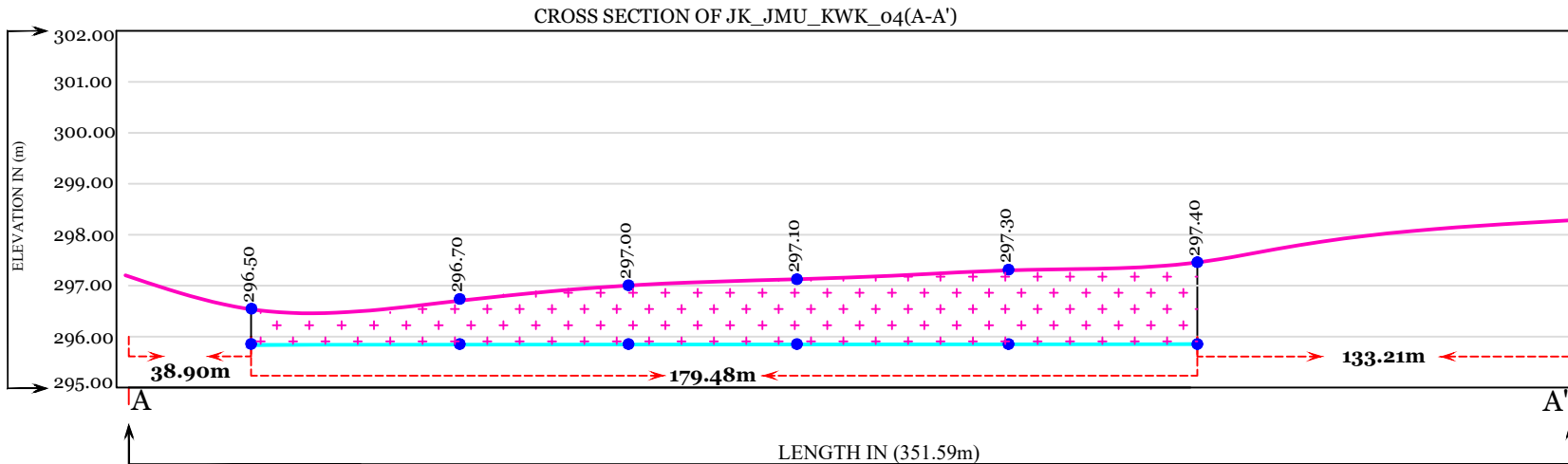


Ave Depth = $(1.2+1.3+1.6+1.1+1+1.6/6) = 1.3(M)$
 VOLUME = $66000 \times 1.3 = 85800 (CUM)$

LEGEND			
POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



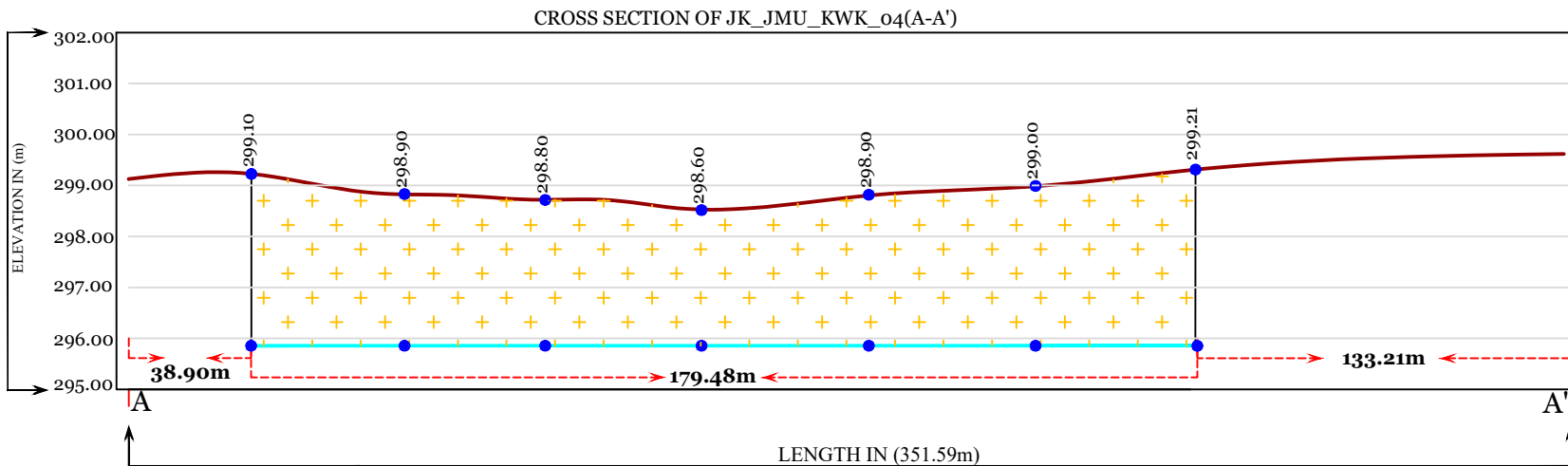
Ave Depth = $(3.3+3.1+3.02+2.82+2.7+3+3.2/7) = 3.02(M)$
 VOLUME = $66000 \times 3.02 = 199320 (CUM)$



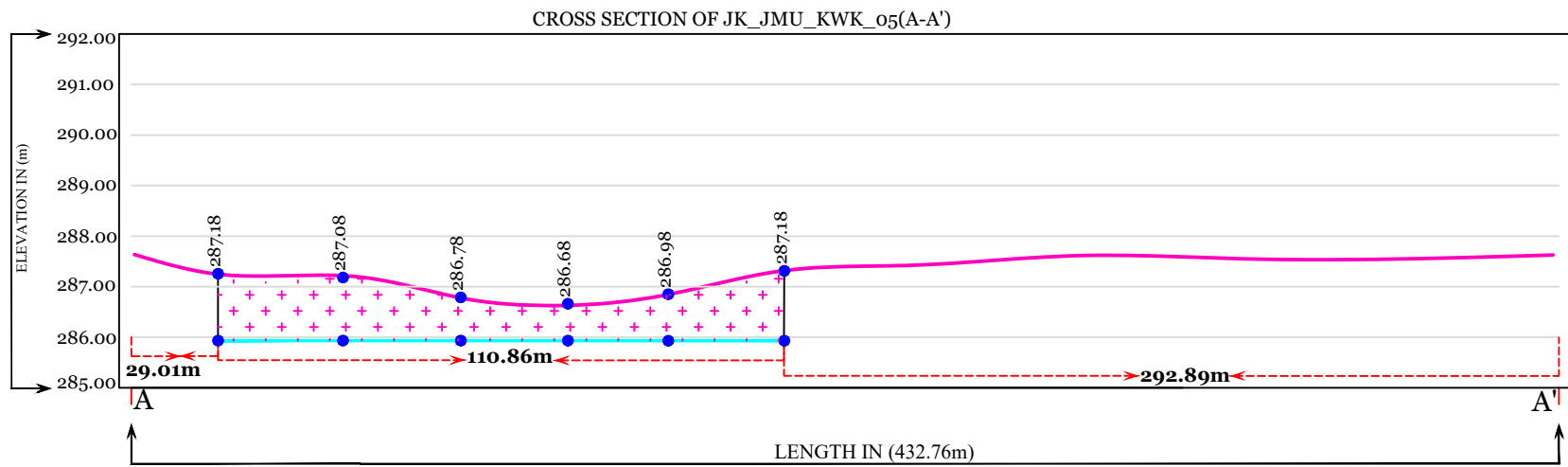
Ave Depth = $(0.6+0.8+1.1+1.2+1.4+1.5/6)= 1.1(M)$
 VOLUME = 75000 x 1.1 = 82500 (CUM)

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



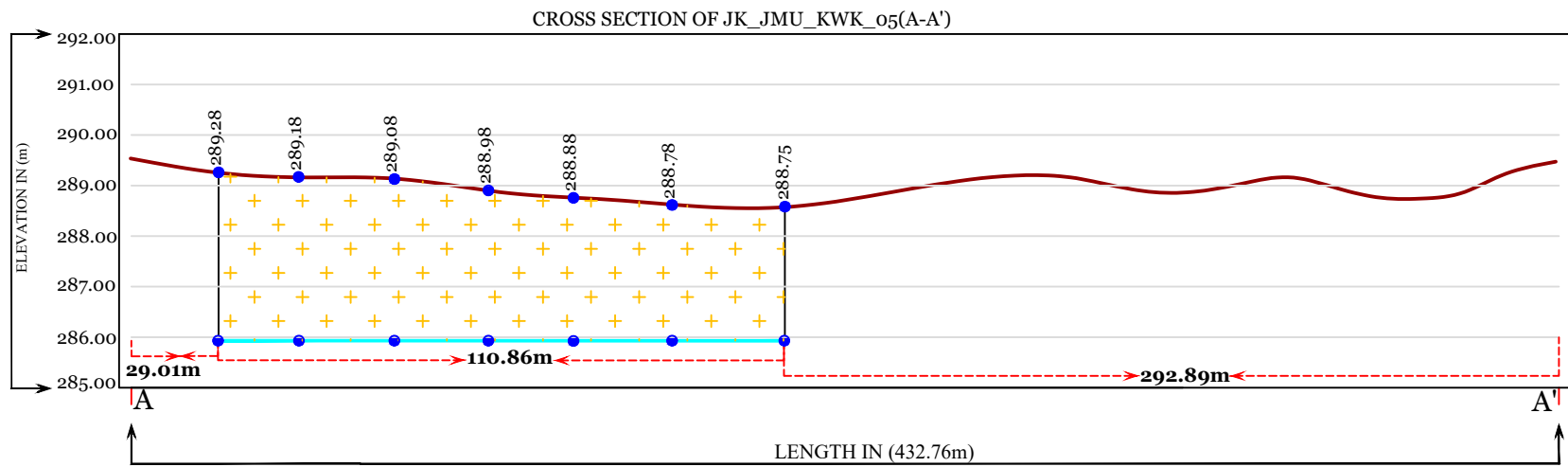
Ave Depth = $(3.2+3+2.9+2.7+3+3.1+3.31/7)= 3.03(M)$
 VOLUME = 75000 x 3.03 = 227250 (CUM)



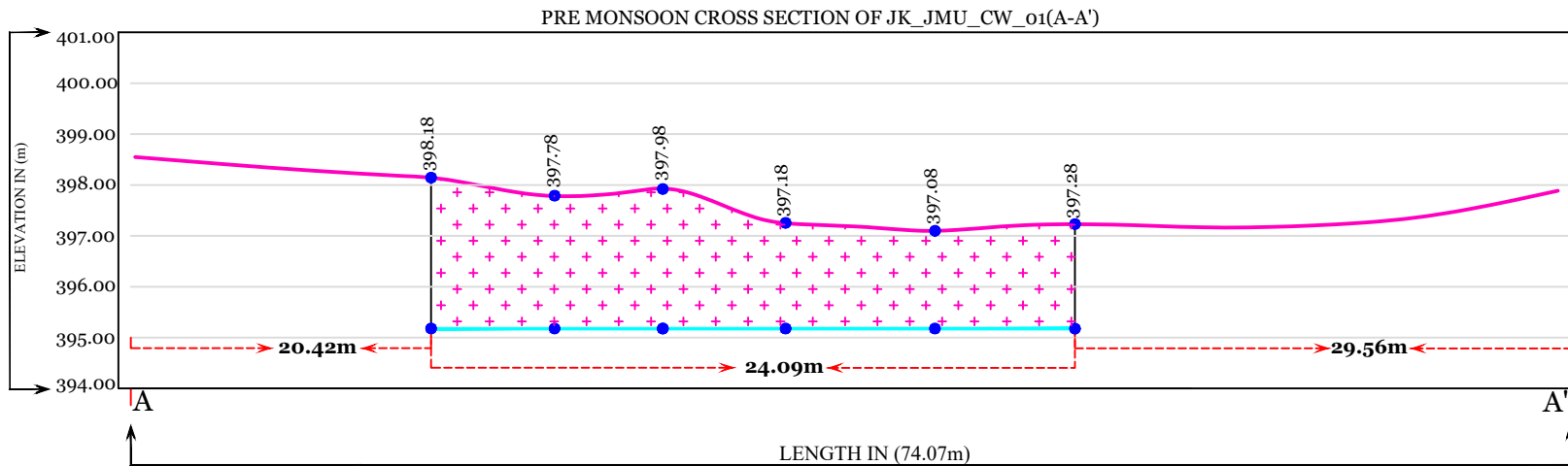
Ave Depth = $(1.2+1.1+0.8+0.7+1+1.2/6) = 1(M)$
 VOLUME = $97000 \times 1 = 97000 (CUM)$

LEGEND

POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	

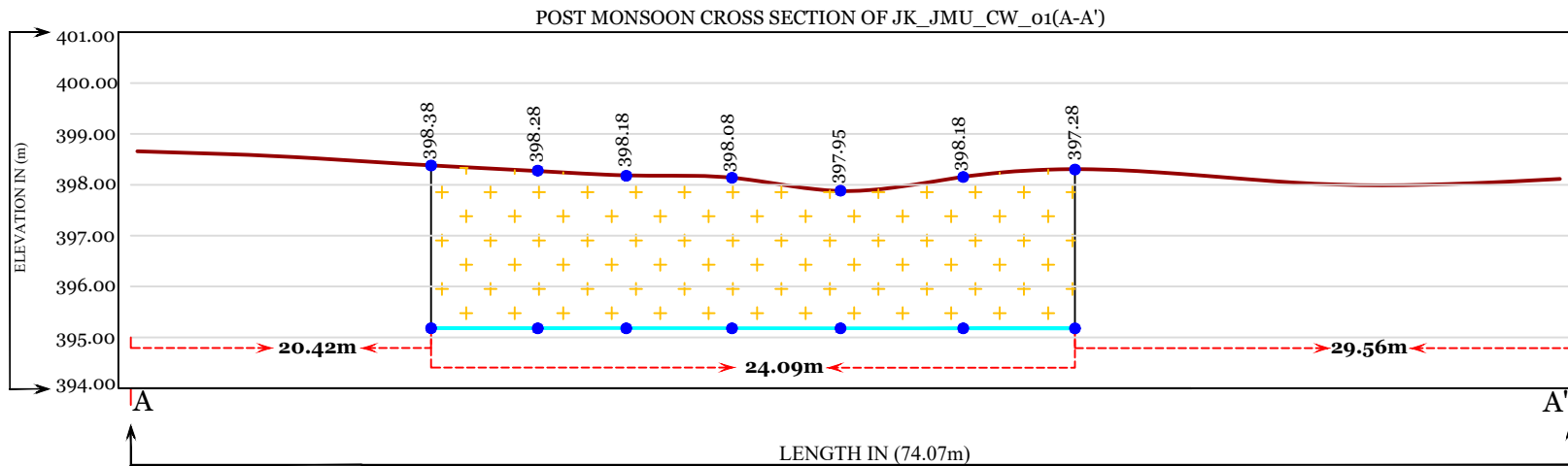


Ave Depth = $(3.3+3.2+3.1+3+2.9+2.8+2.77/7) = 3.01(M)$
 VOLUME = $97000 \times 3.01 = 291970 (CUM)$



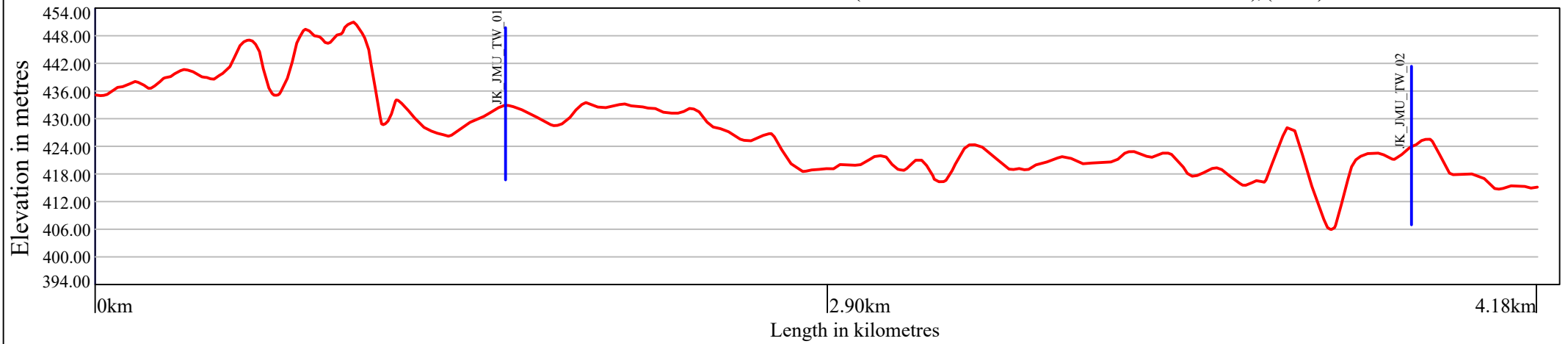
Ave Depth = $(3+2.6+2.8+2+1.9+2.1/6)= 2.4(M)$
 VOLUME = $12000 \times 2.4 = 28800 (CUM)$

LEGEND			
POST MONSOON RBM		PRE MONSOON RBM	
WATER		SECTION LINE	
POST MONSOON ELEVATION		PRE MONSOON ELEVATION	
WATER LINE		FLOW DIRECTION	



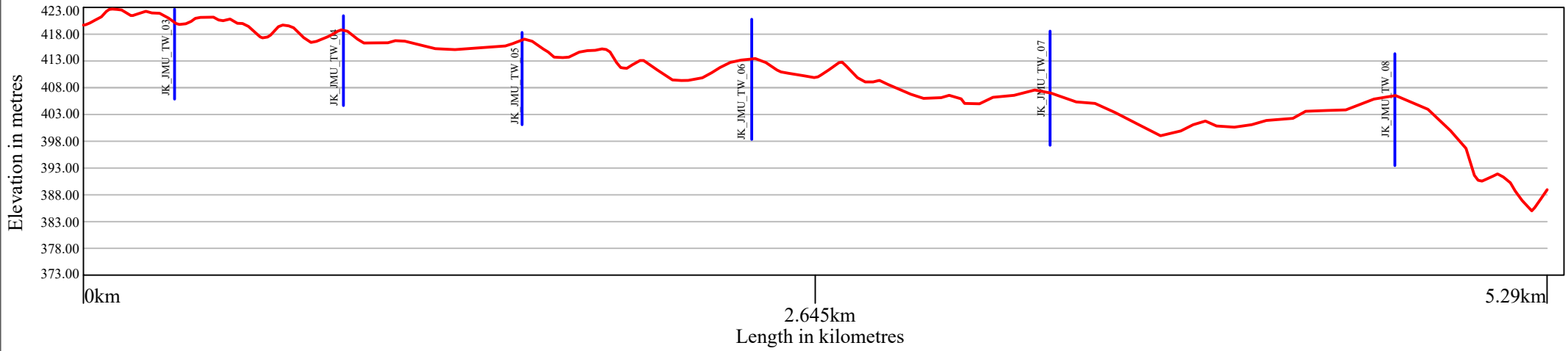
Ave Depth = $(3.2+3.1+3+2.9+2.77+3+3.1/7)= 3.01(M)$
 VOLUME = $12000 \times 3.01 = 36120 (CUM)$

L SECTION OF TAWI RIVER FROM BHAGYA MATA TO MANWAL (UP TO 4.18km EAST SOUTH TO SOUTH WEST), (A - A') PART - 1



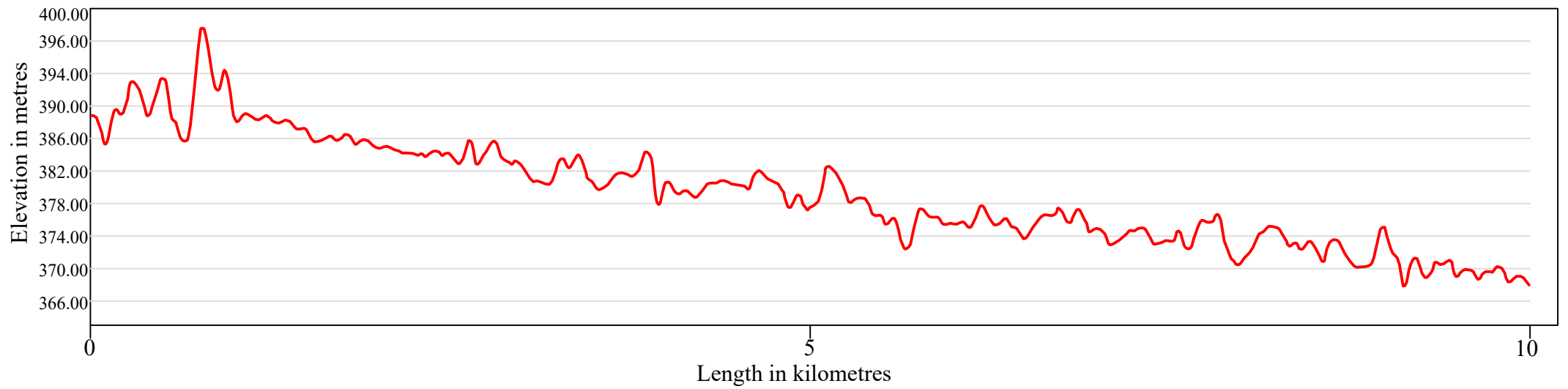
The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER FROM MANWAL TO DHAN (UP TO 5.29km EAST SOUTH TO SOUTH WEST), (B - B') PART - 2



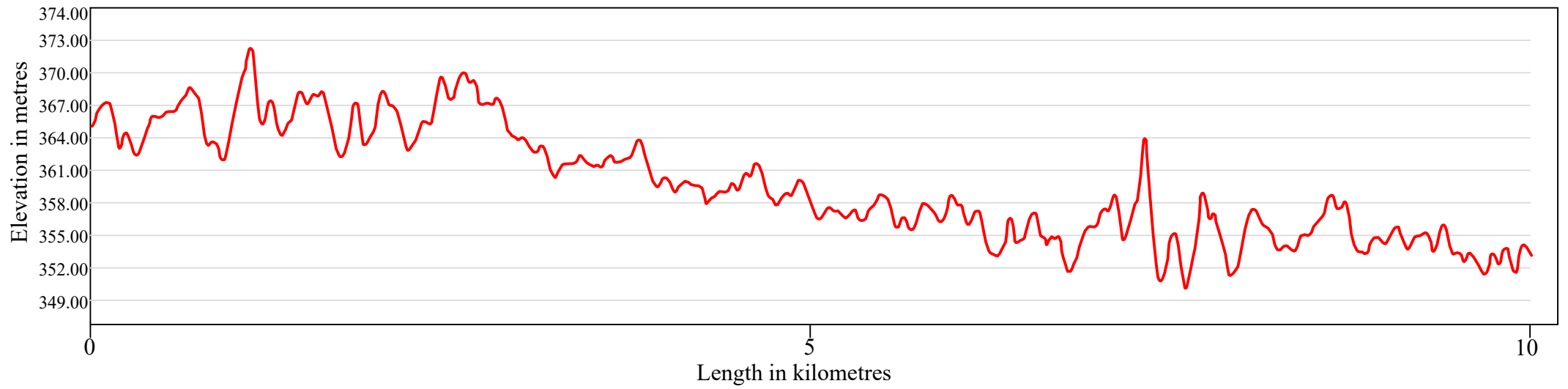
The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER FROM DHAN TO KANALAH (UP TO 10km EAST SOUTH TO SOUTH WEST), (C - C') PART - 3



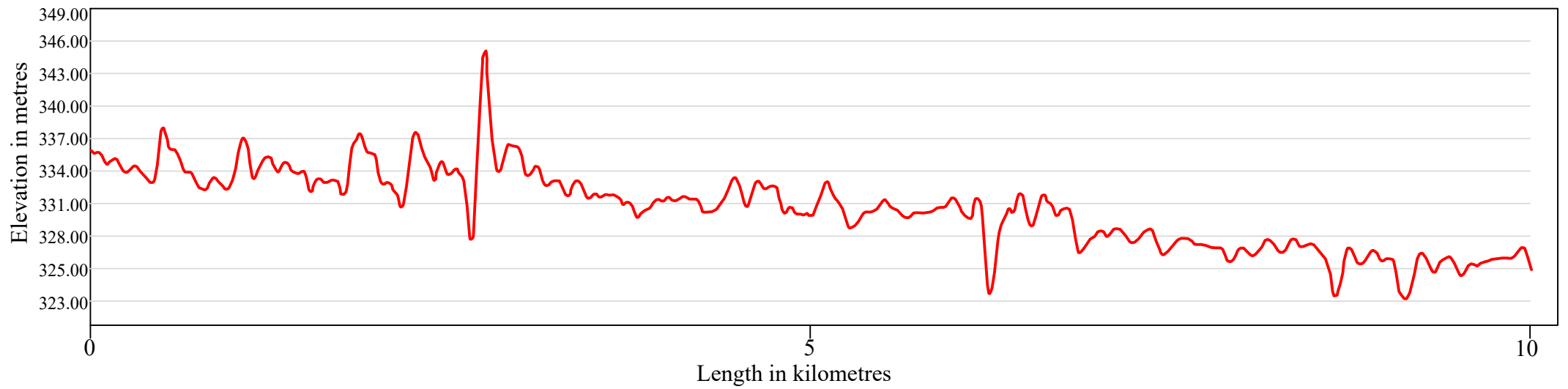
The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER FROM KANALAH TO CHAK CHILAH (UP TO 10km EAST SOUTH TO SOUTH WEST), (D - D')PART - 4



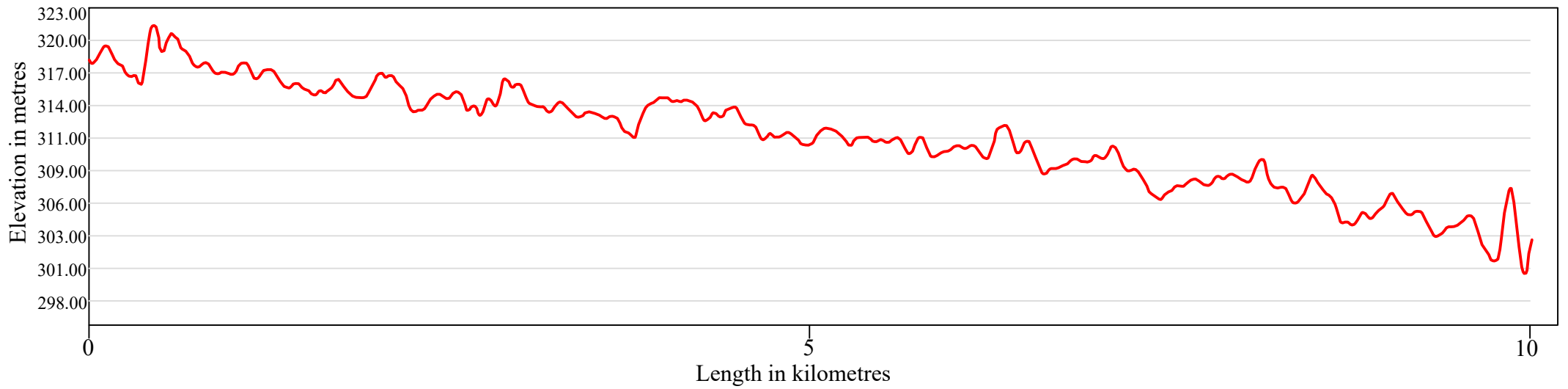
The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER FROM CHAK CHILAH TO NAGROTA (UP TO 10km EAST SOUTH TO SOUTH WEST), (E - E') PART - 5



The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER FROM NAGROTA TO GUJJAR NAGAR (UP TO 10km EAST SOUTH TO SOUTH WEST), (F - F') PART - 6



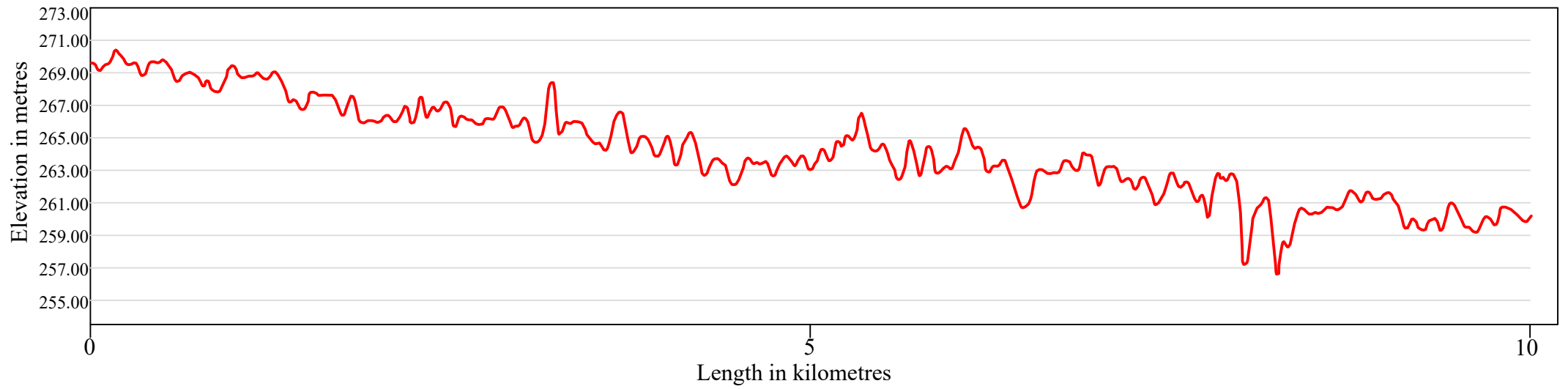
The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER FROM GUJJAR NAGAR TO RANJITPUR (UP TO 10km EAST SOUTH TO SOUTH WEST),(G - G')PART - 7



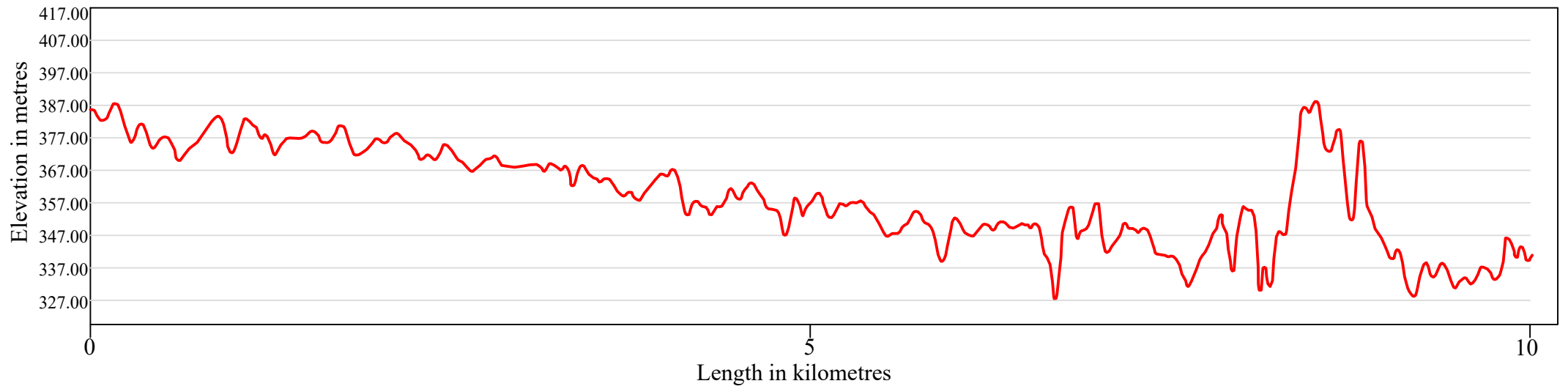
The levels given in above L- sections are nearly correct as per office record

L SECTION OF TAWI RIVER RANJITPUR TO HARIPUR (UP TO 10km EAST SOUTH TO SOUTH WEST), (H - H') PART - 8



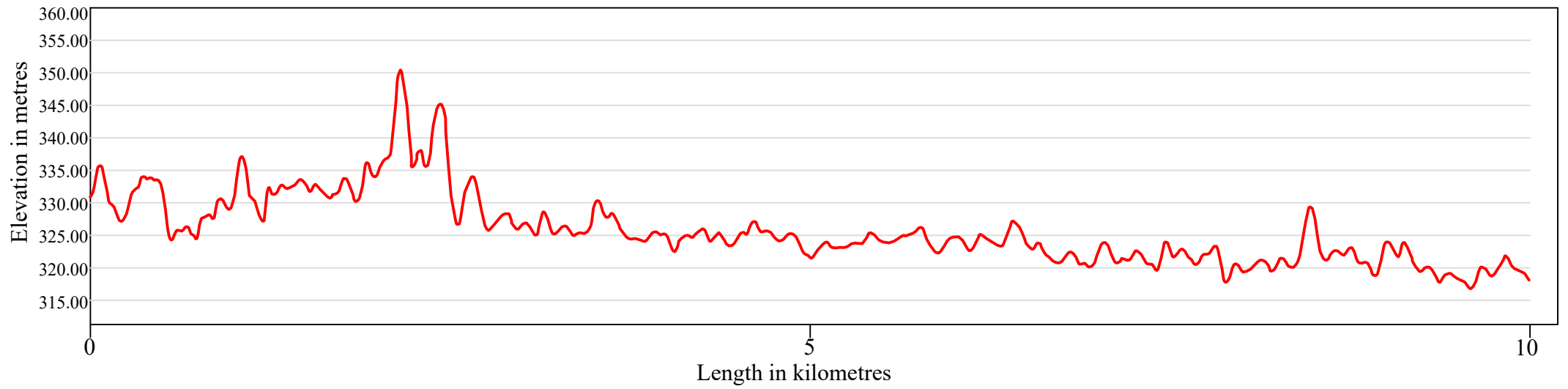
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHENAB RIVER FROM BHABAR ROSYALAN TO GORDAH (UP TO 10km NORTH EAST TO WEST SOUTH), (A - A')PART - 1



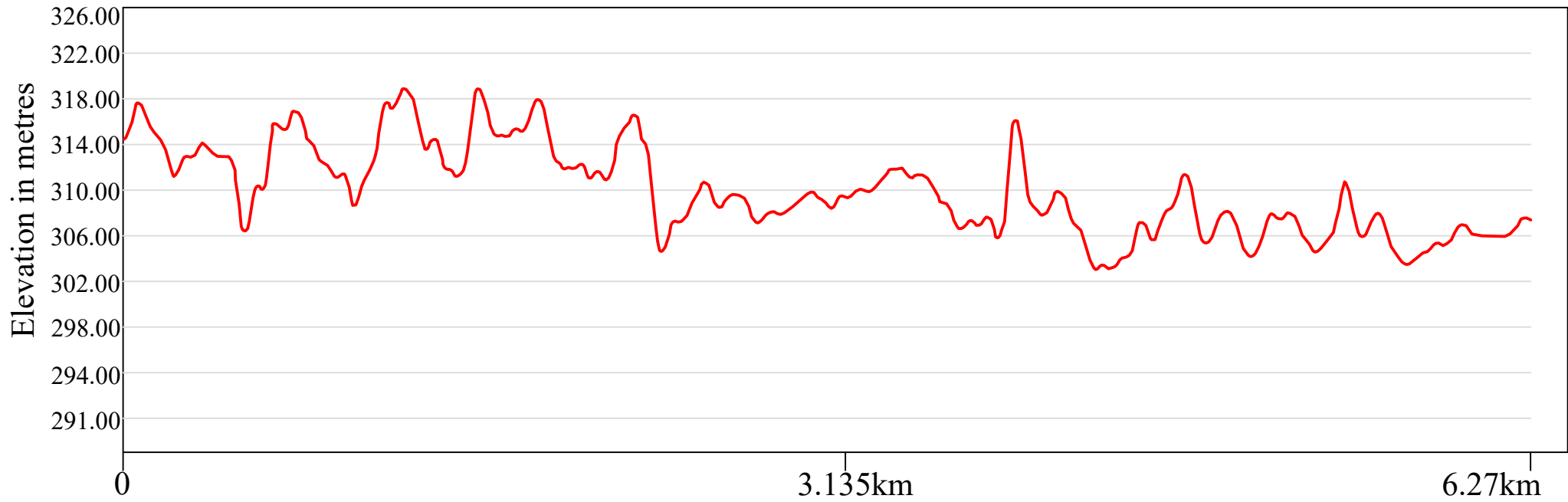
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHENAB RIVER FROM GORDAH TO SAROT (UP TO 10km NORTH EAST TO WEST SOUTH), (B - B')PART - 2



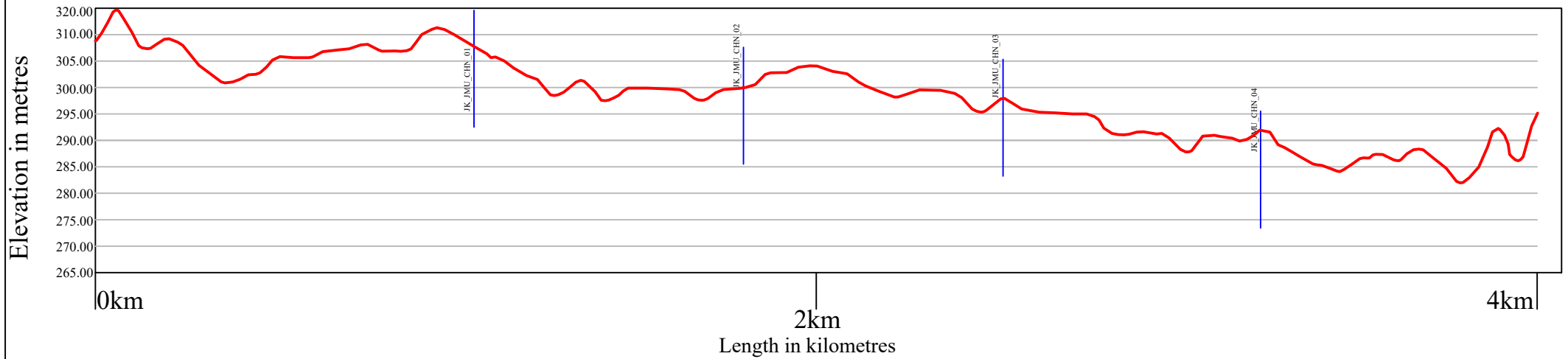
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHENAB RIVER FROM SAROT TO DOOMI (UP TO 6.27km SOUTH TO WEST), (C - C')PART - 3



The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHENAB RIVER FROM DOOMI TO AIRN PUR (UP TO 4km EAST SOUTH TO SOUTH WEST), (E - E') PART - 4



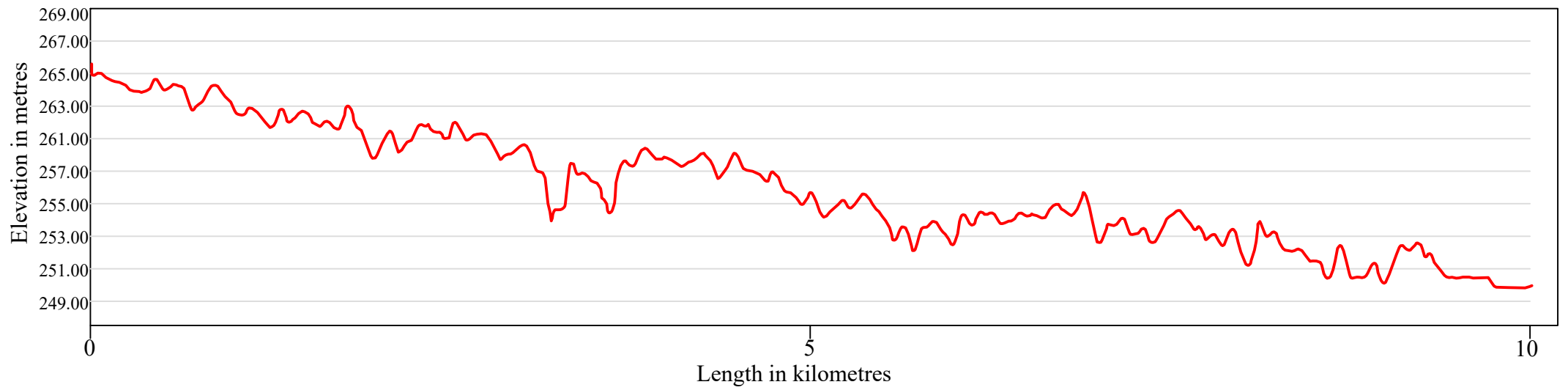
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHENAB RIVER FROM AIRN PUR TO DAL PAT (UP TO 10km SOUTH TO WEST), (F - F')PART - 5



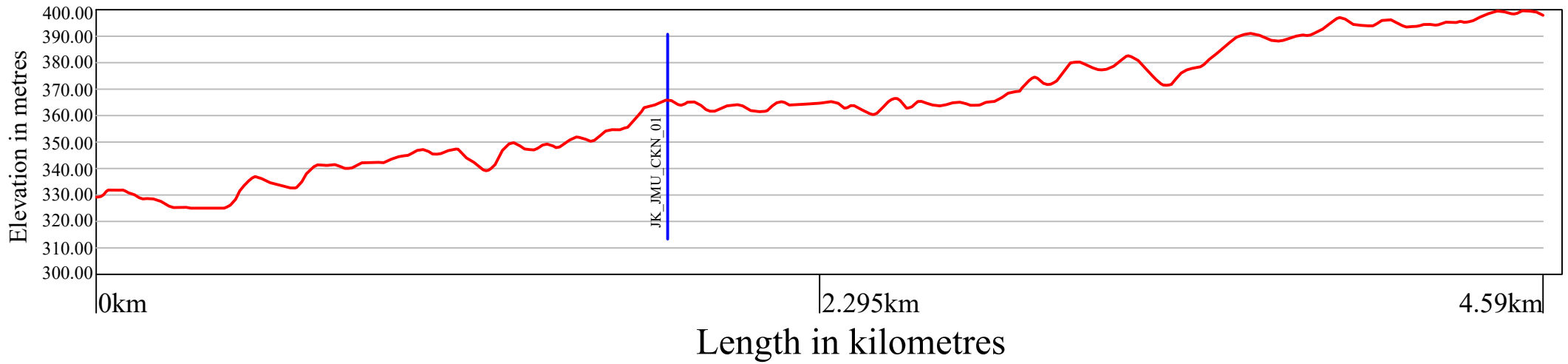
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHENAB RIVER FROM DAL PAT TO TAGWAL (UP TO 10km SOUTH TO WEST), (G - G')PART - 6

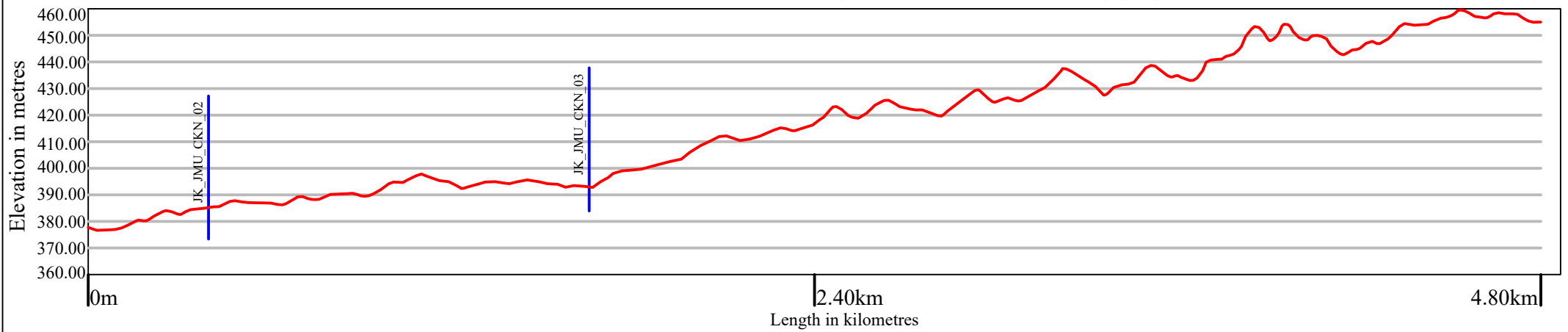


The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHAUKI CHOURA RIVER FROM GANGAS TO PANDHAL (UP TO 4.59km EAST NORTH TO WEST), (A - A')PART - 1

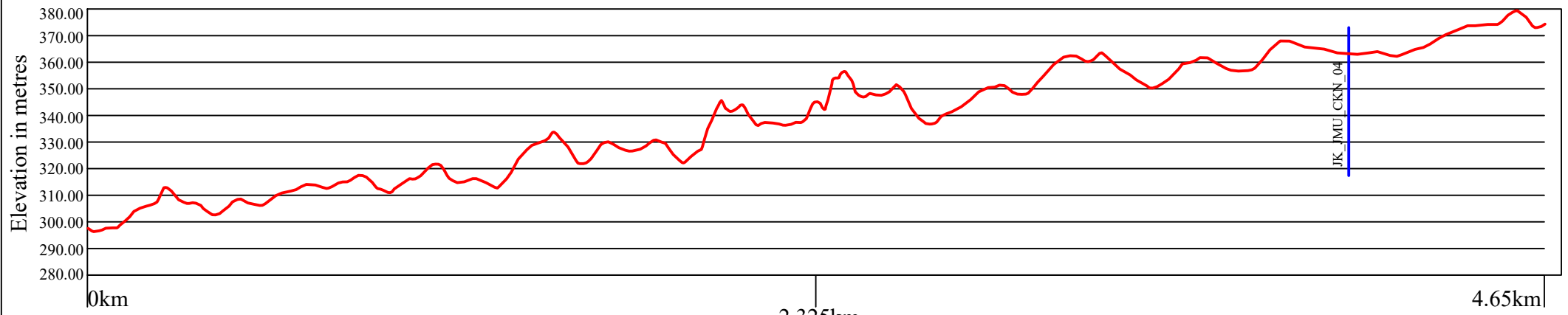


L SECTION OF CHAUKI CHOURA RIVER FROM PANDHAL TO MALEL (UP TO 4.80km EAST NORTH TO WEST), (B - B')PART - 2



The levels given in above L- sections are nearly correct as per office record

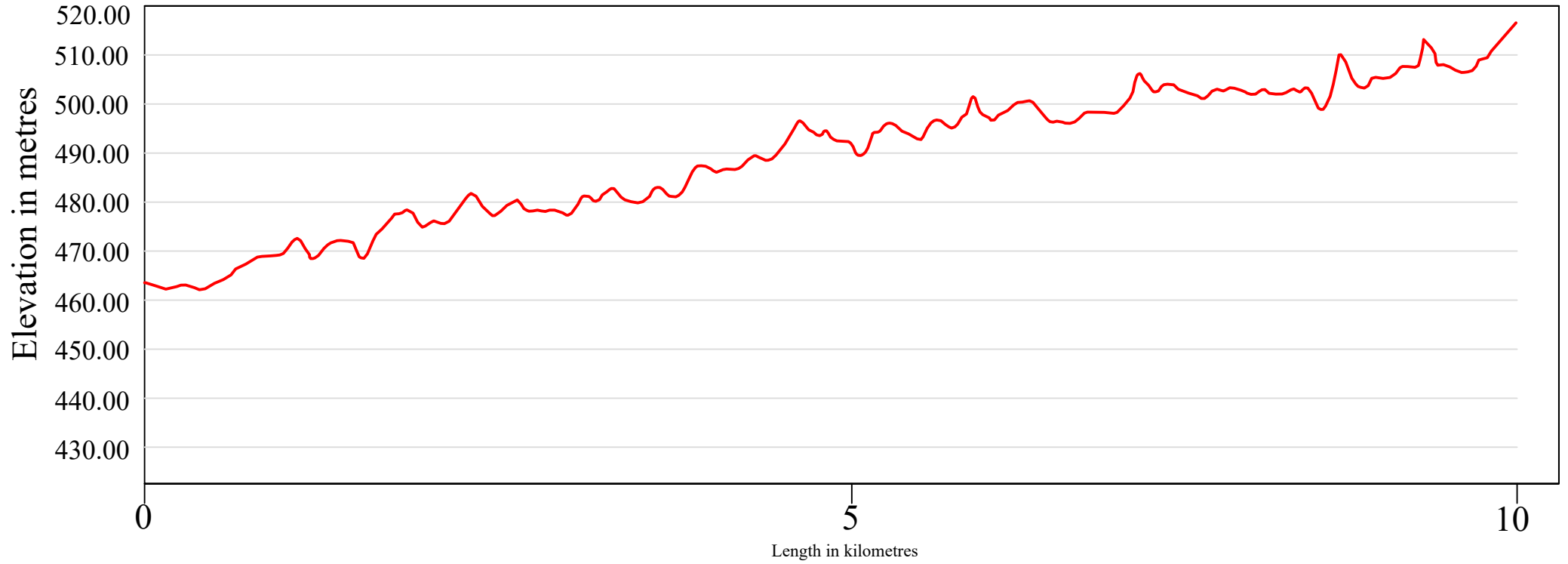
L SECTION OF CHAUKI CHOURA RIVER FROM MALEL TO KHAKHIAL (UP TO 4.65km EAST NORTH TO WEST), (C - C')PART - 3



2.325km
Length in kilometres

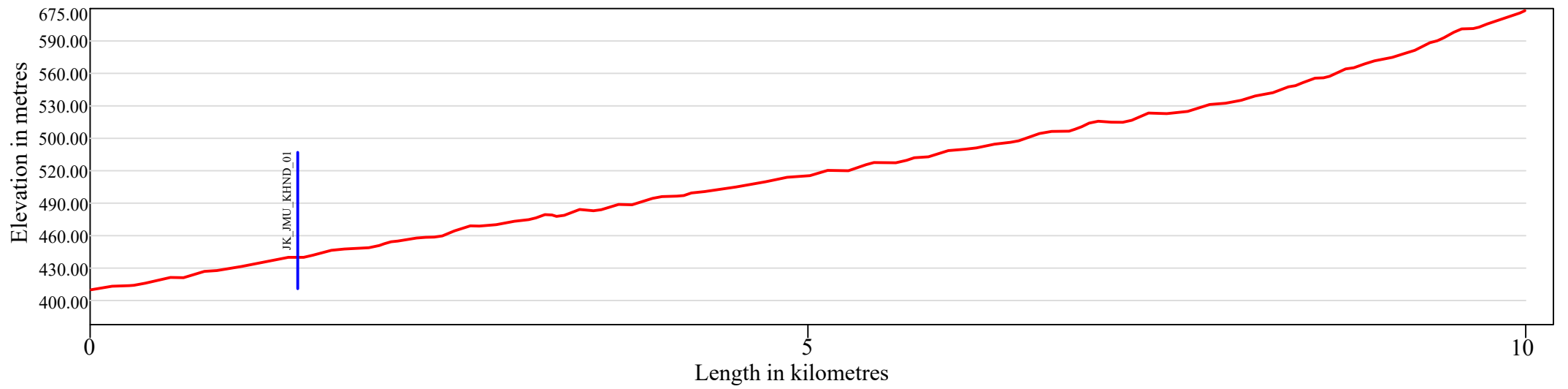
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHAUKI CHOURA RIVER FROM LALYAL KHAKHIAL TO GANGAL (UP TO 10km EAST NORTH TO WEST SOUTH), (D - D')PART - 4



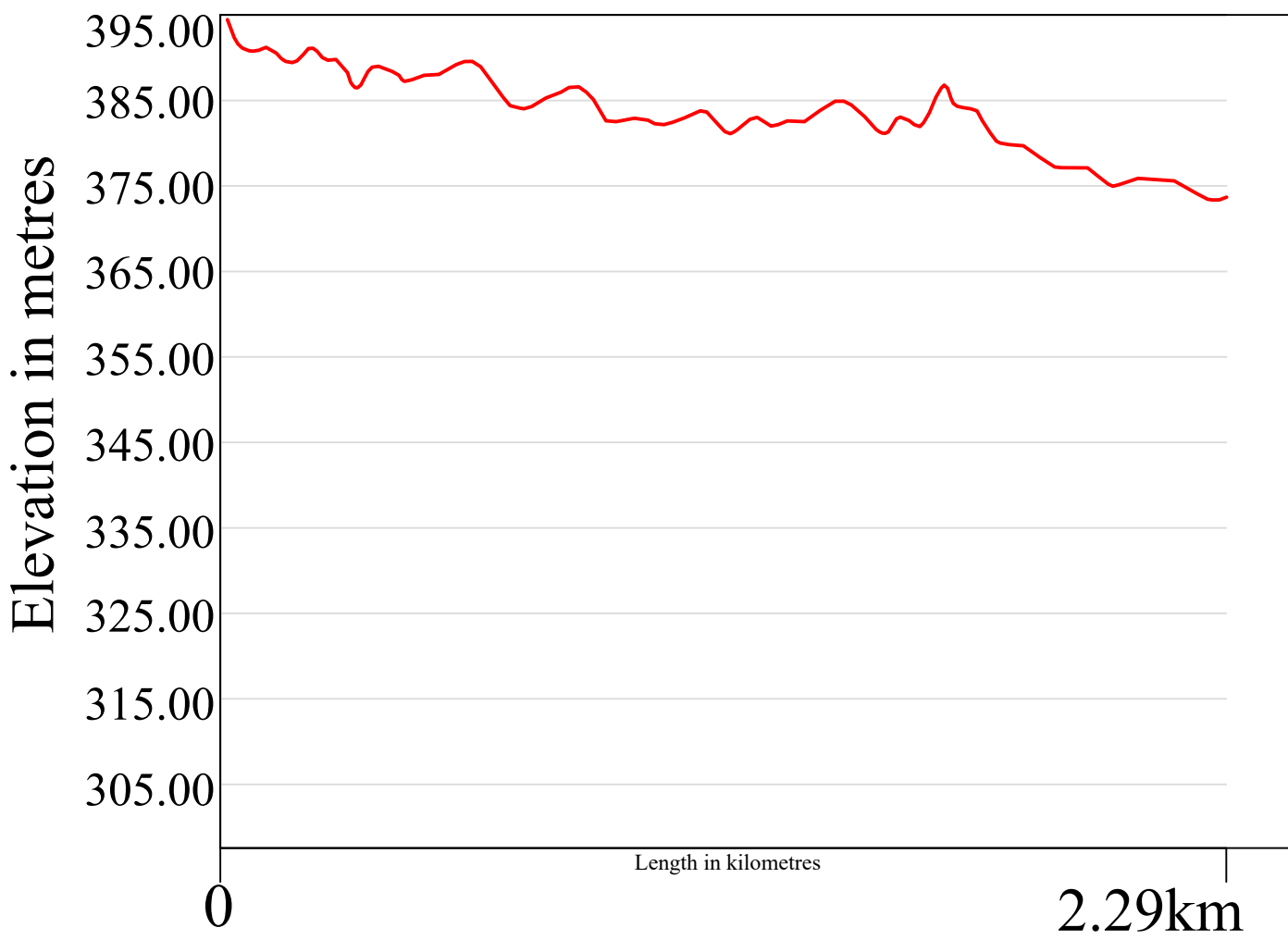
The levels given in above L- sections are nearly correct as per office record

L SECTION OF KHARANDRA KHAD FROM JAMBRI TO KATHAR (UP TO 10km NORTH TO SOUTH WEST), (A - A')PART - 1



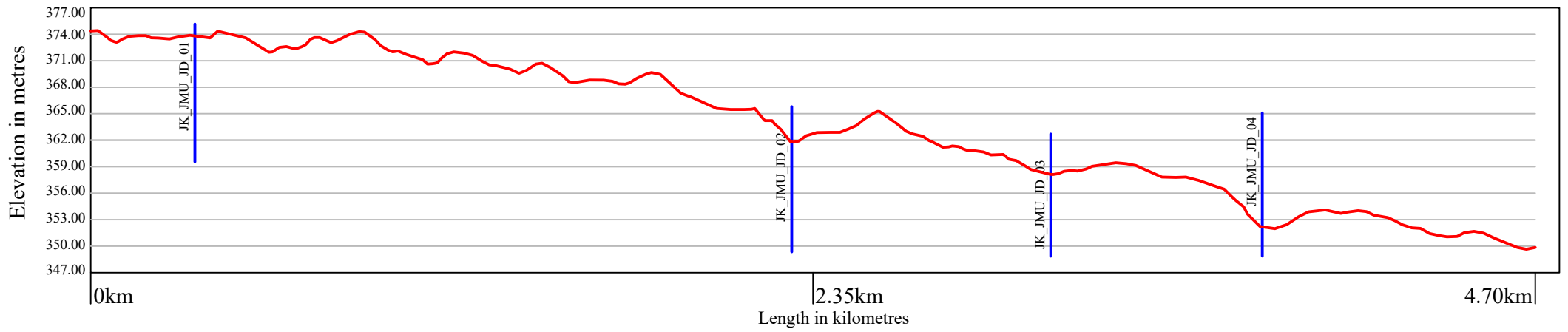
The levels given in above L- sections are nearly correct as per office record

L SECTION OF JAD KHAD FROM MAWA BRAHMANA TO MANANI (UP TO 2.29km NORTH TO SOUTH), (A - A')PART - 1



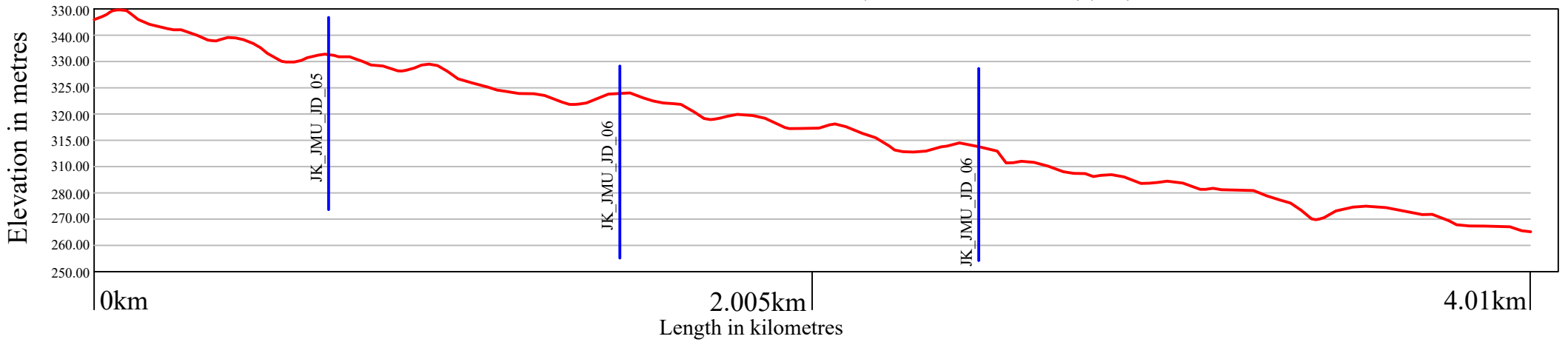
The levels given in above L- sections are nearly correct as per office record

L SECTION OF JAD KHAD FROM MANANI TO GURAH JAGIR (UP TO 4.7km NORTH TO SOUTH), (B - B')PART - 2



The levels given in above L- sections are nearly correct as per office record

L SECTION OF JAD KHAD FROM GURAH JAGIR TO CHAK NAZALA (UP TO 4.01km NORTH TO SOUTH), (C - C')PART - 3



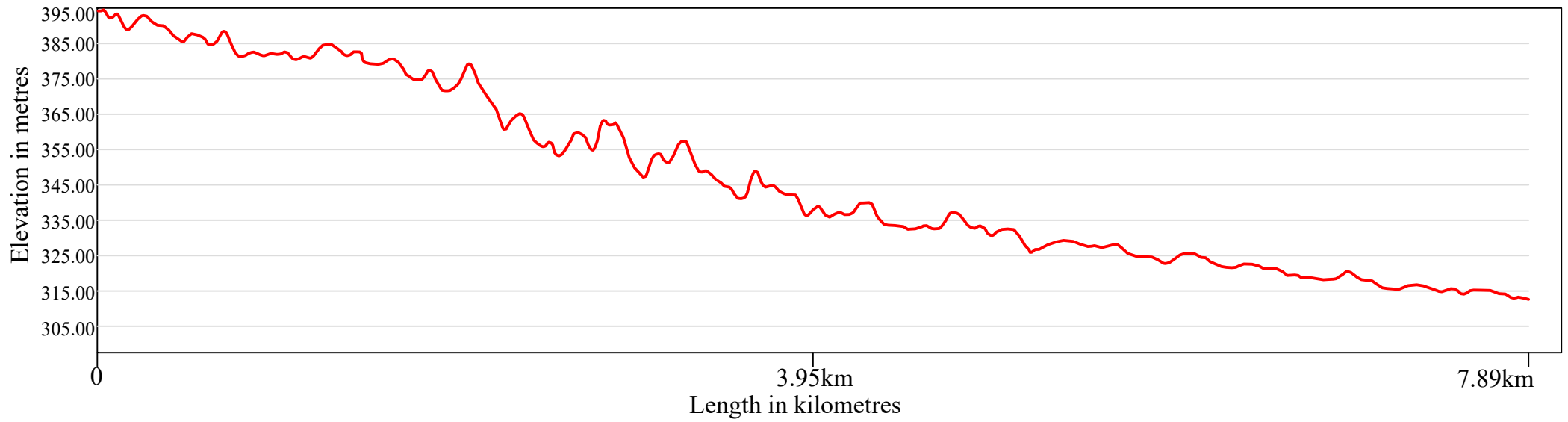
The levels given in above L- sections are nearly correct as per office record

L SECTION OF JAD KHAD FROM CHAK NAZALA TO MAIRA (UP TO 7.28km NORTH TO SOUTH), (D - D')PART - 4



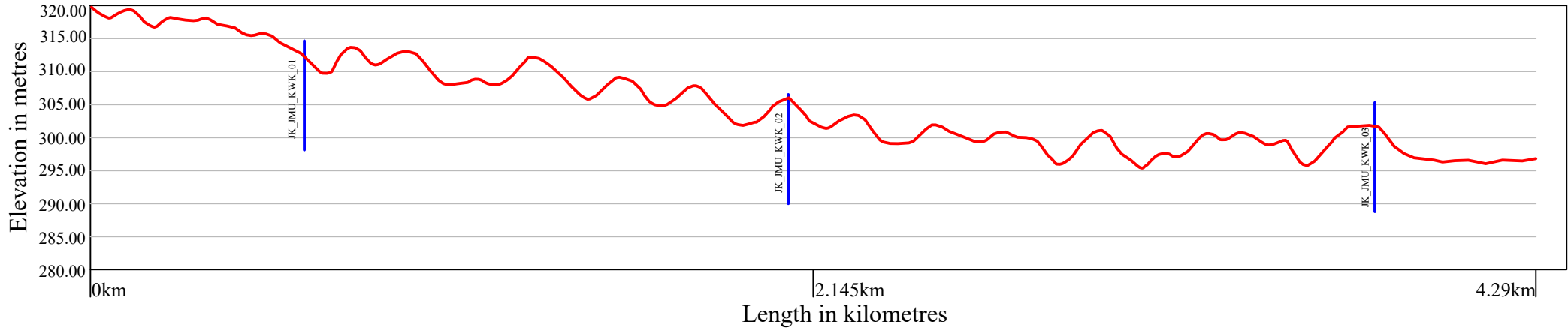
The levels given in above L- sections are nearly correct as per office record

L SECTION OF KHOURA WALLI KHAD FROM DANA TO LOHARA (UP TO 7.89km NORTH TO EAST SOUTH), (A - A')PART - 1



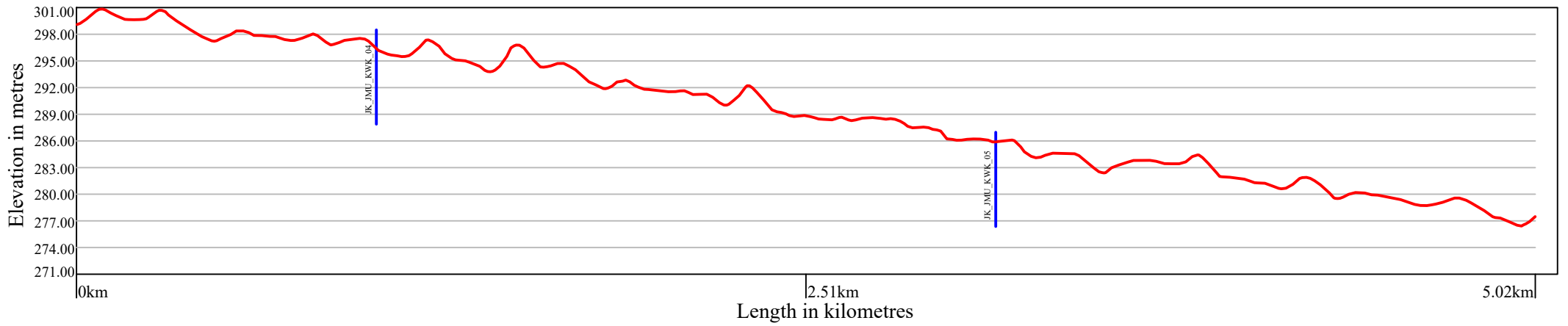
The levels given in above L- sections are nearly correct as per office record

L SECTION OF KHOURA WALLI KHAD FROM LOHARA TO JOGIANI (UP TO 4.29km NORTH TO EAST SOUTH), (B - B')PART - 2



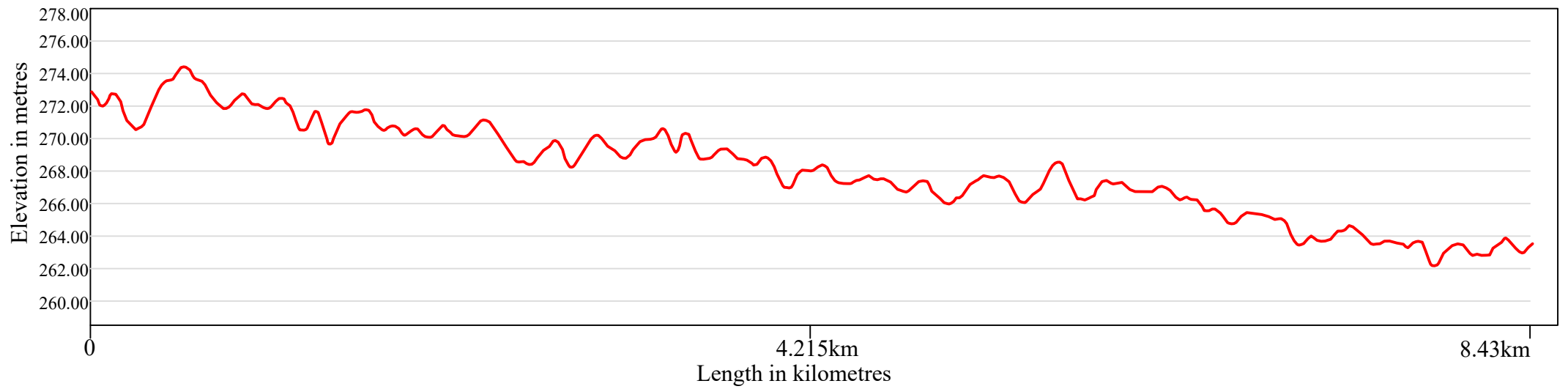
The levels given in above L- sections are nearly correct as per office record

L SECTION OF KHOURA WALLI KHAD FROM JOGIANI TO RAJWAL (UP TO 5.02km NORTH TO EAST SOUTH), (C - C')PART - 3



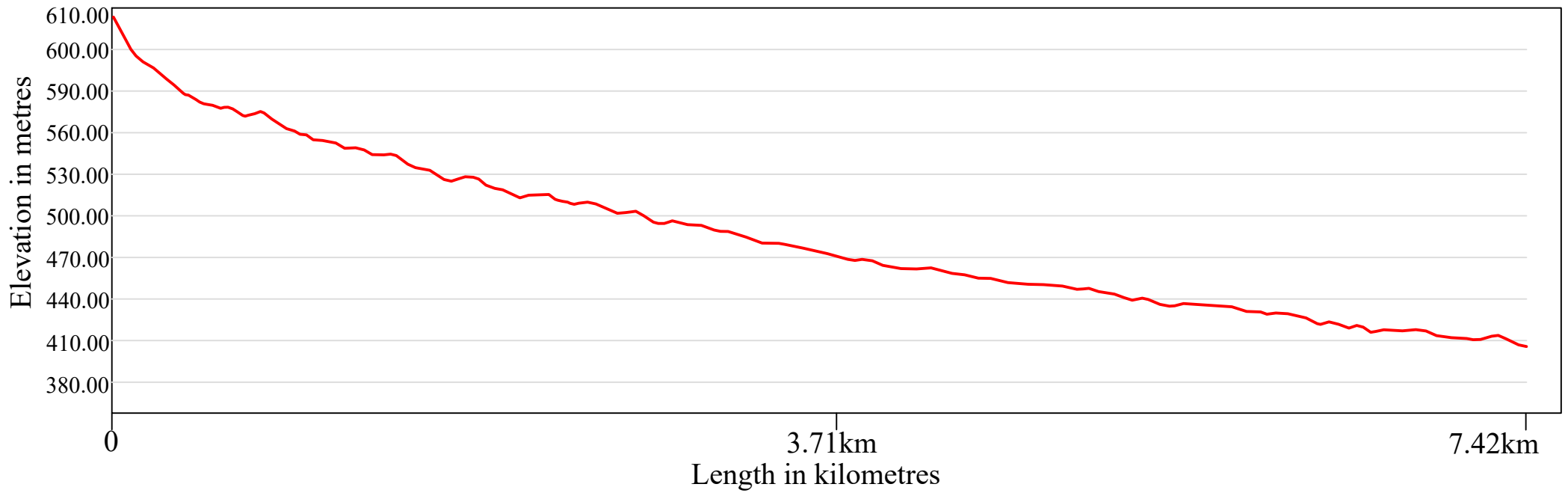
The levels given in above L- sections are nearly correct as per office record

L SECTION OF KHOURA WALLI KHAD FROM RAJWAL TO KALIAN (UP TO 8.43km SOUTH TO WEST), (D - D')PART - 4



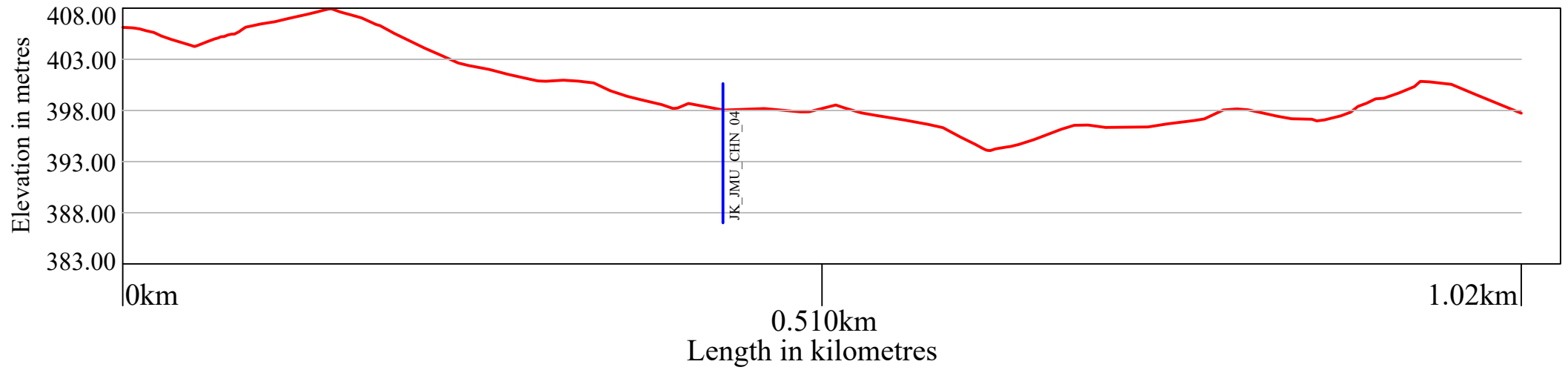
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHIBBE WALI KHAD FROM DONG TO MAJRA KOTLI (UP TO 7.42km WEST TO SOUTH), (A - A')PART - 1



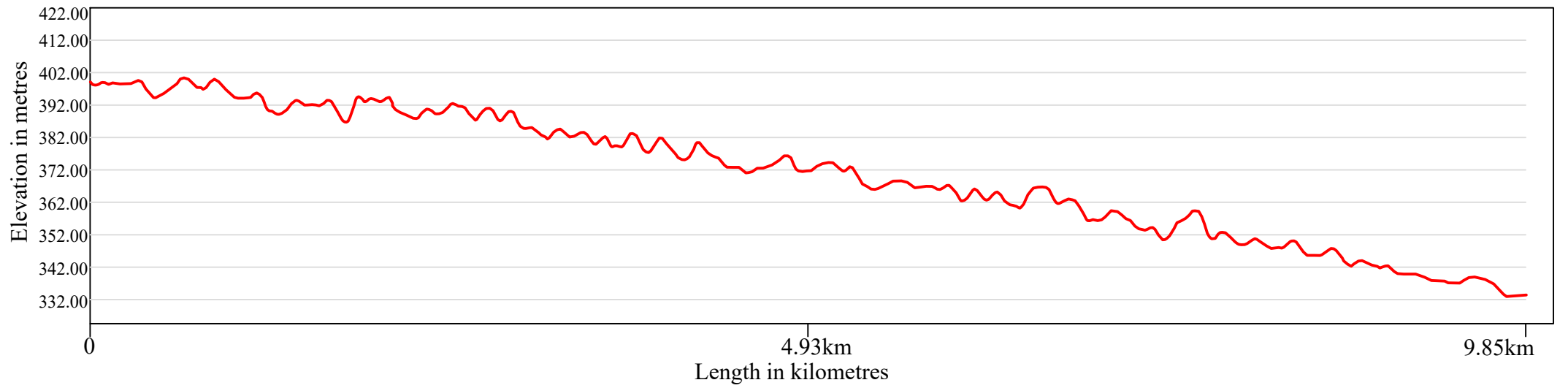
The levels given in above L- sections are nearly correct as per office record

L SECTION OF CHIBBE WALI KHAD FROM MAJRA KOTLI TO MAJRA KOTLI (UP TO 1.02km WEST TO SOUTH), (A - A')PART - 1



The levels given in above L- sections are nearly correct as per office record

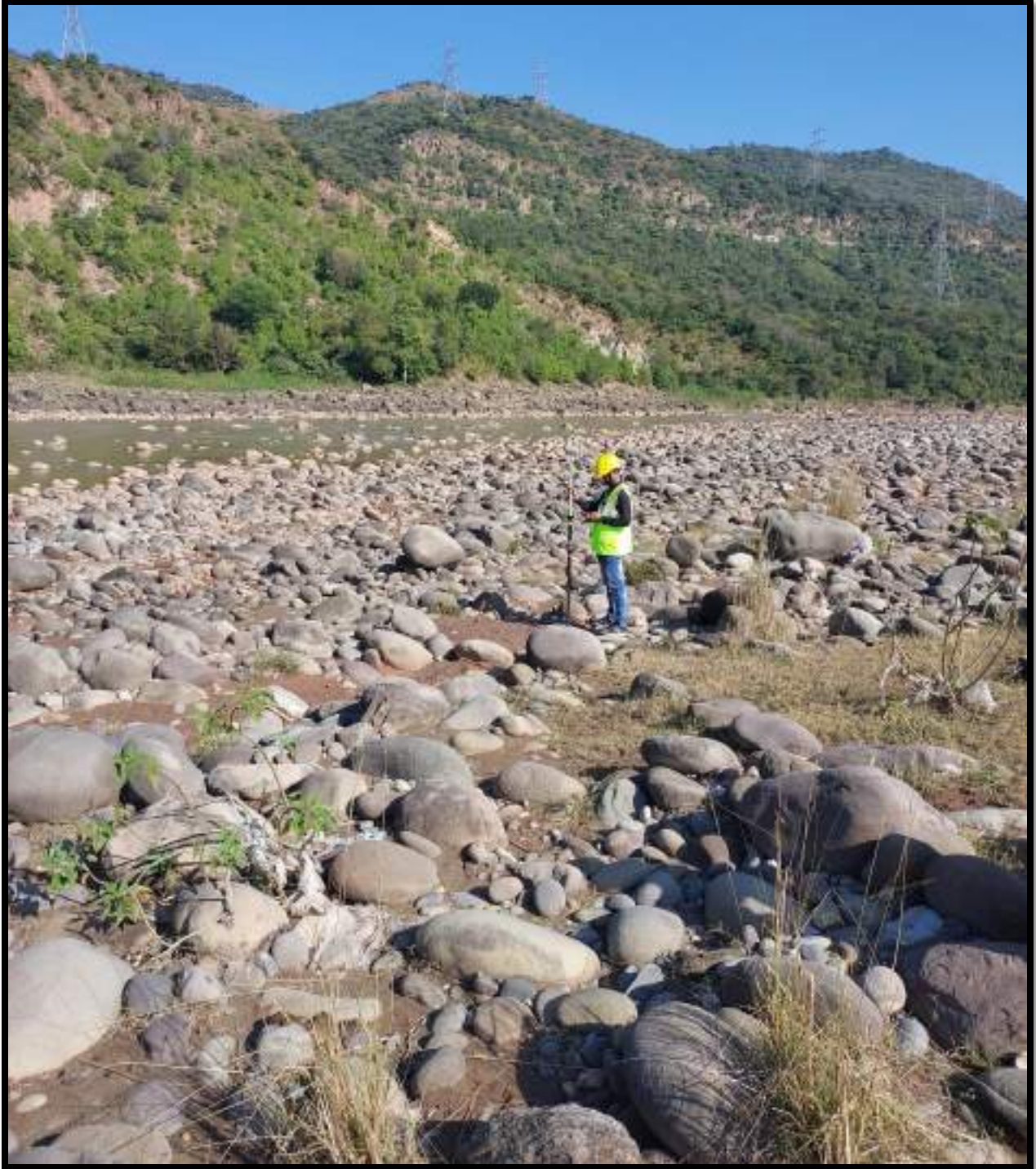
L SECTION OF CHIBBE WALI KHAD FROM MAJRA KOTLI TO NAGROTA (UP TO 9.85km WEST TO SOUTH), (C - C')PART - 3



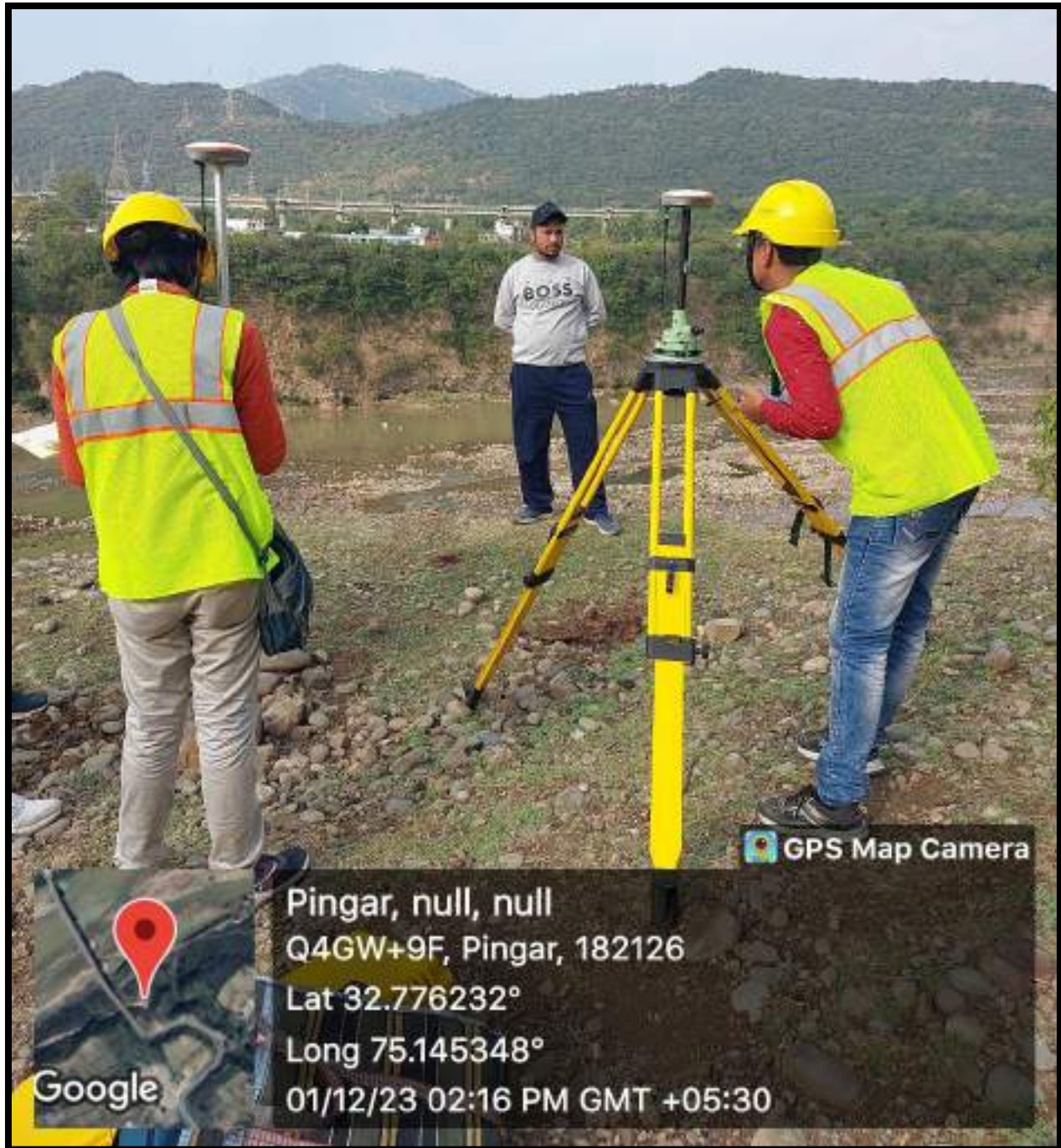
The levels given in above L- sections are nearly correct as per office record

ANNEXURE-X

FIELD PHOTOGRAPHS



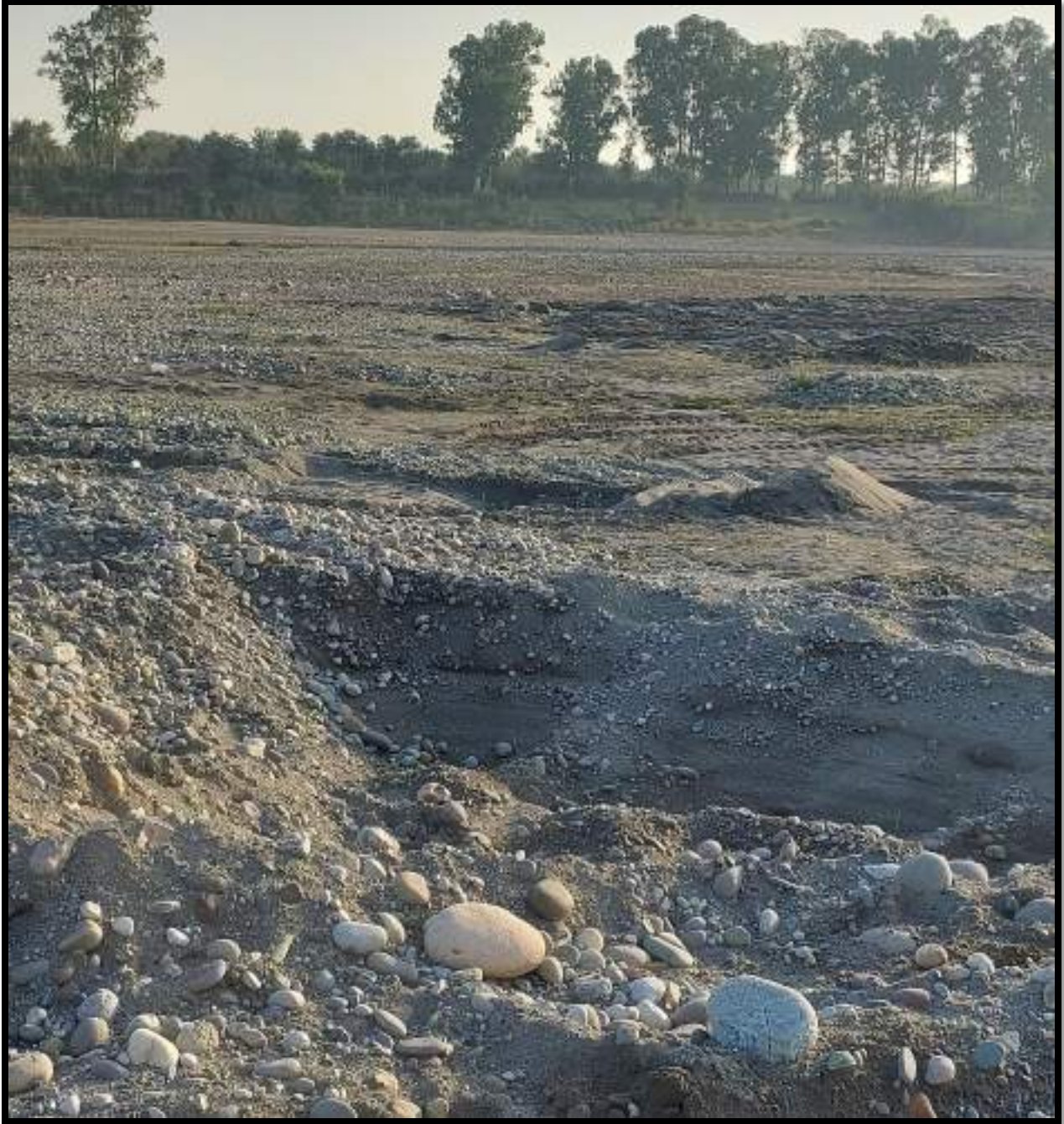
PHOTOGRAPH 1: DGPS survey in the Tawi River in Jammu district.



PHOTOGRAPH 2: DGPS survey in the Tawi River in Jammu district.



PHOTOGRAPH 3: DGPS survey in the Chenab River in Jammu district.



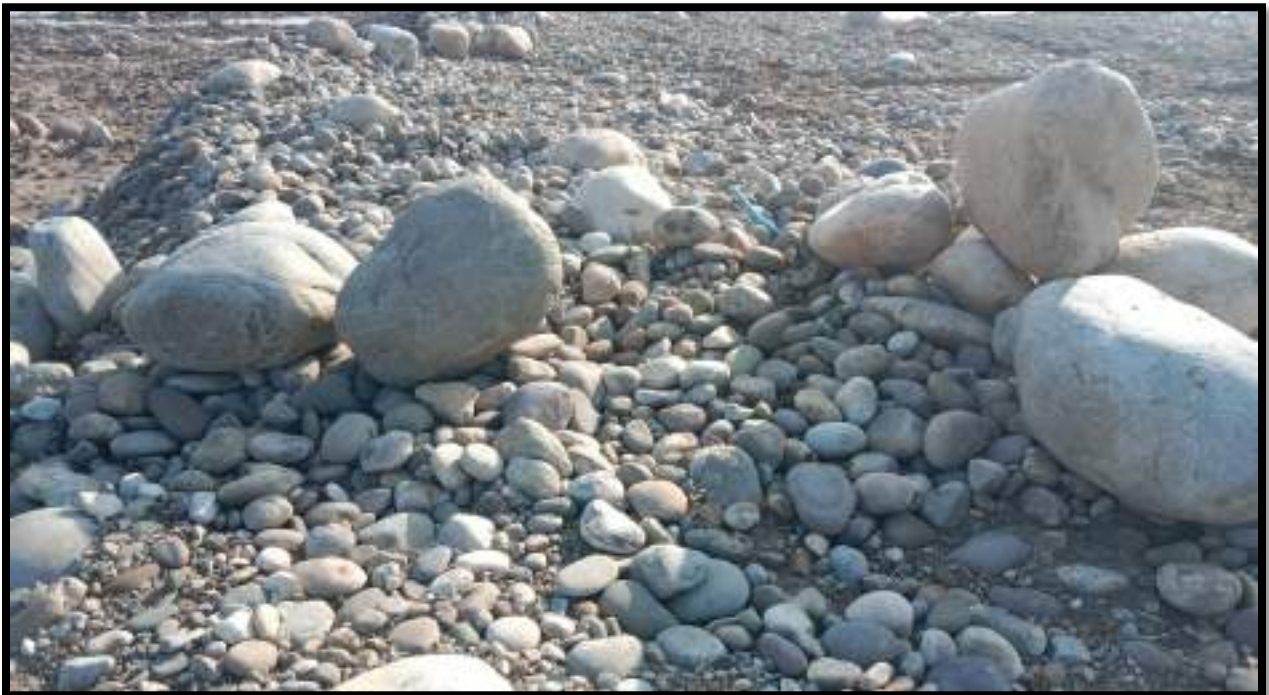
PHOTOGRAPH 4: Depositional pattern of RBM on the riverbed of the Chenab River in Jammu district.



PHOTOGRAPH 5: Lithological study of pit in the Chenab River in Jammu district.



PHOTOGRAPH 6: Lithological study in the Nikki Tawi River in Jammu district.



PHOTOGRAPH 7: RBM depositional pattern in Nikki Tawi River in Jammu district.



PHOTOGRAPH 8: Lithological study of pit in the Nikki Tawi River in Jammu district.



PHOTOGRAPH 9: Benchmark marked on Tawi River bridge in Jammu district.



PHOTOGRAPH 10: DGPS survey in the riverbed of Tawi River in Jammu district.

