

National Mission for Clean Ganga

Ministry of Jal Shakti

Department of Water Resources, River Development & Ganga Rejuvenation
Government of India

RAMGANGA RIVER BASIN ATLAS

December 2022

Version - 1



cGanga
Centre for Ganga River Basin Management and Studies
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National Mission for Clean Ganga (NMCG)

NMCG is the implementation wing of National Ganga Council which was setup in October 2016 under the River Ganga Authority order 2016. Initially NMCG was registered as a society on 12th August 2011 under the Societies Registration Act 1860. It acted as implementation arm of National Ganga River Basin Authority (NGRBA) which was constituted under the provisions of the Environment (Protection) Act (EPA) 1986. NGRBA has since been dissolved with effect from the 7th October 2016, consequent to constitution of National Council for Rejuvenation, Protection and Management of River Ganga (referred to as National Ganga Council).

www.nmcg.in

Centre for Ganga River Basin Management and Studies (cGanga)

cGanga is a think tank formed under the aegis of NMCG, and one of its stated objectives is to make India a world leader in river and water science. The Centre is headquartered at IIT Kanpur and has representation from most leading science and technological institutes of the country. cGanga's mandate is to serve as think-tank in implementation and dynamic evolution of Ganga River Basin Management Plan (GRBMP) prepared by the Consortium of 7 IITs. In addition to this, it is also responsible for introducing new technologies, innovations, and solutions into India.

www.cganga.org

Acknowledgment

This river atlas document is a collective effort of a number of experts, institutions and organisations, some who had been associated with preparing the Ganga River Basin Management Plan (GRBMP) submitted to the Government of India in 2015, and others who joined later with their own independent expertise and enthusiasm. Contributions to the photographs and images for this document by individuals are gratefully acknowledged.

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PREFACE

The Centre for Ganga River Basin Management and Studies (“cGanga”) was established in the year 2016 as a comprehensive think-tank for river restoration and to assist the National Mission for Clean Ganga (NMCG), Jal Shakti Ministry, GoI, for “continual scientific support in the implementation and dynamic evolution of the Ganga River Basin Management Plan” for conservation of National River Ganga. In keeping with this goal, cGanga has been actively developing detailed knowledge capsules, tools and procedures to enable comprehensive and early rejuvenation of the Ganga River network across the whole basin. While a river basin approach is essential for analyzing and comprehending the Ganga river’s status and needs to regain her wholesomeness, the implementation strategies of the required interventions must keep in mind the role and individuality of each State. Thus, it is necessary to focus on state-level sub-strategies of natural resource management for holistic revival of River Ganga.

The present document attempts to provide a comprehensive picture of the Ramganga basin river network in the States of Uttar Pradesh and Uttarakhand. This Atlas for the selected basins was created entirely by cGanga, with original mapping of all identifiable rivers, and with selective additional information culled from different sources for completeness. Many of the rivers and maps given here are not readily available elsewhere, and we expect them to prove useful to the many Central, State, and other organizations engaged in the river, water or natural resource management in the Ramganga basin.

In preparing this document dedicated members of cGanga spent a lot of time in diligently studying, analysing, acquiring and compiling diverse information from diverse sources. Many people and organisations outside cGanga also helped in its preparation, which aided in its comprehensiveness. We are grateful to one and all of them.

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ACRONYMS AND ABBREVIATIONS

BCM	: Billion Cubic Meter
cGanga	: Centre for Ganga River Basin Management and Studies
Cumec	: Cubic meter per second
CWC	: Central Water Commission
DEM	: Digital Elevation Model
GIS	: Geographic Information System
GRBMP	: Ganga River Basin Management Plan
Km	: Kilometer
LULC	: Land Use/ Land Cover
M	: Meter
MCM	: Million Cubic Meter
mm	: millimeter
MW	: Mega Watt
Sol	: Survey of India
Sq. Km.	: Square Kilometer
SWAT	: Soil & Water Assessment Tool
UK	: Uttarakhand

INTRODUCTION

Ramganga River is the first major tributary to join Ganga at its left bank. Ramganga have 10,000+ Km river network and 700+ rivers in the basin. River joins Ganga near Kusumkher village at the border of Hadoi and Kannauj district of Uttar Pradesh (at about 126 m amsl). The present volume is a first attempt to map the rich river network of Ramganga basin in as fine a detail as possible. Much of the information contained in this River Atlas is not available in any other document and was created in original from available earth images with appropriate data and image processing tools and software on GIS platform. Naturally, there may be shortcomings in some of the maps herein, including missing small streams, which can be expected to be duly refined and included in later versions. Also, a river atlas is often useful in conjunction with other natural resource and anthropogenic information such as the *distribution of rainfall and other climatic data, other waterbodies, forest cover, elevations, soil types, other physiographic information, land use, tourist and pilgrimage centres, and infrastructure including roads and highways*. Such other relevant information is also expected to be processed, assembled and included later in a fuller version of this Atlas. In the meanwhile, it is hoped that this Atlas will provide a useful window to Ramganga basin river resources.

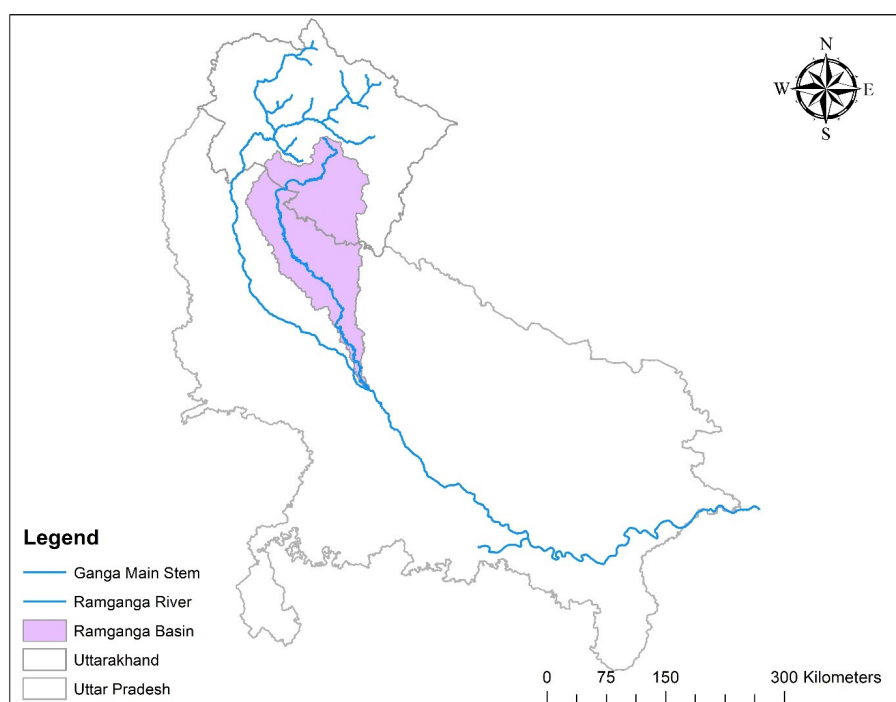


Figure: Location of Ramganga Basin



RAMGANGA BASIN: SALIENT FEATURES

S No	Particulars	Details
1	State Extent	Latitude: 27° 07' 3" & 29° 45' 56"N and Longitude: 78° 16' 23" & 80° 07' 35" E
2	Total Geographical Area (sq. km)	24,409.04
3	Area contributing to Ganga Basin (sq km)	24,409.04
4	Percentage of the Ganga Basin Area (%)	2.83
5	Districts (Census 2011)	UP: 11; UK: 07
6	Towns (Census 2011)	(Class I: 06; Class II: 08; Class III: 31; Class IV: ; Class V: ; Class VI:)
7	Total Population (Census 2011)	
8	Gram Panchayats	UP: 5847; UK: NA
9	Villages (Census 2011)	UP: 8119; UK: 4669
10	Average Annual Rainfall (mm)	2200 mm in north and 800 mm near confluence
11	Average Temperature Range (oC)	5 - 45
12	Major Rivers	Aril, Gangan, Kosi, Khoh, Gaula, East Bahgul, Bino, Palan, Dhela, Phikha, Sona, Gagas, Mandal, MeyraSot
13	Number of Major Basins	14
14	Number of Water Resources Structures	(Dams: 11, Barrages: 09, Weir: 03, Anicuts, Lifts, Power houses: 00)
15	Number of Ground Water Observation wells	Level: 705 Quality: 87
16	Number of CWC Sites	24

RAMGANGA BASIN: RIVERS TRAVERSING THROUGH VARIOUS DISTRICTS IN BASIN AREA

S.No	State	District	Area (sq km)	Population (census 2011)	Growth Rate (%)	Density	River
1	Uttara-khand	Champawat	1,766	259,648	15.63	147	Kaudiyar Gad
2		Bageshwar	2241	259,898	4.18	116	Bagan Raula, Menol Gad
3		Chamoli	8030	391,605	5.74	49	Dungar Gadhera, Gurghat Gad, Gwar Gadhera, Hinwalghat Gad, Kali Gad, Khachyar Gadhera, Khansar Gad, Maigar Nadi, Maroi Gad, Mothu, Noni Gad, Ramganga, Rasoi Gad, Rohida Gad, Svuru Gad
4		Almora	3082	622,506	-1.28	198	Am Gadhera, Amathola Gad, Auldhiru Gadhera, Badangarh Nadi, Bagan Raula, Bagar Ki Gad, Bagen Gadhera, Ban Gad, Ban River, Banarsi Gad, Barkholi Gad, Basola Gad, Baur Gadhera, Baurar Gadhera, Bayalakhan Ka Gadhera, Baye Gadhera, Beni Gad, Bhanelu Gad, Bharnaun Gad, Bimali Gadhera, Bino Nadi, Chamar Ki Rauli, Dangrai Nala, Dangrar Ka Gadhera, Deb Gad, Dev Gad or Dogadda Raula, Dewra Gadhera, Dhamni Gadhera, Dhauli Gadhera, Dusad Gadhera, Gabhini Gadhera, Gadan Gadhera, Gagas River, Gangan River, Garsing Gadhera, Ghat Gad, Godi Gad, Gular Gadhera, Gular Ki gad, Jainal Gad, Jakh Gadhera, Jamehara Gad, Janatari Gad, Jaunpokhra Gadhera, Jaurast Nala, Juniya Gadhera, Kali Gad, Kali Gad, Kali Gad, Kali Rao, Kamehiya Sot, Kanari Gadhera, Kanchan Gad, Kanchula Gad, Kaniyani Gad, Kaphalgari Sot, Kapsori Gadhera, Karula River, Khachyar Gadhera, Khalgari Sot, Khar Gandhera, Khatron River, Khile Gadhera, Khirau, Khodan Gadhera, Khop Gadhera, Khul Gad, Kichha Nadi, Koshi River, Kotur Nala, Kshetrapal Gad, Kuj Gad, Kunai Gad, Kuthlar Gad, Kuwan Gad, Kyari Gadhera, Lamgada Gad, Mahadeo Gad, Maingali Gad, Malli Gad, Manher Nala, Masangari, Menol Gad, Mothu, Nagar, Nagchulakhal Ka Gadhera, Nan Kosi, Nariya Gad, Naurar, Nayer, Pandali Rao, Pandera Raula, Rain Gad, Riskan Gadhera, Riskan Gadhera, Sakuni Gad, Sal Nala, Sarod Gad, Saul Gadhera, Shankergarh Nala, Sim Gad, Singraun Ki Rauli, Siswa Nala, Sumari Gad, Swal Nadi, Tarag Gadhera, Thakulari Gad, Thall Gad, That Gad, Tota Pangra Gadhera, Tuseri Gad, Tuti Gadhera, Tyar Ka Gadhera





S.No	State	District	Area (sq km)	Population (census 2011)	Growth Rate (%)	Density	River
5	Uttara- khand	Pauri Garhwal	5329	687,271	-1.41	129	Adnalo Rao, Agar Gad, Am sot, Am Sot, Amgadi Sot, Amla, Amleda Sot, Amsati Sot, Andheriya Sot, Badangarh Nadi, Baila Nala, Bajir, Bajir Nadi or Ghat Gad, Balabhata Sot, Banaili River, Bangalgarhi Gad, Bara Sot, Baragad Sot, Barhat Nala, Behera Gad, Belamwali Sot, Bhairam Nadi, Bhangrawala Sot, Bhanriwala Sot, Bhumkiya Nala, Bilot Sot, Bino Nadi, Bodil Sot, Boksgadi Sot, Chaura Sot, Cheula Sot, Chhanchera Nala, Chhapa Ka Nala, Chhugalpani Sot, Chintiarao Dhar or Kilani Sot, Chita Nala, Chorpani Sot, Chotta Sal Sot, Chui Sot, Dangal Gad, Deli Dhunga Rao, Dev Gad or Dogadda Raula, Dewalbari Sot, Dhara River, Dhimki Sot, Dhotiyal Gad, Dhulwa Rao, Dhundiwala Sot, Dhundiwala Sot, Doliya Gad, Dudera Sot, Gala Gad, Gamdiru Sot, Gangan Sot, Garhkhettu Nala, Gariyon Sot, Garphuwalla Sot, Gaujera Nala, Gaujna Sot, Gaunch Gad, Gaya Gadhera, Ghanghas Sot, Ghentiwala Sot, Ghugtiya Gad, Ghuna Sot, Ghurnetor Sot, Giwain Sot, Golagadi Nala, Gujar Sot, Gujar Sot, Guniya Rauli, Gwal Gad, Haldgadi Rao, Haldwani Gad, Hathi Nala, Hathiya Sot, Jaman Sot, Jaman Sot, Jameli Canal, Jamna Sot, Jamunagwar Sot, Jara Sot, Jhand Dhar, Jori Sot, Kaduri Gad, Kaingadh Sot, Kali gum gadhera, Kaligad Sot, Kalli River, Kalon Sot, Kalu Shahid Sot, Kamri Sot, Kanchan Gad, Kandal Gad, Kanlya Sot, Kanya Sot, Katera Raula, Kaua Sot, Khadila sot, Khairad sot, Khakasgadi Sot, Khamalda Sot or Kamand Nala, Khansur Sot, Kharera Sot, Khark Rauli, Khyunai Ka Raula, Khoh River, Khubangadda Sot, Kilani Raula, Kilauli Sot, Kisanagadi Sot, kolu sot, Kothidhunga Sot, Koti Rao, Kugadda, Kukrad Sot, Lakharwala Sot, Lohakothi Sot, Majnuwala Sot, Malani Sot, Mandal Nadi, Mandalti Sot, Manor Gad, Masangari, Maugadi Sot, Mauliya sot, Meyra Sot/ Patir pani rao, Mirgonwala Sot, Mohanpani Sot, Mohara Gad, Morgarh Raula, Mortuwala Sot, Nalkata Sot, Nalkwali Sot, Nim Sot, Nungarha Sot, Nuni Raula, Od Ki Gad, Ogalpani Sot, Okliya Nala, Pahara Nala, Palan Nadi, Paniyali Sot, Pathniya Sot, Patliyun Gad, Pawai Gad, Phulai Sot, Pipal Sot, Pipal Sot, Ramawali sot, Ramganga, Ramjiwala Sot, Rigri Sot, Ruina Sot, Sabeh Nadi, Sagra Sot, Sain Gad, Saja, Sara Sot, Sarkara Sot, Semal Sot, Shankergarh Nala, Shimolia Rao, Sidhgadhal Sot, Sil Gad, Sindhuwali Sot, Sinpya Nala, Siya Sot, Siyar Sot, Sokharewar Sot, Sonari Gad, Sua Sot, Sukh Rao, Sungar Sot, Tair Gad, Timal Sot, Tunariawala Sot, Tusaran Raula, Ulasi Sot, Uni River, Vel Gad, Wudar Gad, Barsoti Sot, Sona Nadi, Sukha Sot, Surajgarhi Sot, Tut Gadhera

S.No	State	District	Area (sq km)	Population (census 2011)	Growth Rate (%)	Density	River
6	Uttara- khand	Nainital	4251	954,605	25.13	225	Bhakra Nadi 2, Gadhera, Kanakpur Nala, Amgarhi Sot, Asni Raula, Ausani Sot, Babliya Sot, Badhaiya N, Bahiya Nala, Baini Nadi, Bajun Gad, Baliya, Baliya Or Bah Nala, Balla, Bamania or Khera Nadi, Bamaurkhat Nala, Bamni Sot, Barai Nadi, Barath Gadhera, Barjala Gadhera, Barsoti Sot, Bhadrargarhi Sot, Bhakra_N, Bhandarpani Sot/ Kukurar Gad, Bhangajala Nadi/ Kutaliya Sot, Bhaniyar Sot, Bhawali Nala, Bhimtal gadhera, Bhumkani Gadhera, Bhutgarhi Sot, Bourgara Nala, Buransi Gadhera, Burhi Kosi, Chahal Sot, Chakpheri Nadi, Champa Gad, Chamria Gad, Chhoramili Sot, Chila Gad, Chorkhala Nala, Chorpani Sot, Dabka Nadi, Dal Gad, Damor Gad, Dhamdwari Gad, Dhangarhi Sot, Dhauradei Sot, Dhela River, Dhoriya Gad, Dhulwa Rao, Dhuni Gad, Doniyan Sot, East Bahgul Nadi, Gajar Sot, Gajrai Gad, Gangoli Gad, Garkhark Nala, Gharani Sot, Ghat Gad, Ghat Gad, Ghat Gad, Ghat Gad, Ghimoriya Sot, Ghirauli Nala, Ghugwa Gad, Ghutwa Nadi, Gorkha Sot, Goruni Gadhera, Gung Gad, Guniyanlekh Gadhera, Halkula Gadhera, Hari Rao, Hat Gadhera, Jabran Nala, Jakh, Jal Gad, Jam Gandhera, Jam Raula, Jamliya Sot, Jamunagwar Sot, Jangi Khan Nala, Jaunpokhra Gadhera, Jhargaon Gad, Jhingi Nala, Jhulwari Sot, Jijan Sot, Kakarchar Gadhera, Kakuchar Gadhera, Kali Gad, Kali Gad, Kali Rao, Kaligad Sot, Kalikich, Kalsa Nadi, Kaluwa Gad, Kamehiya Sot, Kanwan Gadhera, Karari Nadi, Karari Nala, Kargara Nala, Karkat Nala, Kaserwa sot, Kaudiyar Gad, Kelawali Nala, Kelawali Nala, Khaira N, Khairna Nadi, Khalghagala Gad, Khani Gad, Khani Gad, Khaula, Khichari Nadi/Masani Gad/Patkot Sot, Khodan, Kichha Nadi, Koshi River, Kuriya Gad, Ladwa Gad, Lambi Dhar, Luta Gad, Machhiya Gad, Maingarh Gadhera, Malla Panod, Mauliya sot, Mawani Gadhera, Naktua Nala, Nalena, Nauli Gad, Nihal Nadi, Ninglan Gadhera, Ninglat Nala, Paha or Gola Nala, Pandali Rao, Pang Gadhera, Paniya Gad, Paniyali Gad, Parkha, Pashiyar Gad, Patharkhani Gad, Patherwa Nala, Pathri Nala, Patthar Chatra Nadi, Pauriya Nala, Pilakhar Nadi/ Baur Nadi, Ram gad, Ranibagh Sot, Rattapani Rao, Raturi Gadhera, Runiyani Sot, Sainjini, Sajgarhi Sot, Salbana Sot, Sanchaliya Gad, Sanguri Nala, Sarenda Nala, Sarod Gad, Saryu River / Bahalla Nadi, Sawaldehy Nadi, Sayal Gad, Seldhari Sot, Semalgair Sot, Shinar Gadhera, Simrar Gadhera, Simu Gad, Sukha Gad, Sukha Sot, Sukha Sot, Sultan sot, Sungarkhal Gad, Swal Nadi, Syura Gadhera, Tani Gad, Tehra Nala, Terha Sot, Thakulari Gad, Thala Gad, Thall Gad, Thandapani Nadi, Tilaur Gad, Timliya Rauli, Tirath Nala, Udai, Logar Gad, Ramganga





S.No	State	District	Area (sq km)	Population (census 2011)	Growth Rate (%)	Density	River
7	Uttara- khand	Udham Singh Nagar	2,542	1,648,902	33.45	649	Absara Nadi, Andhara Nala, Andhara Nala, Andhuwa Nadi, Arjun Nala, Badhaiya N, Baini Nadi, Baliya Or Bah Nala, Bamania or Khera Nadi, Barai Nadi, Baraur Nadi, Baur, Begul Nala, Bhadwara, Bhainsa Nala, Bhakra Nala, Bhakra_N, Bhuta Nala, Burhi Kosi, Chakpheri Nadi, Dabka, Dabka Nadi, Deoranian Nadi, Dhela River, Dhimri Nadi, Dhora River, East Bahgul Nadi, Gandhi Nala, Gangli Nala, Gangli Nala, Garganda Nala, Gaula/Bahgul River, Ghangas Nala, Ghebia Nala Dhandhi Nadi, Ghuga Nadi, Ghuga Nala, Ghutwa Nadi, Gorhi Nala, Jabdi Nala, Jabran Nala, Jalpanian Nala, Jangi Khan Nala, Jhingi Nala, Kagarsen Nadi, Kakrala, Kaksha Nadi, Kalikich, Kanakpur Nala, Karari Nadi, Karkat Nala, Katna River, Kelawali Nala, Khaira N, Khaira Nadi/Hatyari Nadi, Khairiya Nadi, Khala Nadi / Kurna Nala, Khukreta Nala, Khuliya Nala, Kichha Nadi, Kilwa Nala, Kilwa Nala, Koshi River, Lapkana, Lebra Nala, Madani N, Matwali Nadi, Nachna Nala, Naiya Nadi, Nakti Nala, Naktua Nala, Nihal Nadi, Pachhana Nala, Paha or Gola Nala, Patherwa Nala, Pathri Nala, Patthar Chatta Nadi, Peli Nala, Phulwa Nadi, Pilakhar Nadi/Baur Nadi, Pilakheri Nala, Pili River, Piratha Nala, Piratha Nala, Repi, Sainjini, Sandla Nala, Saryu River / Bahalla Nadi, Satyanashan, Saudiya, Semalgair Sot, Tehra Nala, Thandapani Nadi, Tirath Nala, Tumaria
8	Uttar Pradesh	Bijnor	4,561	3,682,713	17.6	807	Amla, Bambhak Sot, Ban River, Banaili River, Banra, Banra Nala, Bega Sot, Chorpani Sot, Dangrai Nala, Dhara River, Dharak River, EKra Nala, Gangan River, Ghuna Sot, Ghurnetor Sot, Gujar Sot, Gula Nala, Hathiya Sot, Jara Sot, Jori Sot, Kalu Shahid Sot, Kanya Sot, Karula Nala, Karula River, Katheni Nala, Khala Nala, Khaliya Nala, Khari, Khoh River, Kilauli Sot, Koti Rao, Lalbra Sot, Mahlwali River, Maugadi Sot, Nachna Nala, Nalkata Sot, Nim Sot, Nungarha Sot, Padhoi Nadi, Pahara Nala, Paniyali Sot, Patharia Nala, Peliya Khala, Pelkhala River, Pili River, Ramganga, Ramjiwala Sot, Sanghai Nala, Sarkara Sot, Sinpya Nala, Sukh Rao, Surankhal Nala, Uni River
9		Moradabad	3,718	4,772,006	25.22	1283	Aril Nala, Damdama, Dhandhi Nadi, Dhela River, Gangan River, Ghughwa Nala, Harya Nala, Jabdi Nala, Kachhia Nala, Kachhua Nala, Karula Nala, Kawakhar Nala, Khalia Nala, Koshi River, Kurka River, Lapkana, Nachna Nala, Nachna Nala, Nechiya Nala, Nochiya Nala, Rajhera Nala, Ramganga, Repi Nala, Repi River, Saryu River / Bahalla Nadi, Siamsundar Nala
10		Sambhal					Aril Nala
11		Amroha	2,249	1,840,221	22.76	818	Ramganga ,Siamsundar Nala

S.No	State	District	Area (sq km)	Population (census 2011)	Growth Rate (%)	Density	River
12	Uttar Pradesh	Rampur	2,367	2,335,819	21.42	987	Andharia Nala, Aril Nadi, Badhaiya N, Bagaiya River, Bamania or Khera Nadi, Barai Nadi, Barkusia Nala, Bhakra N, Bhakra_N, Bihar Nala, Bihar or Parkiya Nadi, Burhi Kosi, Chhoriya Nala, Dhakra Nadi, Dhimri Nadi, Dhobia Nala, Gaula/Bahgul River, Gendai Nadi, Ghuga Nadi, Ghuga Nala, Hingwa Nadi, Jalali, Kachha Nala, Kahlaiya Nadi, Khaira N, Khaira Nadi/Hatyari Nadi, Khanda River, Kharra Nala, Khuliya Nala, Kista Nala, Koshi River, Kuli Nadi, Nachna Nala, Nachna Nala, Nahal Nadi, Nahal Nala, Naiya Nadi, Narai Nala, Narai nala, Nihal Nadi, Pila, Pilakhar Nadi/Baur Nadi, Pilakhar River, Ramganga, Rajhera Nala, Sainjini, Sarenda Nala, Saryu River / Bahalla Nadi, Sidda, Sohaya Nadi, Terha Nala, Thandapani Nadi, Urela Nala
13		Bareilly	4,120	4,448,359	22.93	1080	Absara Nadi, Andhara Nala, Andhara Nala, Aril Nadi, Aril Nadi, Bagaiya, Bagaiya River, Bahral, Bajha Nadi, Banarasi Nala, Barai Nadi, Baraur Nadi, Basit Nala, Bhakra N, Dania Nala, Danian N, Deoranian Nadi, Dhora River, East Bahgul Nadi, Ganda Nala, Gaula/Bahgul River, Gauneya Nadi, Gora N, Gundhia N, Kahlaiya Nadi, Kailas Nadi, Kandu Nala, Khaira_N, Khajaiya, Khalmacha Nala, Kharra, Kharra Nala, Kharra Nala 2, Kichha Nadi, Kilwa Nala, Kilwa Nala, Kuli Nadi, Kundu Nala, Launchha Nala, Madani N, Nahal Nadi, Nakatia Nala, Narha Nadi, Nawab Nadi, Pairiya Nadi, Pilakhar Nadi/Baur Nadi, Pilakhar River, Ramganga, Reoti Nala, Sankha Nadi, Sidda, Singia Nala, Sokhai Nala
14		Badaun	5,168	3,681,896	19.95	712	Aril Nadi, Aril Nadi, Bajha Nadi, Ramganga, Narha Nadi
15		Shahjahanpur	4,388	3,006,538	18	685	Andhoi Nadi, Baigul, Bharguda Drain, Dunda Nala, East Bahgul Nadi, Gauneya Nadi, Jaunra Drain, Ramganga, Reoti Nala
16		Farrukhabad	2,181	1,885,204	20.05	864	Ramganga
17		Hardoi	5,986	4,092,845	20.44	684	Ramganga
18		Pilibhit	3,686	2,031,007	23.45	551	Absara Nad, Banarasi Nala, Kailas Nadi





MAJOR BARRAGE AND WEIR ON THE RIVER RAMGANGA AND HER TRIBUTARIES

MAJOR BARRAGES ON THE RIVER YAMUNA AND HER TRIBUTARIES														
S.No	State	District	Name	Lat	Long	River	Year Completed	Status	Type	Length (m)	Max ht. Above Foundation (m)	Total Volume (cumec)	Design Flood (cumec)	Purpose
1	Uttarakhand	Nainital	Gola Barrage	29.2714486	79.5479852	Gola		Completed	Bar-rage	81	4.2			
2		Nainital	Phika Barrage	29.3626345	78.8719381	Phikha		Completed	Bar-rage	107.87				
3		Nainital	Kosi Barrage	29.3989732	79.1329856	Kosi		Completed	Bar-rage	138.5				
4		Almora	Dhela Barrage	29.345551	79.0076925	Dhela		Completed	Bar-rage	140.78				
5		Udham Singh Nagar	Kiccha Barrage	28.9177524	79.5406086	Kiccha	1964	Completed	Bar-rage	91.25				
6		Nainital	Kota Trench Weir	29.4137907	79.3144306	Dabka			weir	20				
7		Udham Singh Nagar	Nangla Weir	29.0078122	79.5290758	Kiccha		Completed	weir					Irrigation
8		Udham Singh Nagar	Katna Weir	29.05	79.627	Katna			weir					Irrigation
9	Uttar Pradesh	Bijnor	Harewali/Ram-ganga	29.412975	78.620782	Ram-ganga	1975	Completed	Bar-rage	408				
10		Bijnor	Khoh	29.322708	78.567043	Khoh	1975	Completed	Bar-rage	203				
11		Bareilly	badaun barrage	28.29081	79.37161	Ram-ganga		Under Construction	Bar-rage					Irrigation
12		Rampur	Lalpur Barrage	28.903637	79.012058	Kosi		Under Construction	weir					Irrigation

MAJOR DAMS ON THE RIVER RAMGANGA AND HER TRIBUTARIES

MAJOR DAMS ON THE RIVER RAMGANGA AND HER TRIBUTARIES														
S.No	State	District	Name	Lat	Long	River	Year Completed	Status	Type	Length (m)	Max ht. Above Foundation (m)	Total Volume (cumec)	Design Flood (cumec)	Purpose
1	Uttarakhand	Pauri garhwal	Ka-lagarh Dam/ Ram Ganga	29.520202	78.759142	Ram Ganga	1974	Completed	Earth/ Gravity	715	128	10000	8467	Irrigation/ Hydro-electricity
2	Uttarakhand	Nainital	Baigul Dam	28.8823774	79.6309922	Baigul	1968	Completed	Earth-en	15300	13.7	70725	567	Irrigation
3		Nainital	Bhimtal Dam	29.3433274	79.5627956				Grav-ity/ Maso-nary	137	16.16			
4		Udham Singh Nagar	Dhora Dam	28.9382697	79.5812409	Dhora And Katna	1962	Completed	Earth-en	9050	14.63	45640	549	Irrigation
5		Udham Singh Nagar	Tumaria Dam	29.3058131	78.9203144	Phika	1970	Completed		10000	15.29			Irrigation
6		Nainital	Jamrani	29.2671992	79.6161031	Gola	1990	Completed	Grav-ity/ Maso-nary	765	130.6	206600	3630	Irrigation/ Hydro-electricity
7		Garhwal	Afzal-garh	29.4958603	78.7597309	Ram Ganga		Completed	Earth-en					Irrigation
8		Udham Singh Nagar	Haripu-ra Dam	29.122525	79.317852	Bhakra	1975	Completed	Earth-en	7980	10.97	28320	877	Irrigation
9		Udham Singh Nagar	Baur Dam	29.1320717	79.2596105	Baur	1967	Completed	Earth-en	9500	17.98	103368	1416	Irrigation
10	Uttar Pradesh	Bijnor	Pili Dam	29.358938	78.795019	Pili	1968	Completed	Rock Fill		9230	253300	963.17	Irrigation
11		Mir-zapur	Bhonka Dam	28.891934	79.271165	Bhakra	1951	Completed	Earth-en	2012	15.3	160	Irrigation	





CWC BASINS

Basin Code	Basin Name
1	Indus (Up to border)
2a	Ganga
2b	Brahmaputra
2c	Barak and others
3	Godavari
4	Krishna
5	Cauvery
6	Subernarekha
7	Brahmani and Baitarni
8	Mahanadi
9	Pennar
10	Mahi
11	Sabarmati
12	Narmada
13	Tapi
14	West flowing rivers from Tapi to Tadri
15	West flowing rivers from Tadri to Kanyakumari
16	East flowing rivers between Mahanadi and Pennar
17	East flowing rivers between Pennar and Kanyakumari
18	West flowing rivers of Kutch and Saurashtra including Luni
19	Area of inland drainage in Rajasthan
20	Minor rivers draining into Myanmar (Burma and Bangladesh)

Source: River Basin Atlas of India, Ministry of Water Resources, Gol (October 2012)

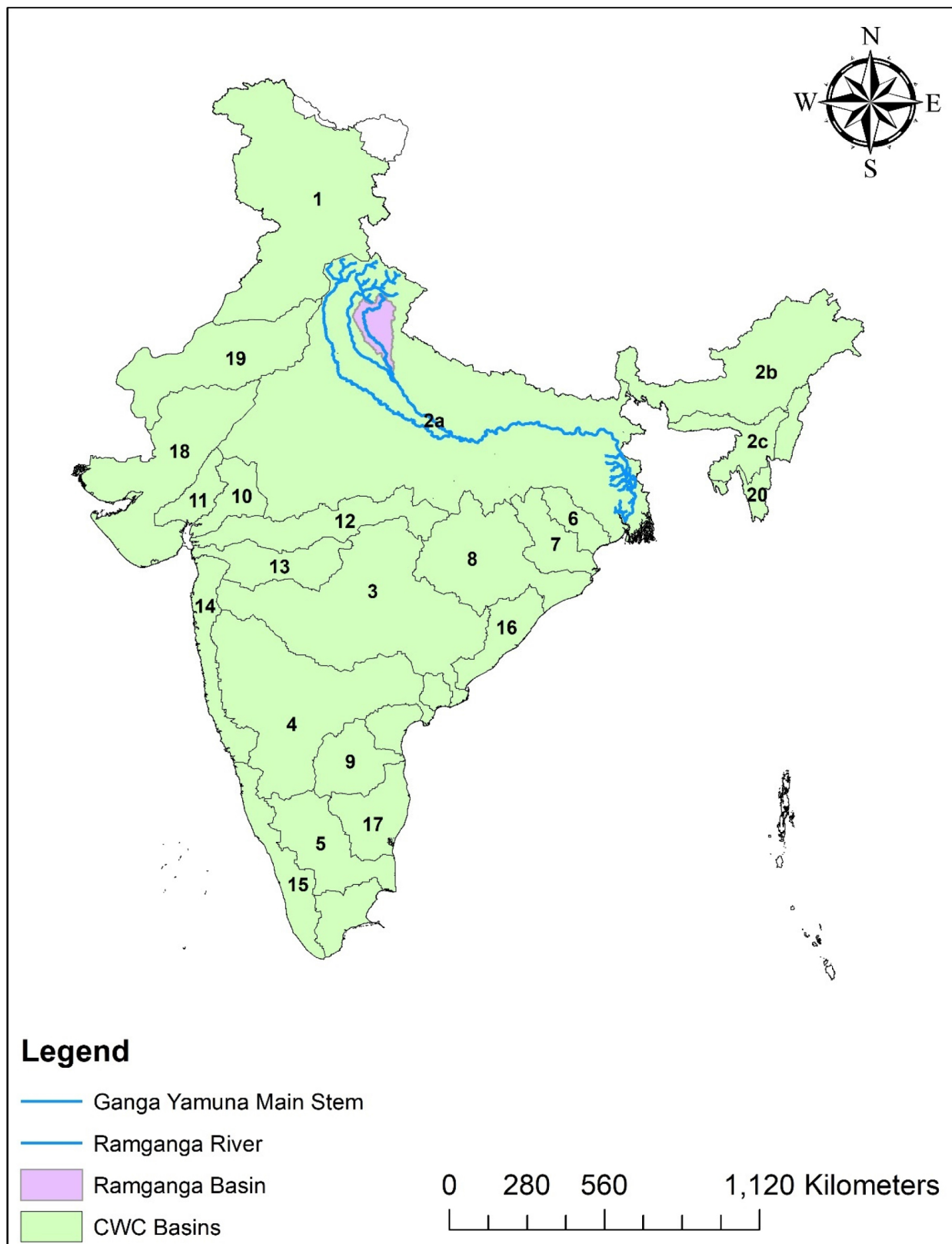


Figure: CWC Basins in India



RAMGANGA BASIN: ADMINISTRATIVE STRUCTURE

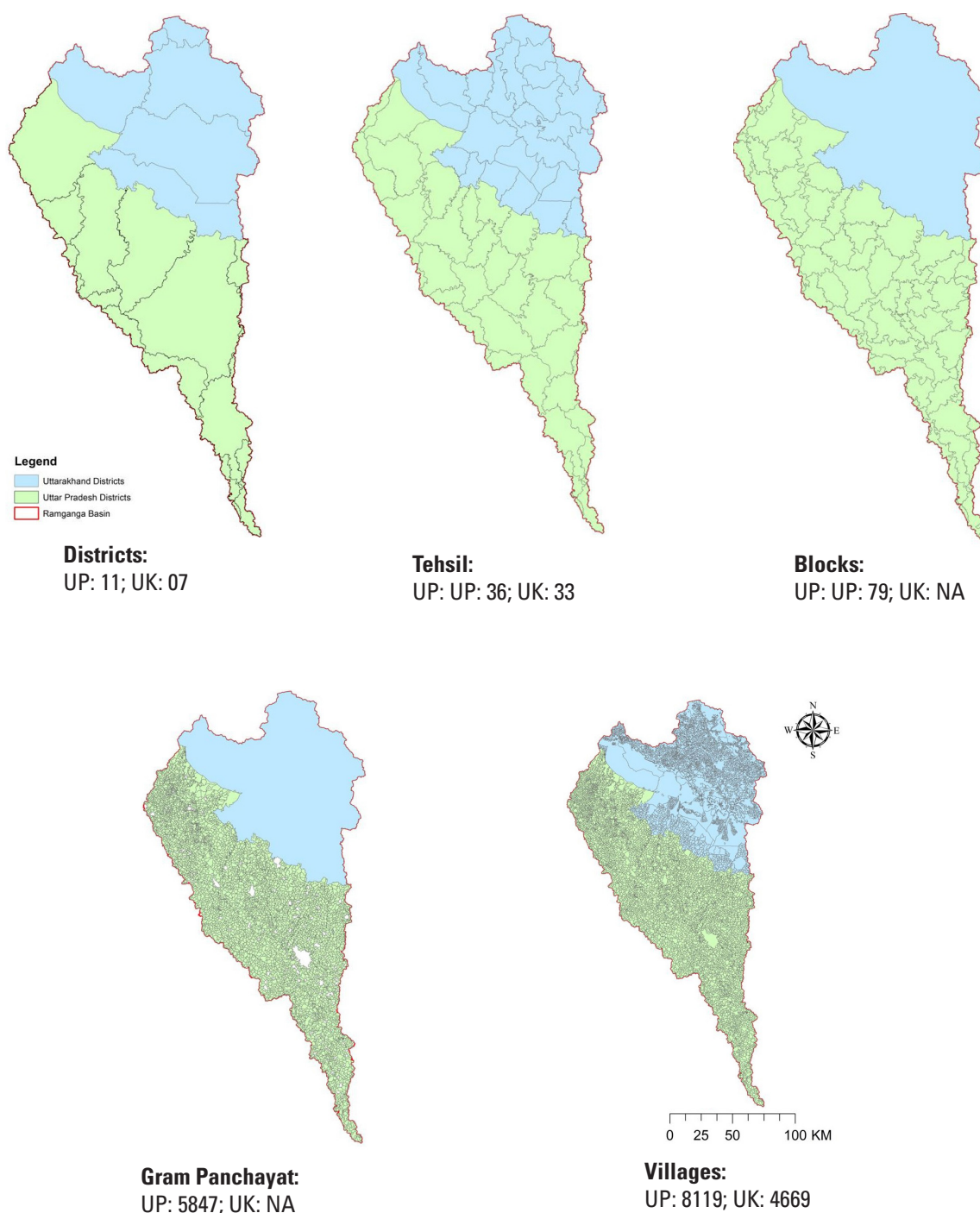
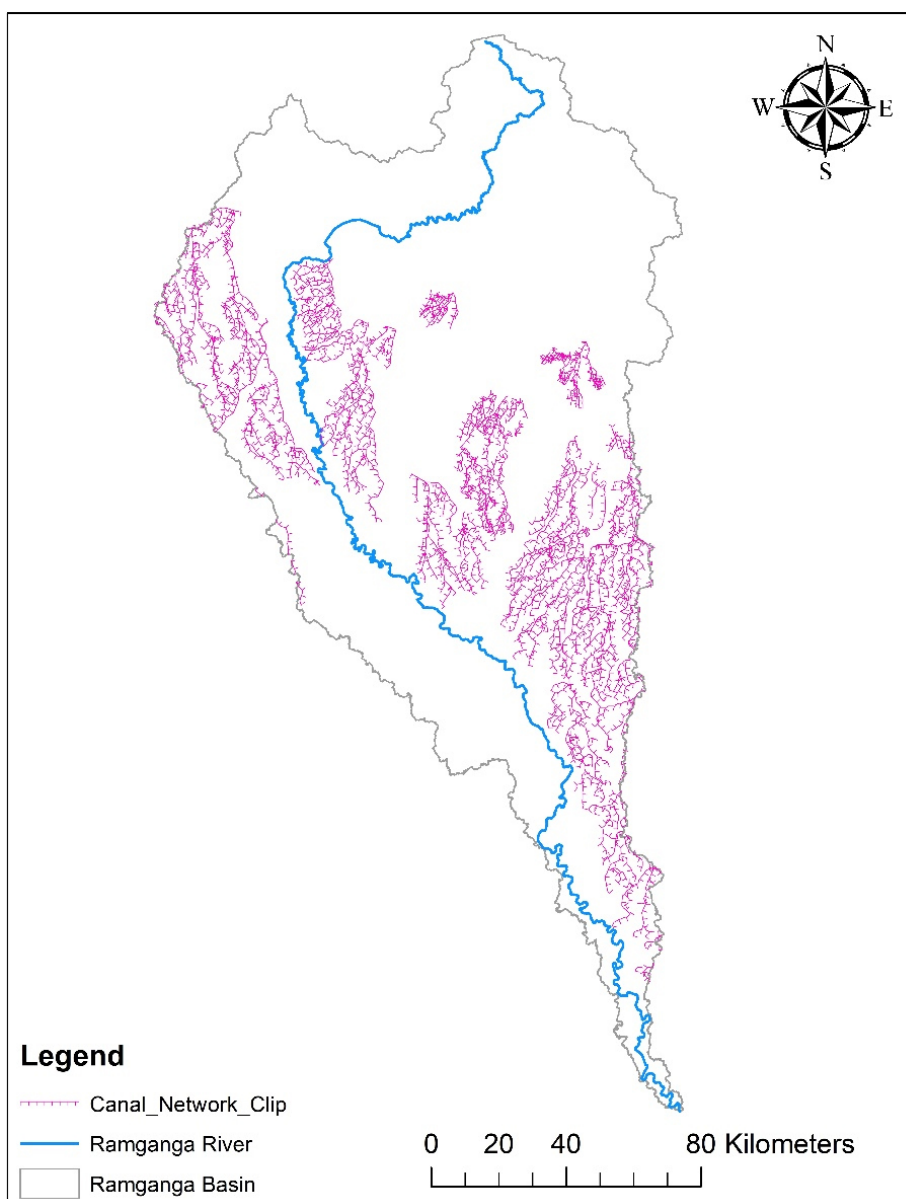


Figure: Administrative Structure of Ramganga River Basin

RAMGANGA BASIN: CANAL NETWORK



Source: NWIC

Total Canal Network: 4324.04 Km

Afzalgarh Medium Irrigation Project: 161.28 Km
 Baur Medium Irrigation Project: 67.42 Km
 East Baigul Major Irrigation Project: 126.03 Km
 Eastern Ganga Canal Major Irrigation Project: 586.21 Km
 Haripur Major Irrigation Project: 490.92 Km
 Jamrani Multipurpose Project: 323.22 Km
 Kosi Irrigation Project: 99.96 Km

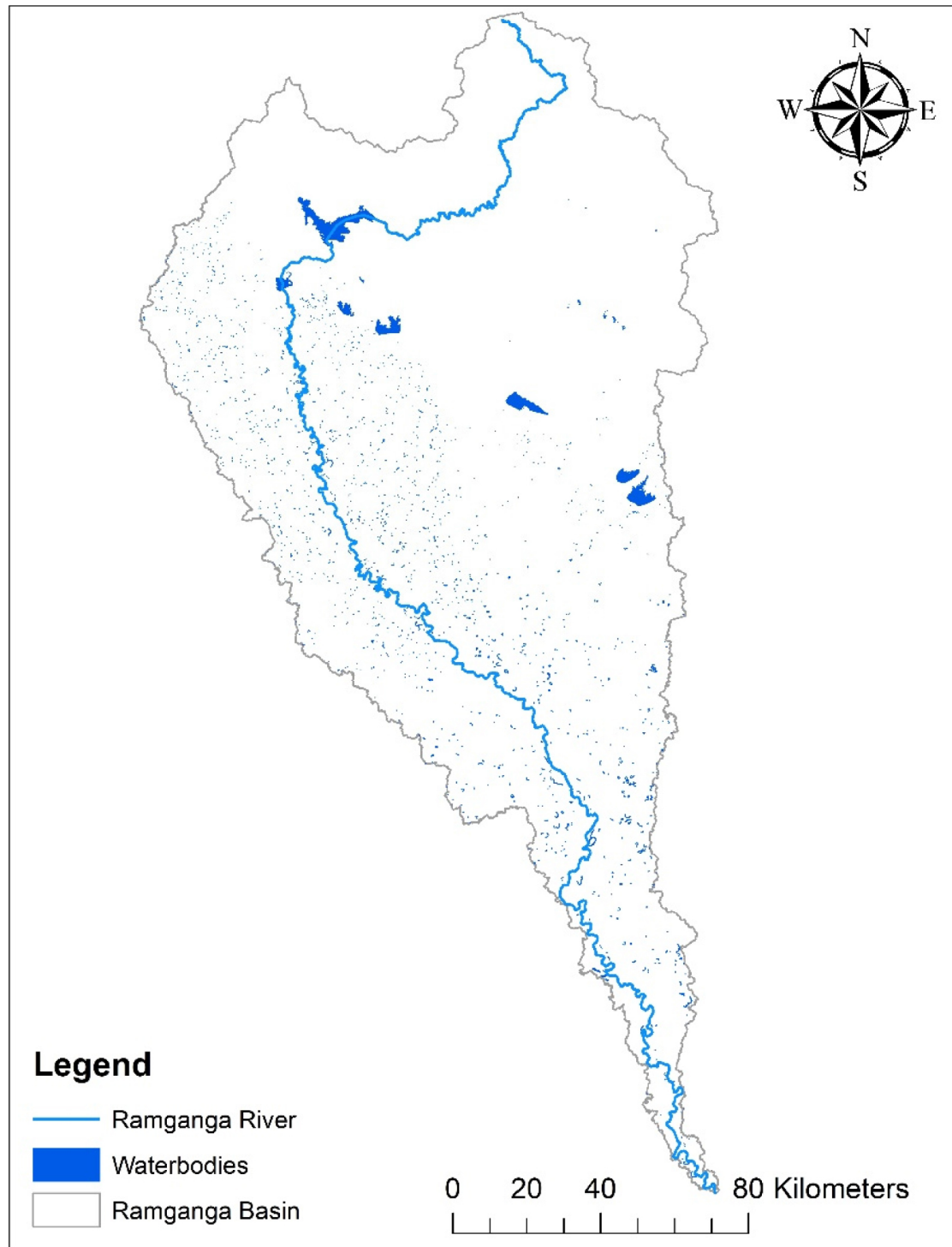
Madhya Ganga Canal Phase - II Major Irrigation Project: 28.07 Km

Nanak Sagar Major Irrigation Project: 248.37 Km
 Pili Dam Medium Irrigation Project: 58.06 Km
 Ramganga Major Irrigation Project: 229.65 Km
 Rampur Canal Major Irrigation Project: 207.32 Km
 Rohilkhand Canal Major Irrigation Project: 1280.83 Km
 Tumaria Reservoir Medium Irrigation Project: 416.70 Km





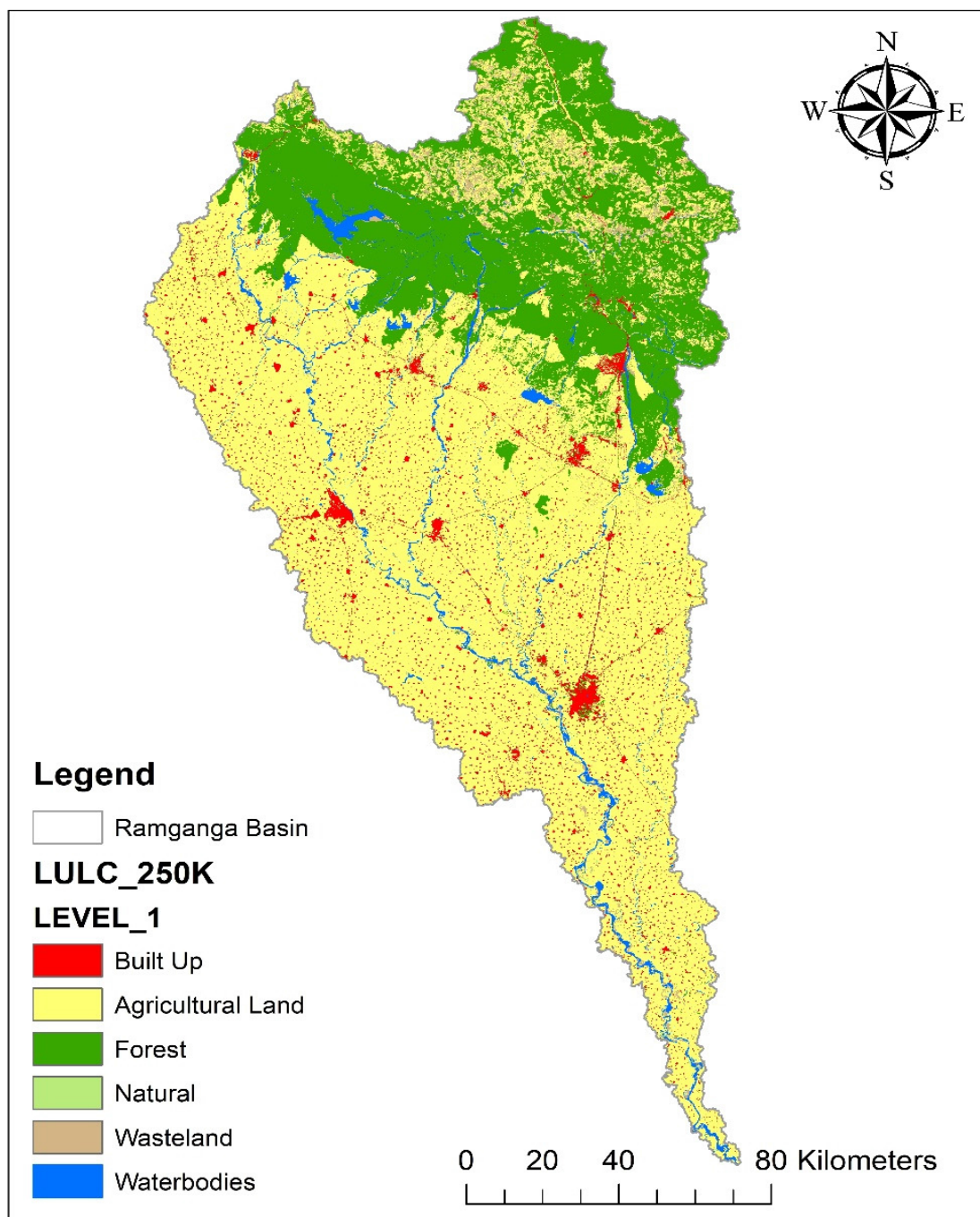
RAMGANGABASIN: WATERBODIES MAP



Total No. of waterbodies: 1819

Source: NWIC

RAMGANGA BASIN: LAND USE LAND COVER [250K]



Imagery: multi-temporal satellite data of IRS AWiFS sensor

Year: 2017-18

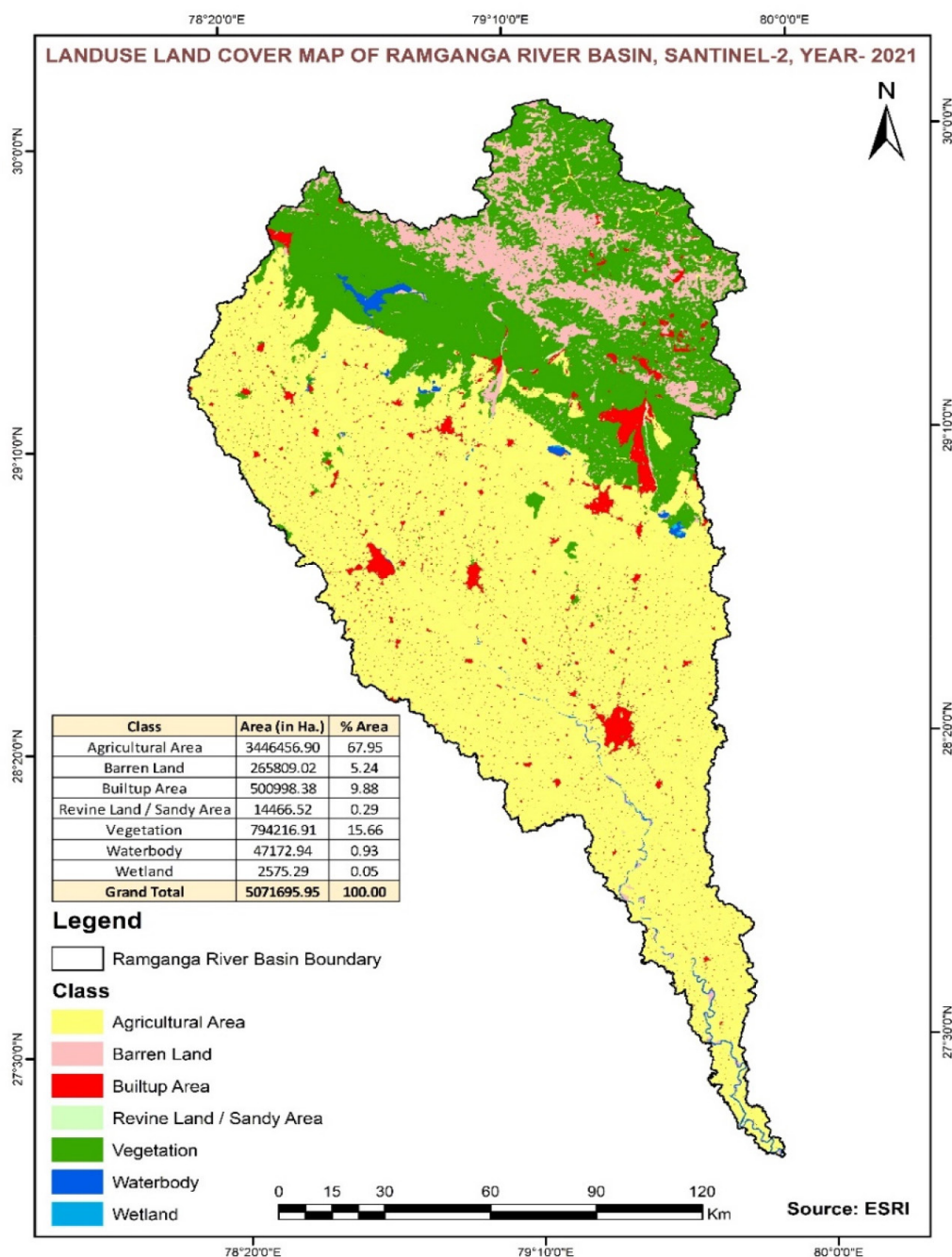
Accuracy: 90.07 % with a range of 86 to 95 % in different states.

Source: NRSC





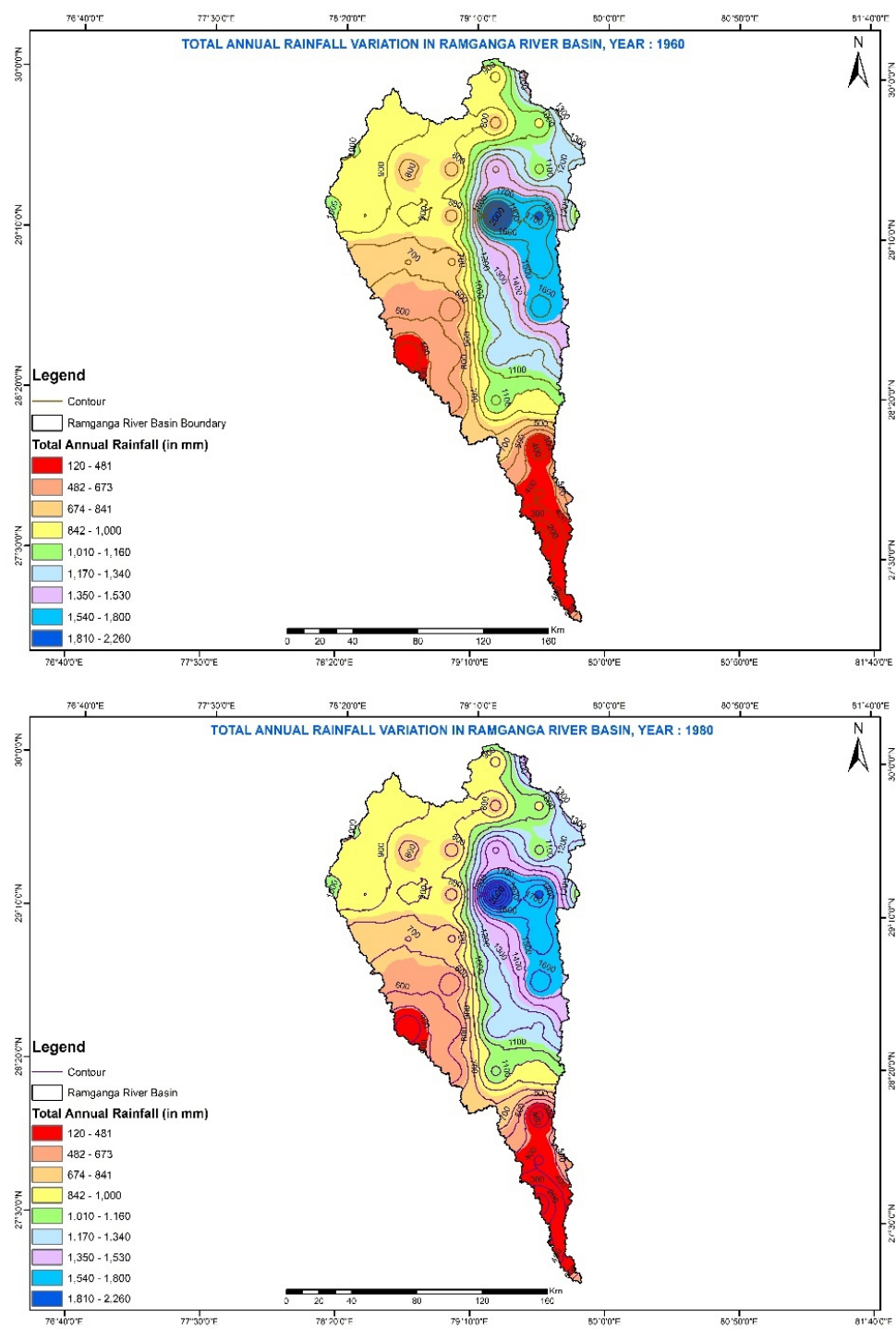
RAMGANGA BASIN: LAND USE LAND COVER



Imagery: Sentinel-2
 Year: 2021
 Accuracy: 85.96%

Source: ESRI

RAMGANGA BASIN: ANNUAL RAINFALL [1960 – 2020]



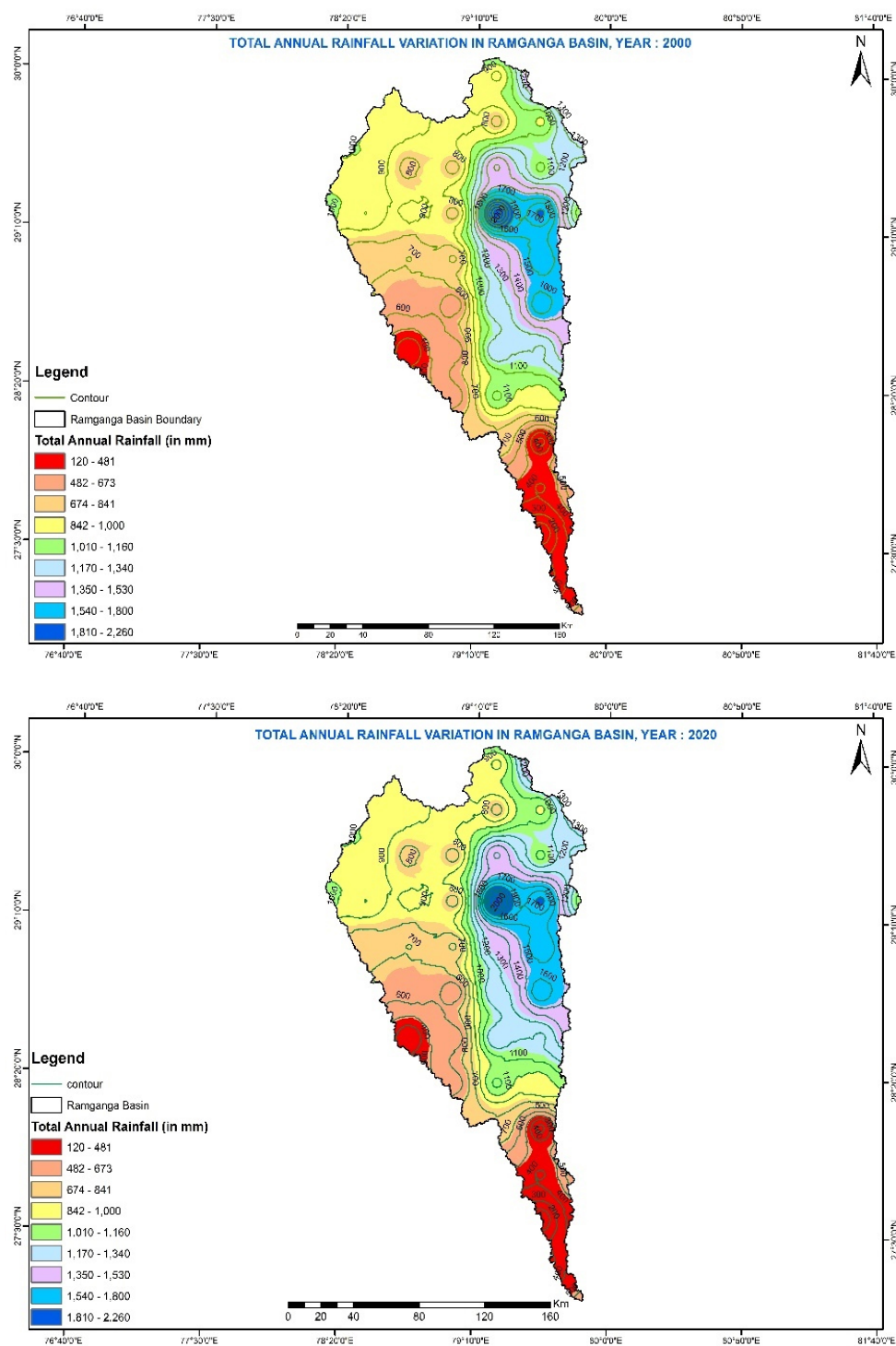
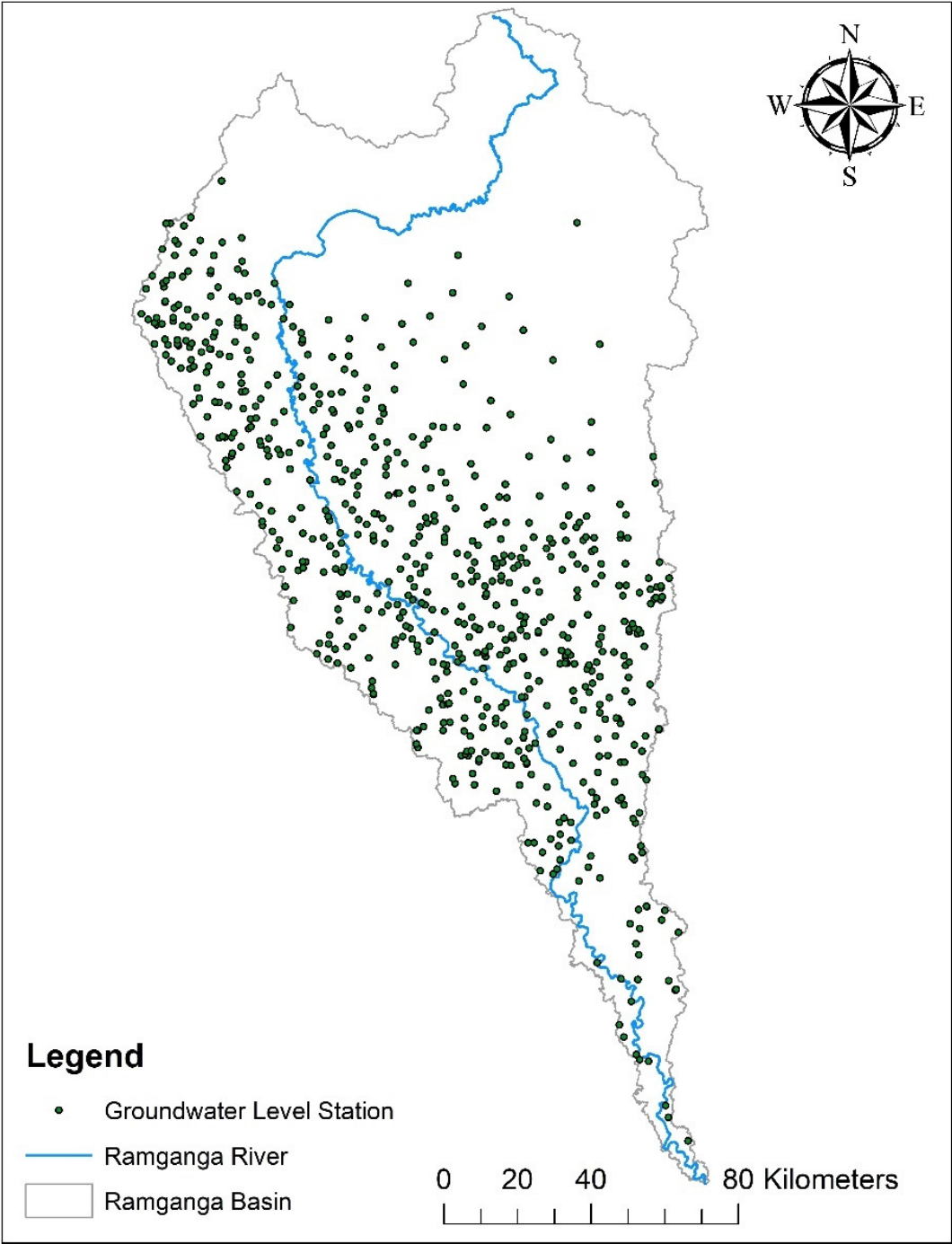


Figure: Annual Rainfall Isohyetal Maps of Ramganga River Basin of years

Source: IMD Rainfall Data

RAMGANGA BASIN: GW LEVEL AND QUALITY STATION



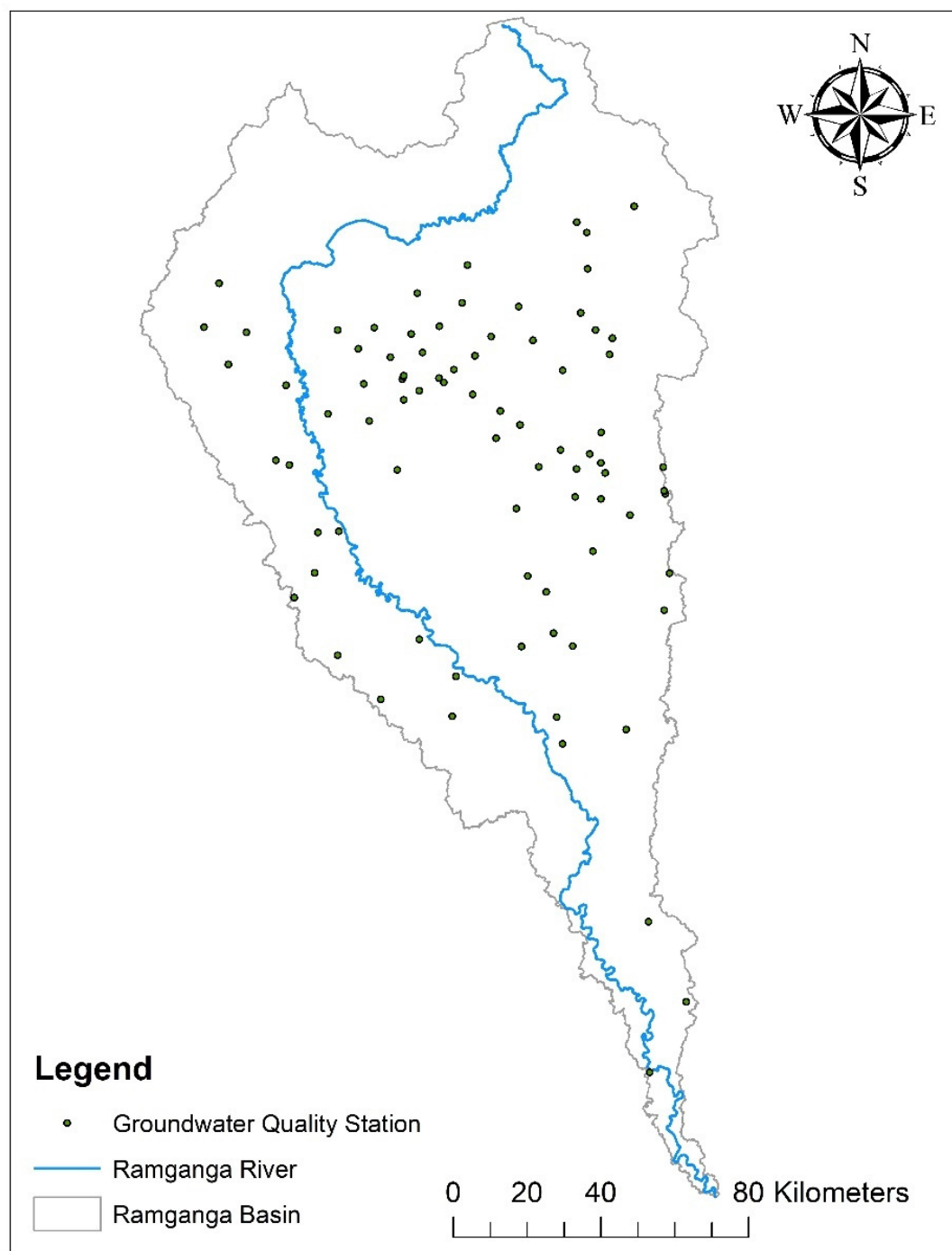
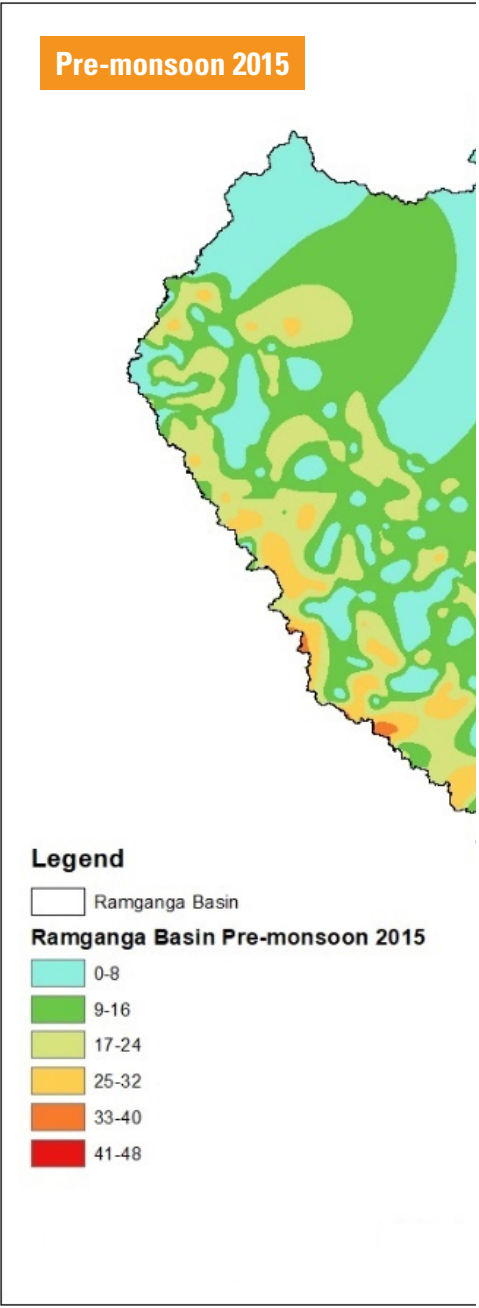
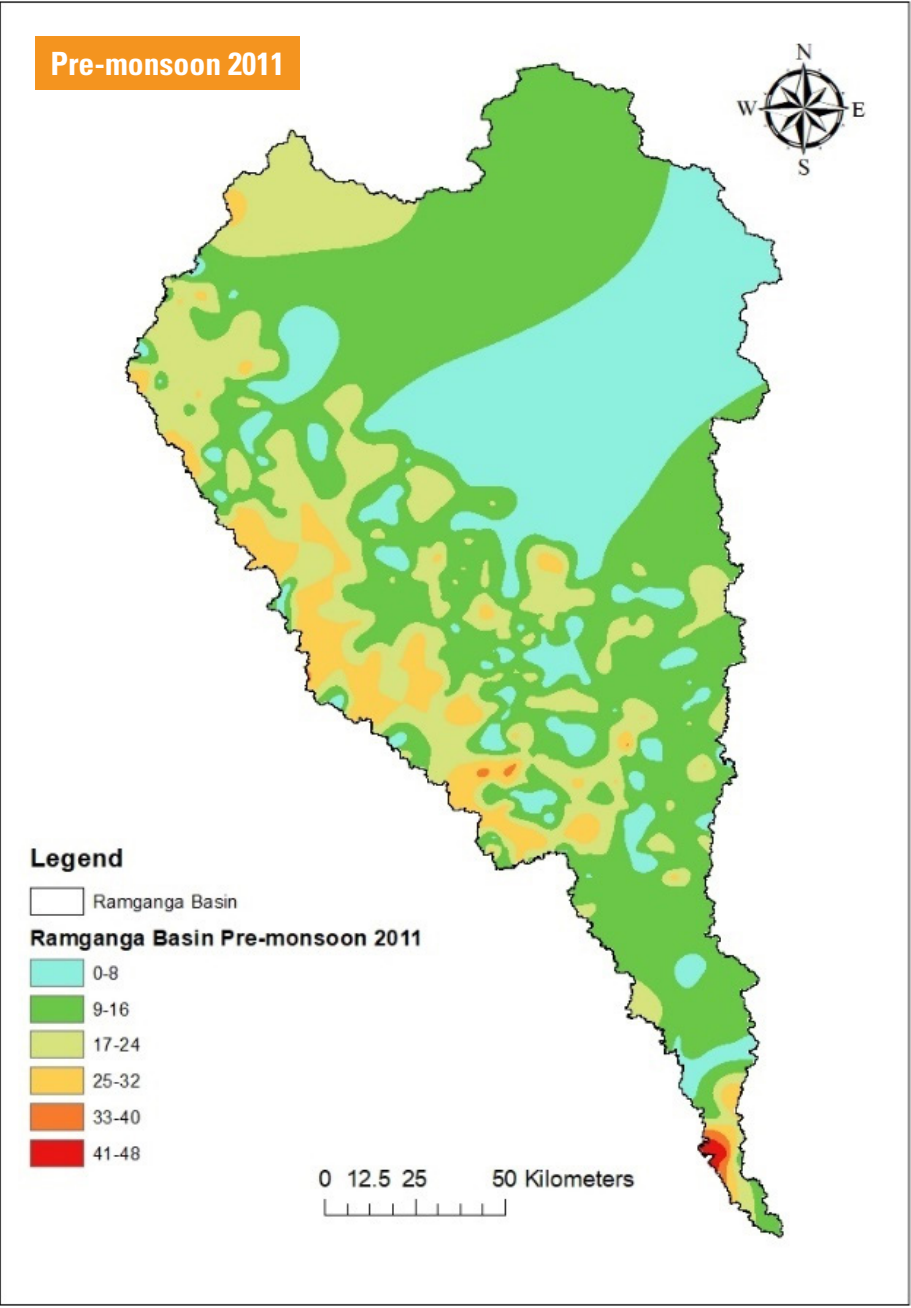
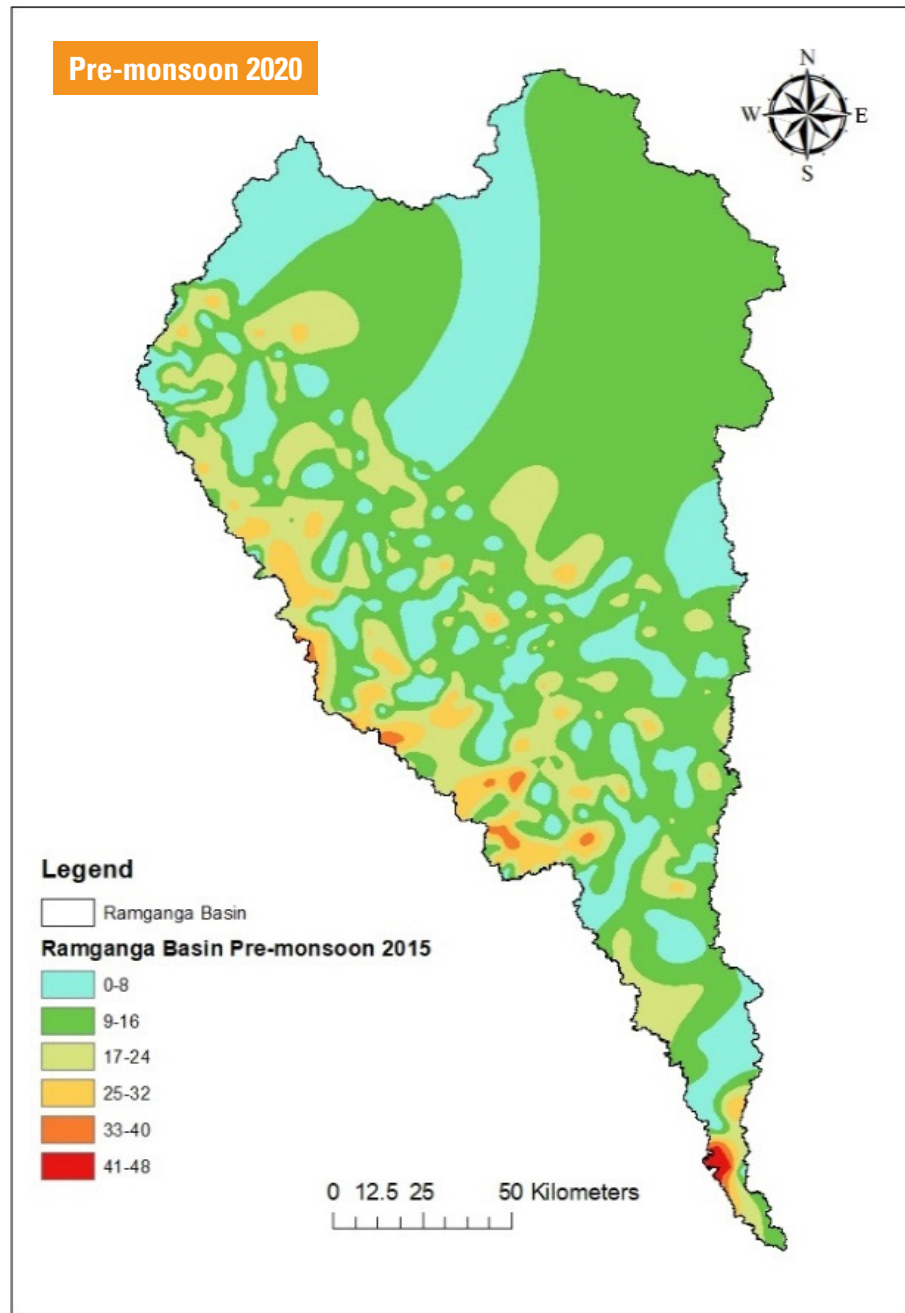
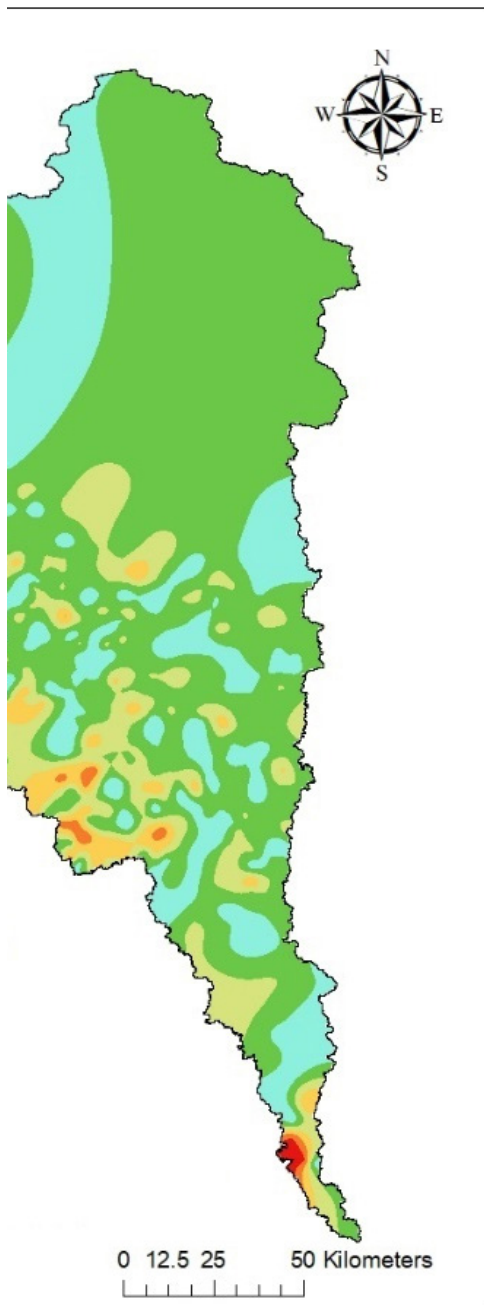


Figure: Groundwater Level and Gorundwater Quality Maps of Ramganga River Basin

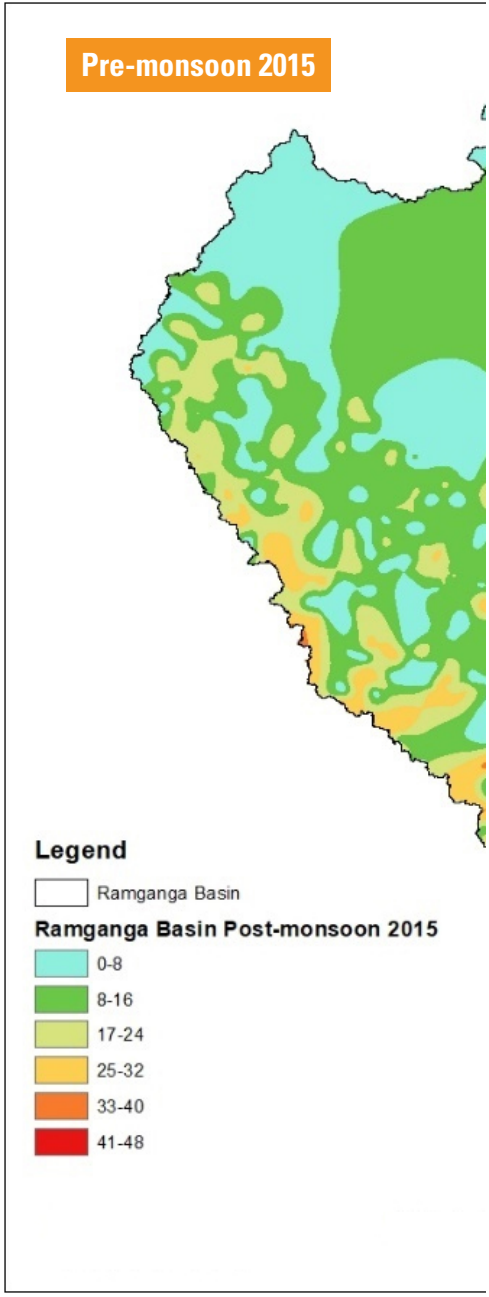
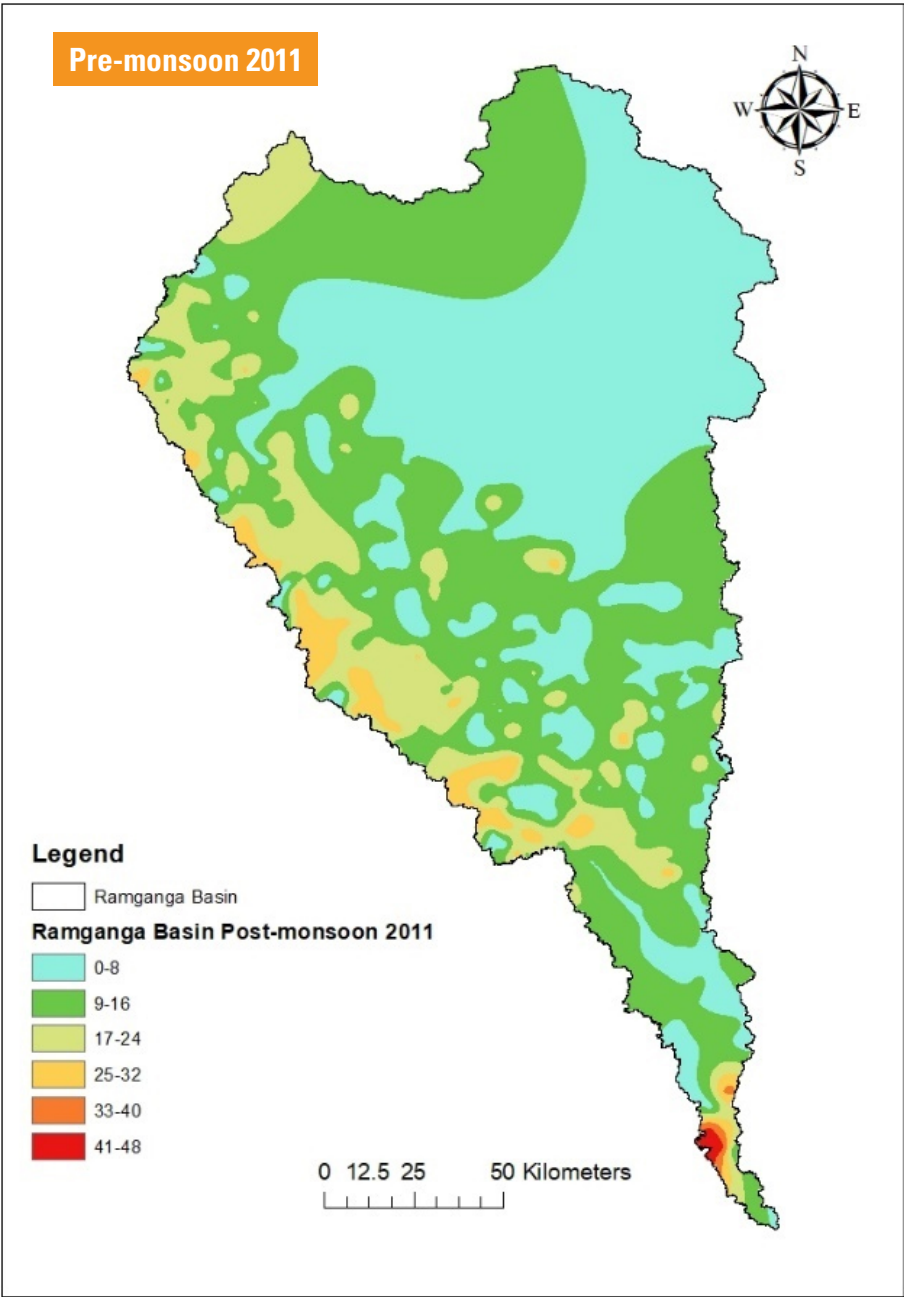
Source: CGWB

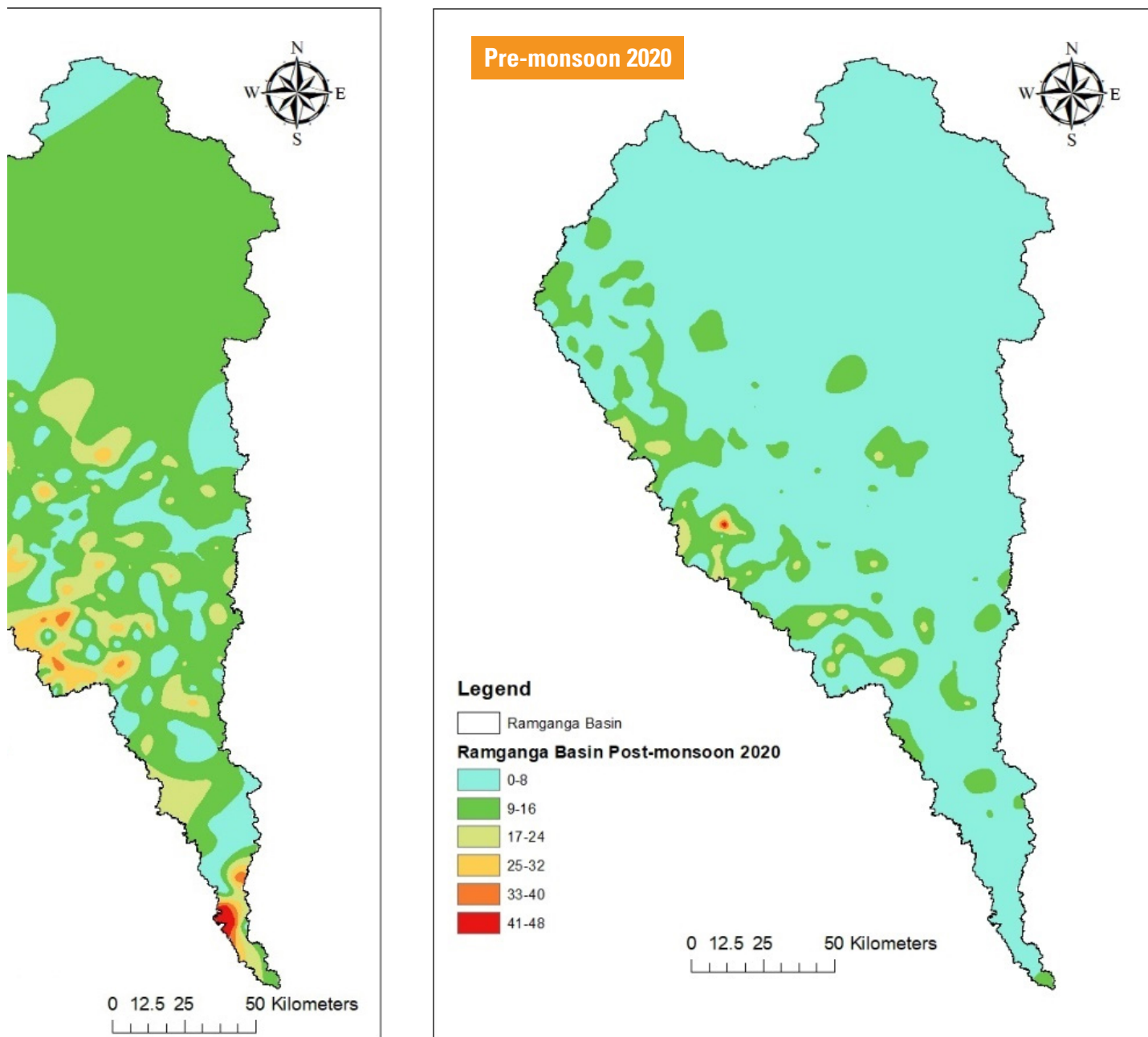
RAMGANGA BASIN: GROUNDWATER ELEVATION CONTOUR





RAMGANGA BASIN: GROUNDWATER ELEVATION CONTOUR

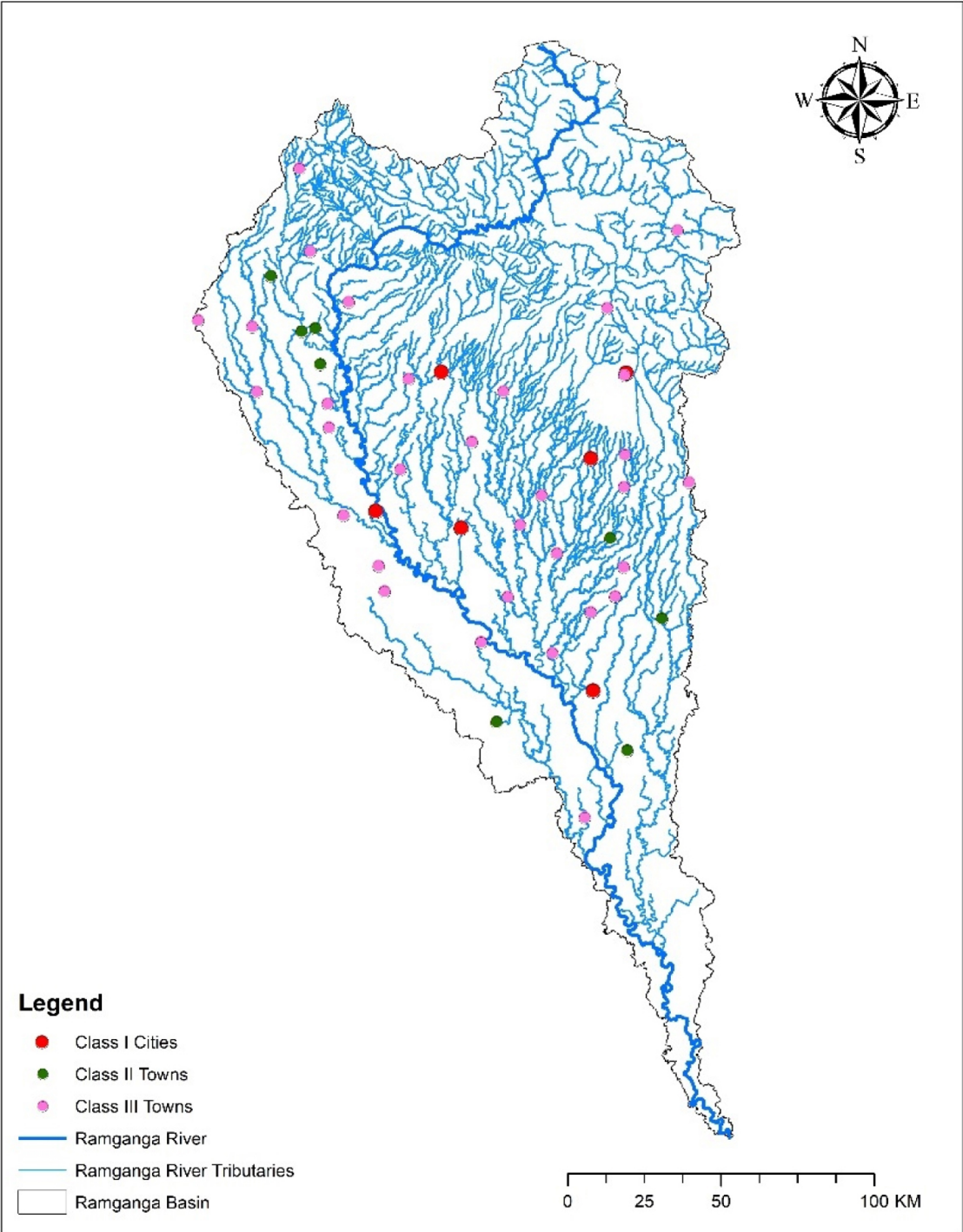




Source: CGWB

Figure: Groundwater level (in mbgl) contour maps in Pre and Post Monsoon Periods for the years 2011, 2015 and 2020

RAMGANGA BASIN: CLASS I, II AND III CITIES



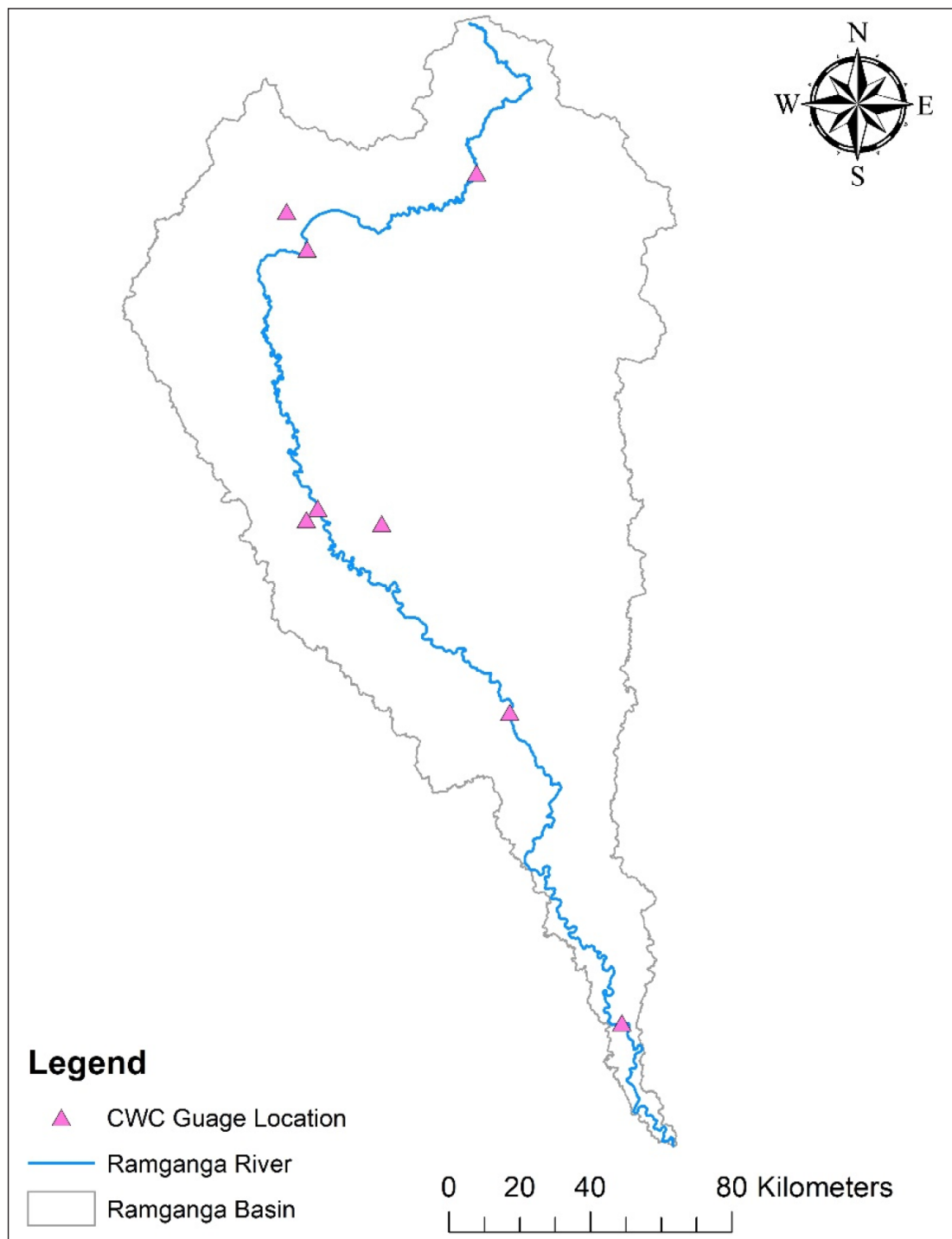
06 Class I cities, 08 Class II and 31 Class III towns

Source: Census 2011





RAMGANGA BASIN: CWC SITE LOCATION



Source: CWC

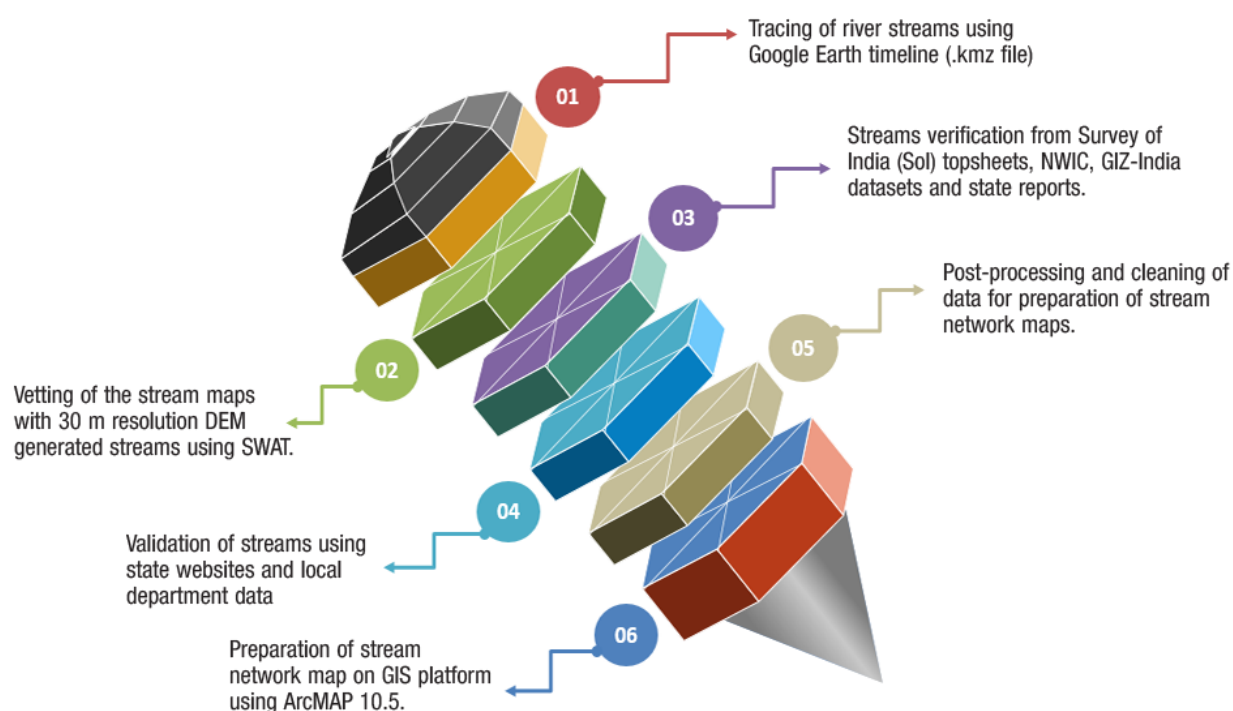
RAMGANGA BASIN: CWC SITES					
S No	Station Name	River	Location	Measurement Type	Data Available
1	Existing Sites	Ramganga	Bareilly	GDSQ	G: 20-05-70 D: 20-05-70 S: 08-03-77 Q: 01-12-81
2		Ramganga	Bhikiasen, Almora	G	G: 23-11-84
3		Ramganga	Dabri, Farukhabad	GDSQ	G: 15-01-85 D: 15-01-85 S: 15-01-85 Q: 08-01-85
4		Ramganga	Kalagarh, Pauri-Garhwa	G	G: 27-10-84
5		Sona	Marora (D/S)	GD	G: 27-10-84
6		Ramganga	Moradabad	GDQ	G: 22-05-68 D: 22-05-68 Q: 21-11-80
7		Gangan	Moradabad	GD	G: 02-05-70
8		Kosi	Rampur	GDSQ	G: 27-03-71 D: 27-03-71 S: 17-09-79 Q: 01-12-80
9	New Sites	Kosi	Betalghat, Almora	G	
10		Buar	Bhatpura, Rampur	G	
11		Dhela	Bhojpur, Moradabad	GD	
12		Behgul	Dhaneta, bareilly	GDSQ	
13		Kiccha	Duleha Dhakiya, Shahjahanpur	GD	
14		Behgul	Fatehganj, Shahjahanpur	GD	
15		Absara	Jyoti Jagir, Bareilly	GD	
16		Gola	Kathgodam, Nainital	G	
17		Ramganga	Marchula, Almora	GD	
18		Bhakra	Miraganj, Bareilly	GD	
19		Ramganga	Naula, Almora	G	
20		Phika	Phika Barrage D/S, Udham Singh Nagar	GD	
21		Kosi	Ramnagar Barrage D/S, Nanital	G	
22		Ramganga	Seohara, Bijnor	GDSQ	
23		Kiccha	Shergarh, Bareilly	G	
24		Kosi	Suyalbari, Nainital	GD	





RIVER NETWORK PREPARATION METHODOLOGY

The method adopted, in brief, to obtain the river network are stepwise as follows:



- Streams less than 2.5 km and coming from local agriculture land is not covered.
- All streams covered which are coming from populated area (Urban or Rural) even if they are less than 1 km. (if it is visible).

Disclaimer: The accuracies of the maps generated by the above method are subject to the limitations of the data processing tools and software used for the particular geographical regions as represented in Google Earth images, and are subject to future refinement.

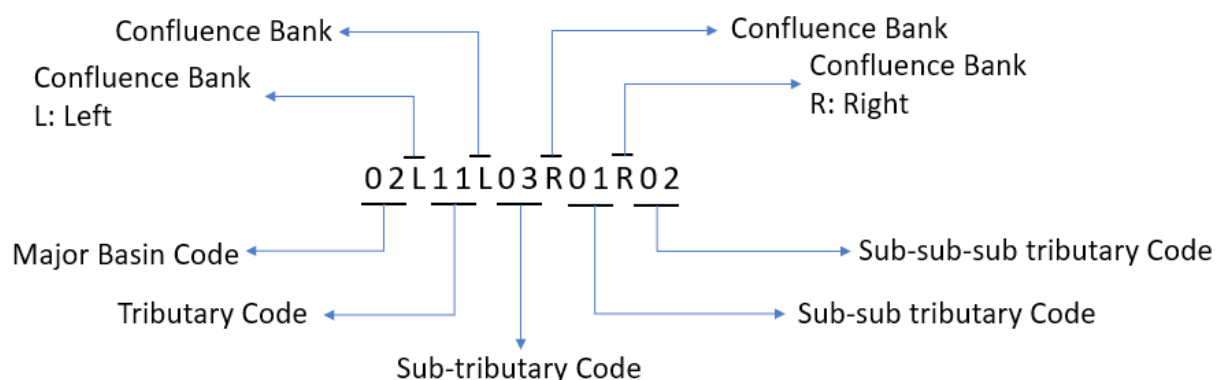
RIVER CODIFICATION SYSTEM

In the present Atlas alphanumeric characters are used for coding the river systems within natural and administrative boundaries. Each sub step in codification system is assigned a digit which reflects the length of the code up to that sub step. The coding has been done for the two different types of compartmentalizing river basins as stated below.

- a) Codification system based on natural delineation
- b) Codification system based on administrative delineation

The natural delineation approach is better suited to study and understand the basin area as a natural ecological unit while administrative delineation is good for determining specific interventions and fixing responsibilities in the implementation of any project relevant to rivers. Both approaches are important for their own reasons and, therefore, it was decided to develop the codification system for both natural as well as administrative delineations.

a) Codification system based on natural delineation: In the natural delineation approach, major basin codes given by CWC in River Basin Atlas of India, jointly published by CWC and NRSC, ISRO in October 2012, have been adopted here. These codes are accepted at regional level. In the second step, tributary code is given based on their confluence bank and their sequential number from the origin of the major river. R and L represents Right Bank and Left Bank, respectively, for the confluence bank in this code. For example, L11 in the code represents the 11th tributary (from the head of the major river) joining the major river at the left bank. In steps 3, 4, 5,

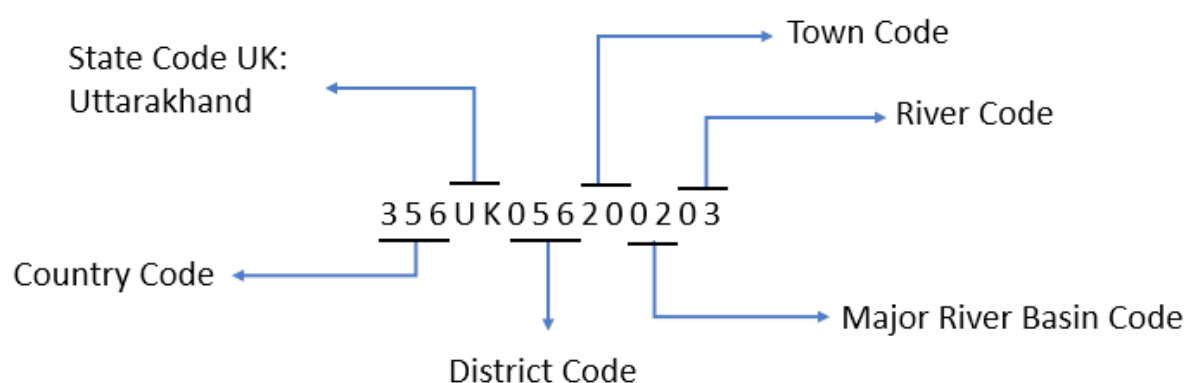




etc. the same coding procedure as in step 2 is followed for sub-tributaries joining the tributaries and so on. Thus, the code can be extended without any alteration until it reaches down to the lowest order river.

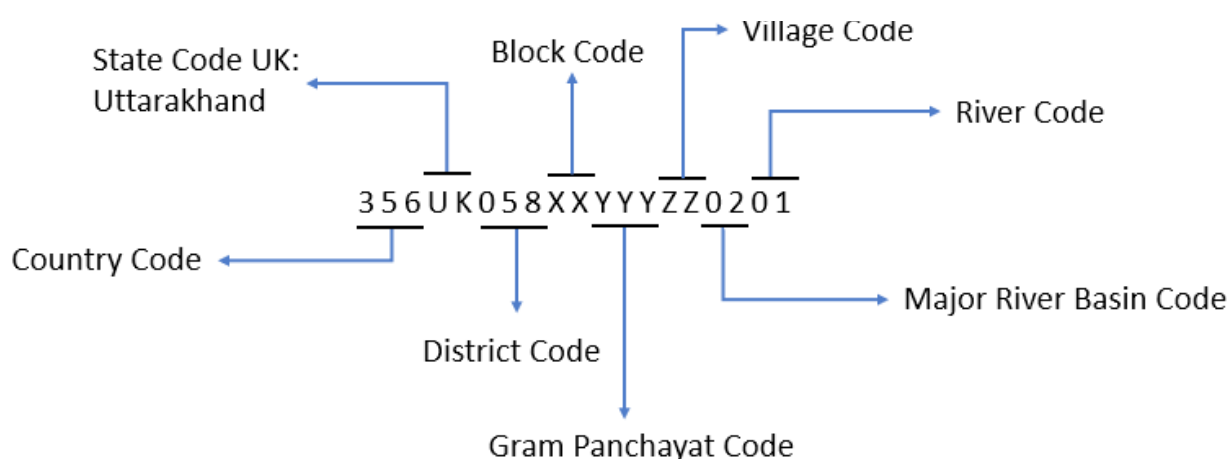
b) Codification system based on administrative delineation: In administrative delineation codes are generated separately for areas coming under urban and rural jurisdictions as further described.

Codification system based on administrative delineation – Urban: In administrative delineation-urban the first 3 digits of the code represent the country code adopted from ISO 3166-1. The next 5 digits give the state code and district code. State code is taken from transportation department and district code is adopted from Census codes. The next 2



digits represent the town, which adopted from the census town codes. In the next step, 2 digits are assigned for major river basins and the codes are adopted from River Basin Atlas of India given by CWC. The last 2 digits of the code represent the river based on higher to lower river order approach, and if there are more than one river of the same order then code is allotted in alphabetical order.

Codification system based on administrative delineation-Rural: In administrative delineation-rural the first 3 digits of the code represent the country code adopted from ISO 3166-1. The next 5 digits give the state code and district code State code is taken from transportation department and district code is adopted from Census codes. Block, Gram Panchayat and Village codes are further generated based on district codes. In the next step, 2 digits are assigned for major river basin as per the River Basin Atlas of India given by CWC. The last 2 digits of the code represent the river code based on higher to lower river order approach, and if there be more than one river of same order then the code is allotted in alphabetical order.





RAMGANGA BASIN AND ITS RIVER NETWORK

Ramganga River UID Code:

Basin Area: 24,409.04 Sq. Km.

Major Rivers: Bino, Gagas, Mandal, Palan, Sona, Khoh, Dhela, Phikha, Kosi, Gaula, Aril, East Bahgul

Number of rivers: 705

River network: 10338.51 Km

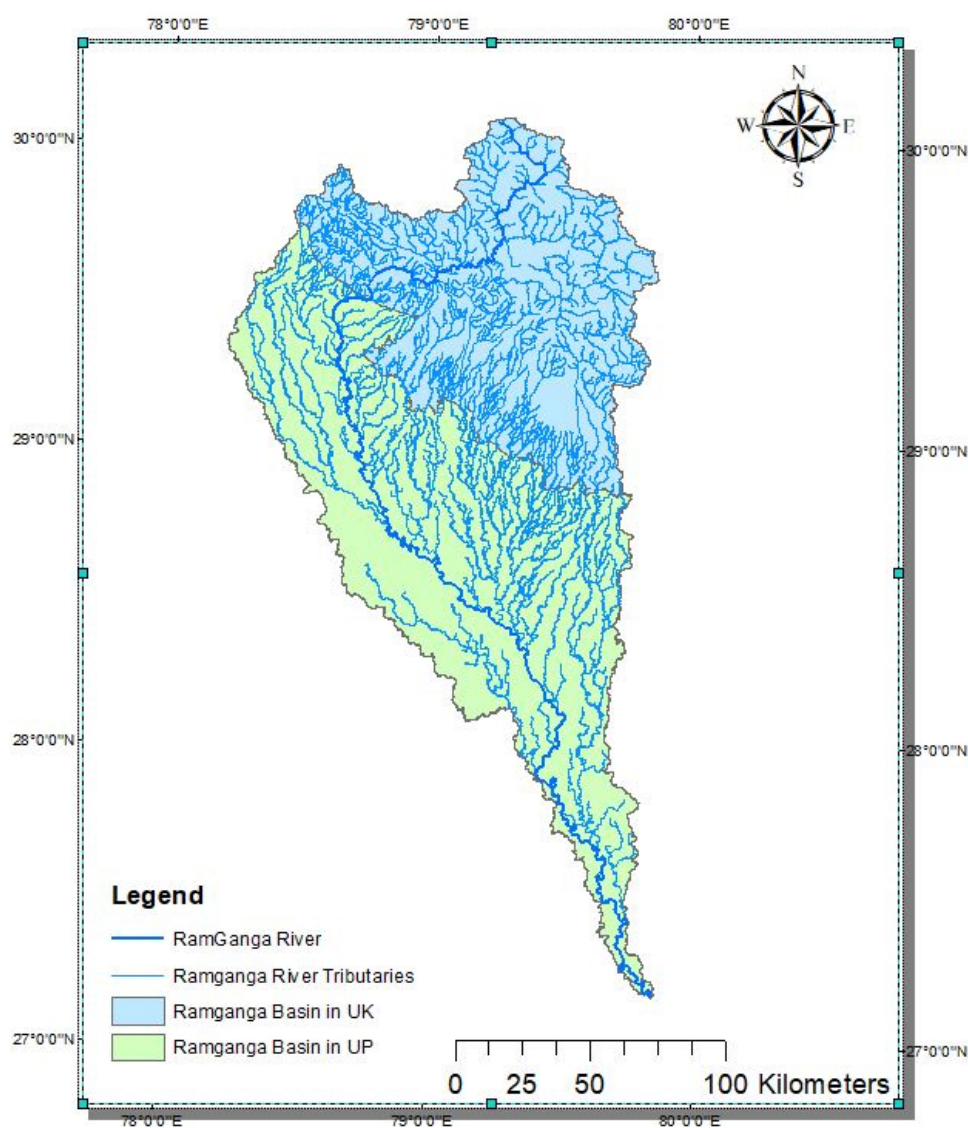
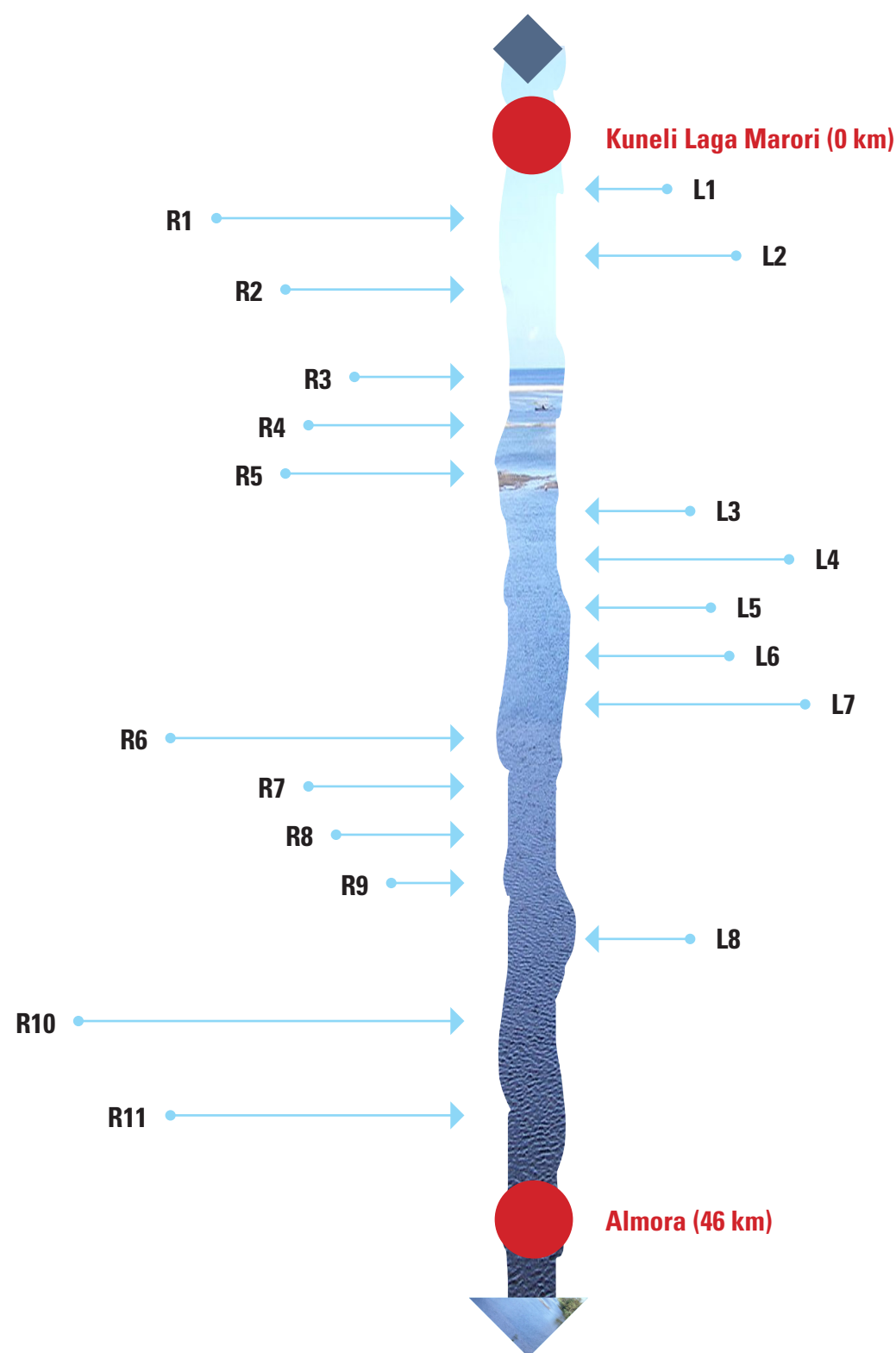
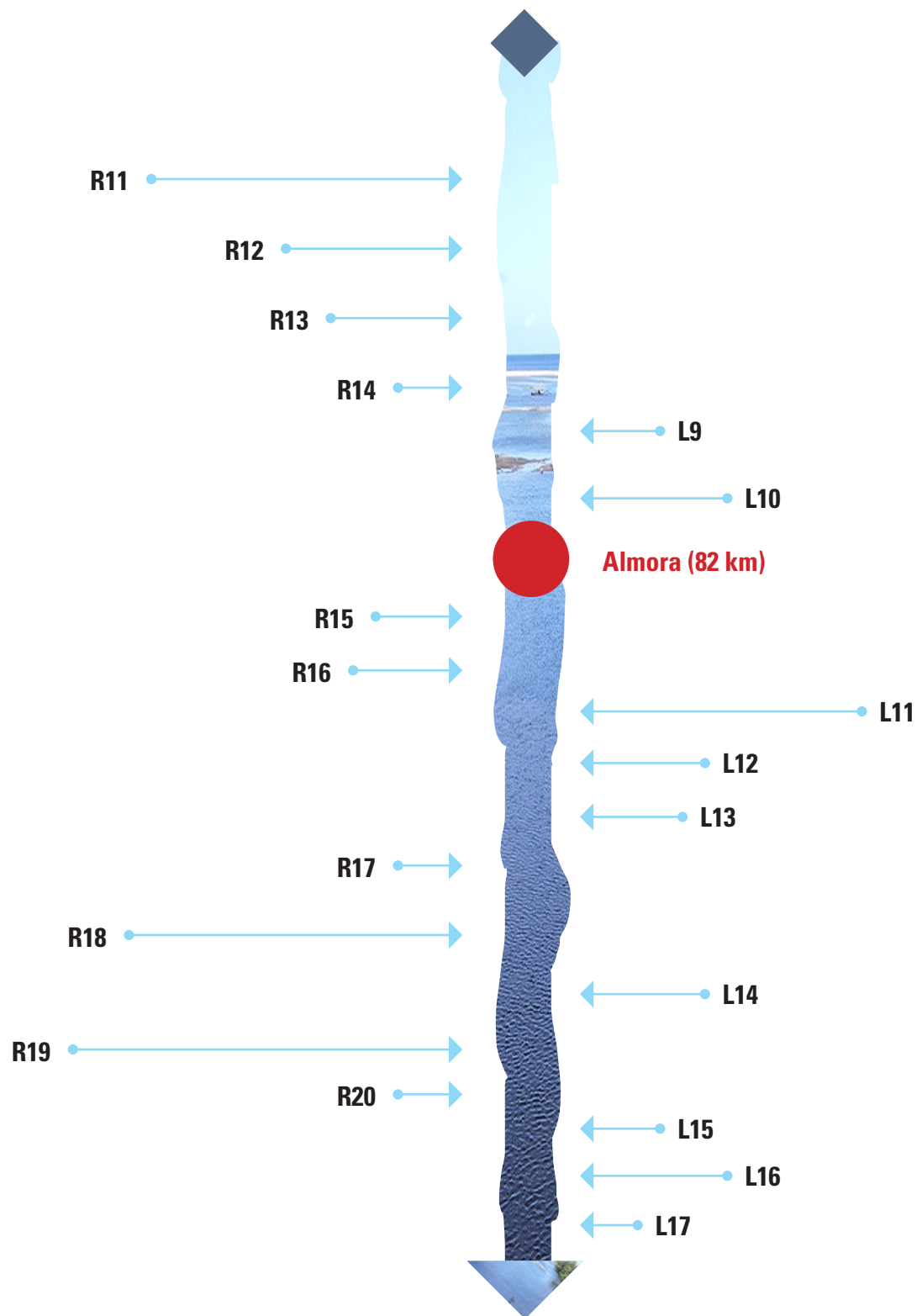
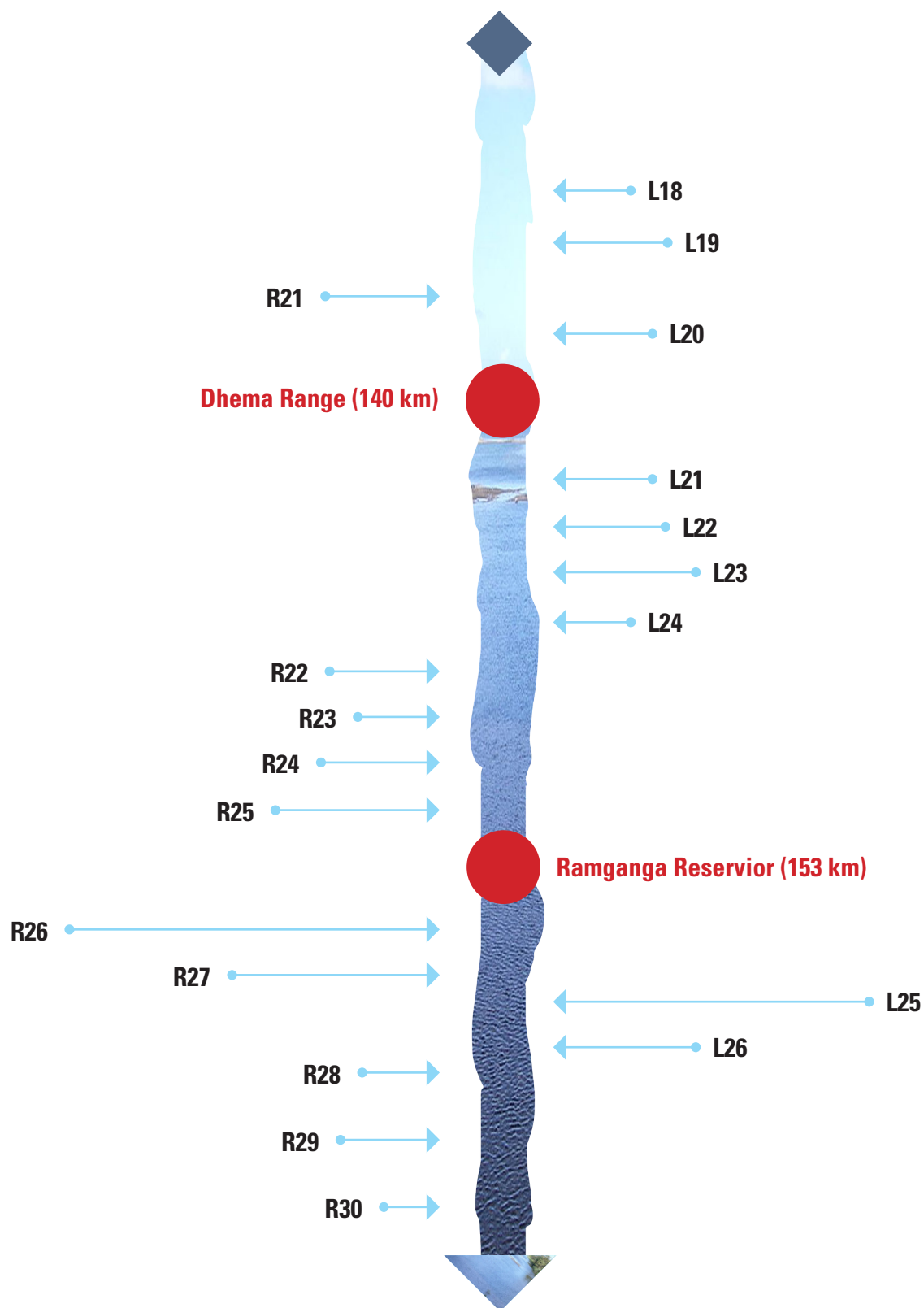


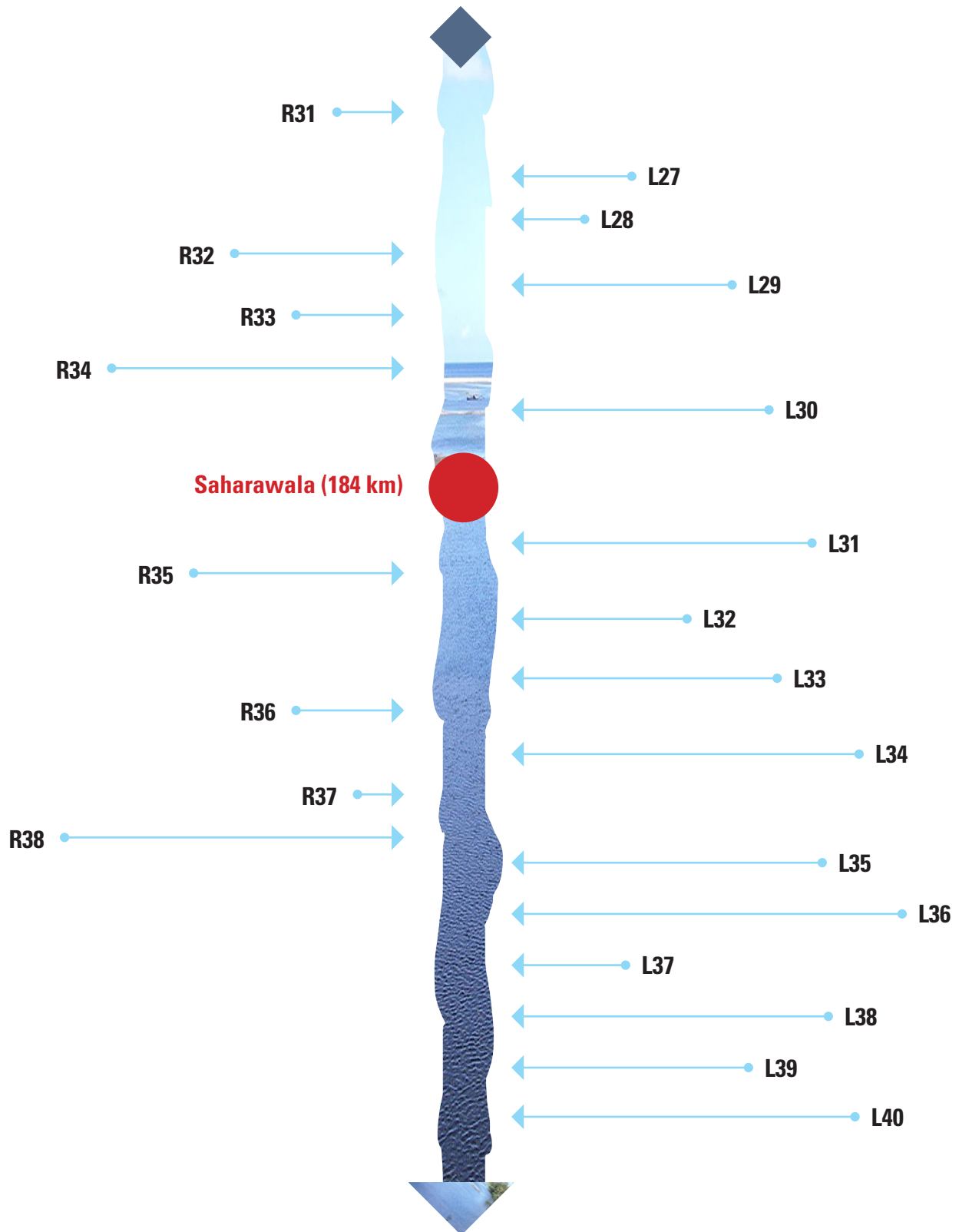
Figure: Ramganga basin river network

RAMGANGA RIVER MAIN STEM FLOW DIAGRAM









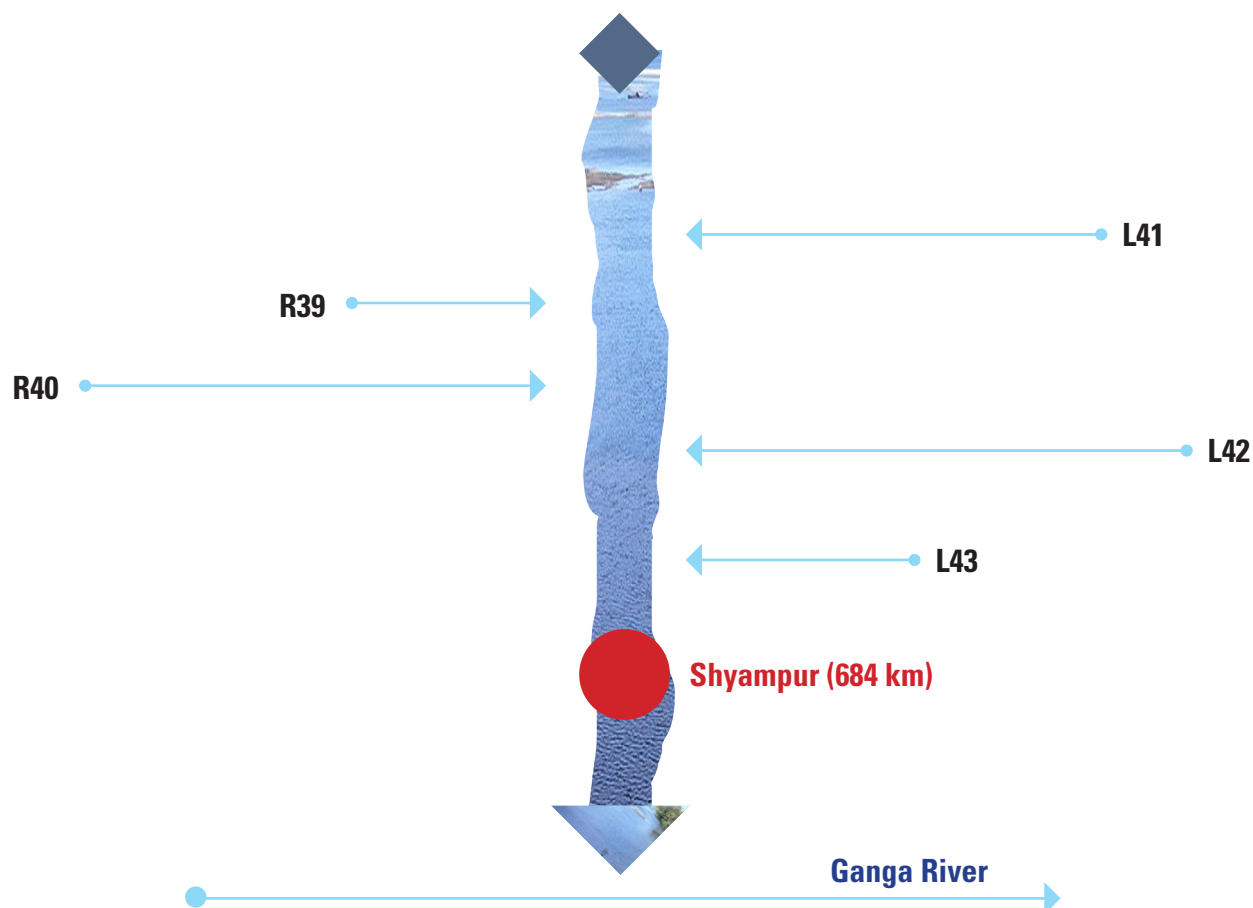


Figure: Flow Diagram of Ramganga River

RAMGANGA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Rasoi Gad	L1	2.31	30.076781°	79.287098°	2.51
2	Motho	R1	11.64	30.063308°	79.284938°	4.1
3	Gwar Gadhera	L2	5.37	30.056659°	79.285312°	5.3
4	Drain21_Gurghat Gad	R2	9.45	30.047787°	79.284487°	9.45
5	Noni Gad	R3	4.94	30.036015°	79.282599°	9.49
6	Kali Gad	R4	5.43	30.029083°	79.292636°	9.8
7	Drain20_Maigar Nadi	R5	10.1	29.986213°	79.320332°	16.5



RAMGANGA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
8	Svuru Gad	L3	7.5	29.985236°	79.345150°	19.9
9	Drain19_Khansar Gad	L4	17.3	29.949652°	79.407809°	29.8
10	Bimali Gadhera	L5	7.9	29.917717°	79.420143°	34.5
11	Drain_Tarag Gadhera	L6	8.35	29.886478°	79.380818°	40.6
12	Stream 2 Kuthlar Gad	L7	17	29.882711°	79.359078°	43.1
13	Drain 17_Khachyar Gadhera	R6	13.6	29.888355°	79.348924°	44.6
14	Nagar	R7	7.41	29.883342°	79.338945°	45.6
15	Drain 16	R8	6.1	29.880891°	79.336611°	46
16	Drain 15	R9	1.99	29.856784°	79.301338°	52
17	Tyar Ka Gadhera	L8	6.06	29.844405°	79.295514°	53.5
18	Bino Nadi	R10	39.3	29.784014°	79.234977°	64.6
19	Khatron River	R11	14.3	29.771605°	79.229939°	66.9
20	Auldhiru Gadhera	R12	4.53	29.769070°	79.229753°	67.2
21	Kapsori River	R13	3.54	29.745749°	79.244088°	71.1
22	Khile Gadhera	R14	2.98	29.737108°	79.249796°	72.5
23	Tuseri Gad	L9	5.78	29.735330°	79.253777°	73
24	Gagas River	L10	606	29.697328°	79.261377°	77.8
25	Am Gadhera	R15	3.9	29.682067°	79.251145°	80.1
26	Jakh Gadhera	R16	4.7	29.625936°	79.221411°	89.1
27	Nayar	L11	18.4	29.632803°	79.200168°	93.3
28	Gabhini Gadhera	L12	7.5	29.621373°	79.191862°	96.8

RAMGANGA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
29	Baur Gadhera	L13	4	29.610816°	79.165714°	102
30	Chamar Ki Rauli	R17	3.37	29.614532°	79.130578°	109
31	Dev Gad Or Dogadda Raula	R18	30.1	29.605794°	79.096398°	114
32	Pandali Rao	L14	6.42	29.585354°	79.037426°	125
33	Mandal Nadi	R19	41.8	29.585361°	79.008076°	129
34	Mauliya Sot	R20	3.35	29.563150°	78.998465°	132
35	Ranibagh Sot	L15	5.69	29.556204°	79.005400°	133
36	Dhulwa Rao	L16	5.95	29.551487°	78.991272°	135
37	Gorkha Sot	L17	1.79	29.539643°	78.972854°	137
38	Barsoti Sot	L18	3.53	29.539170°	78.970061°	137
39	KothiDhunga Sot	L19	3.11	29.542252°	78.965625°	138
40	Bilot Sot	R21	6.46	29.551107°	78.948162°	140
41	Jaman Sot	L20	3.54	29.550944°	78.945889°	140
42	Balabhata Sot	L21	3.3	29.555421°	78.924687°	142
43	Stream 9	L22	3.61	29.558359°	78.918478°	143
44	Sokharewar Sot	L23	4.32	29.559251°	78.917220°	143
45	Ruina Sot	L24	4.24	29.559968°	78.916272°	143
46	Boksgadi Sot	R22	8.69	29.568492°	78.912563°	144
47	Chintiarao dhar or Kilani Sot	R23	6.88	29.580013°	78.906696°	146
48	Phulai Sot	R24	7.38	29.593197°	78.866774°	150
49	Gaujera Nala	R25	10	29.596885°	78.837705°	153
50	Palan Nadi	R26	43.1	29.578984°	78.783660°	159



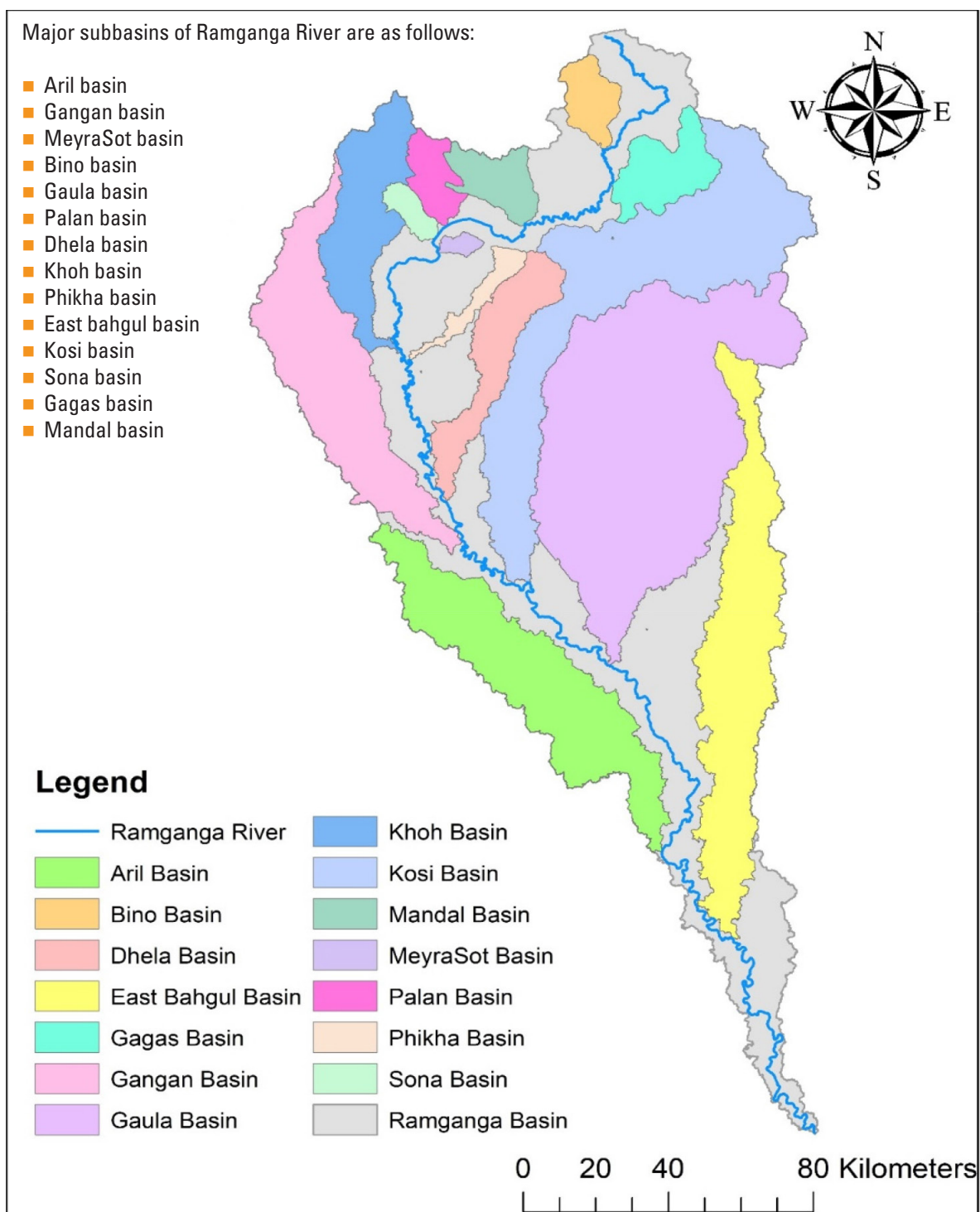


RAMGANGA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
51	Sona Nadi	R27	25.1	29.552134°	78.755422°	163
52	Meyra Sot/Patir pani Rao	L25	20.9	29.507234°	78.758575°	169
53	Stream 6	L26	11.6	29.484392°	78.743537°	172
54	Stream 7	R28	7.14	29.492348°	78.695679°	177
55	Kalu Shahid Sot	R29	13.3	29.480157°	78.646143°	183
56	Dharak River	R30	10.6	29.476750°	78.639451°	184
57	Bega Sot	R31	13.2	29.414684°	78.618473°	192
58	Amla,Dhara	L27	16.1	29.373036°	78.647183°	199
59	Nachna Nala	L28	5.44	29.365631°	78.650028°	200
60	Stream 8	R32	18.4	29.308979°	78.637760°	209
61	Drain 9/Banaili Nadi	L29	41.5	29.299047°	78.642751°	211
62	Sanghai Nala	R33	14.8	29.279612°	78.628553°	217
63	Khoh River	R34	115	29.251852°	78.651843°	224
64	Pili River	L30	44.8	29.233911°	78.663819°	227
65	Phika Nadi	L31	53.3	29.222411°	78.679237°	234
66	Dangarai Nala	R35	25.35	29.121038°	78.669211°	257
67	Repi River	L32	33.3	29.057674°	78.712002°	269
68	Kurka River	L33	46.6	29.027243°	78.734999°	275
69	Drain 7_ Siasundar Nala	R36	21.5	28.950431°	78.723386°	293
70	Drain 6_Dhela River	L34	117	28.872183°	78.776066°	309
71	Karula Nala	R37	11.3	28.771352°	78.818253°	325

RAMGANGA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
72	Gangan River	R38	214	28.746021°	78.833145°	329
73	Rajhera Nala	L35	63	28.669917°	78.926661°	363
74	Kosi River	L36	304	28.633885°	79.027593°	380
75	Pilakhar River	L37	22.8	28.454287°	79.195665°	418
76	Gaula/Bahgul River	L38	118	28.415040°	79.257291°	431
77	Sankha Nadi	L39	61.6	28.338691°	79.339434°	447
78	Deoranian Nadi	L40	129	28.316686°	79.374936°	452
79	Drain 3	L41	108	28.134387°	79.484479°	480
80	Narha Nadi	R39	29.5	28.003948°	79.470569°	504
81	Drain 2/Aril Nadi	R40	158	27.921363°	79.412648°	518
82	East Bahgul Nadi	L42	344	27.691144°	79.615046°	573
83	Bharguda Drain	L43	33	27.668129°	79.640688°	580



RAMGANGA BASIN: MAJOR SUB-BASINS



ARIL BASIN

Aril River UID Code: 02L01R12
Basin Area: 2061.35 Sq. Km.
Number of rivers: 12
River network: 503.54 Km

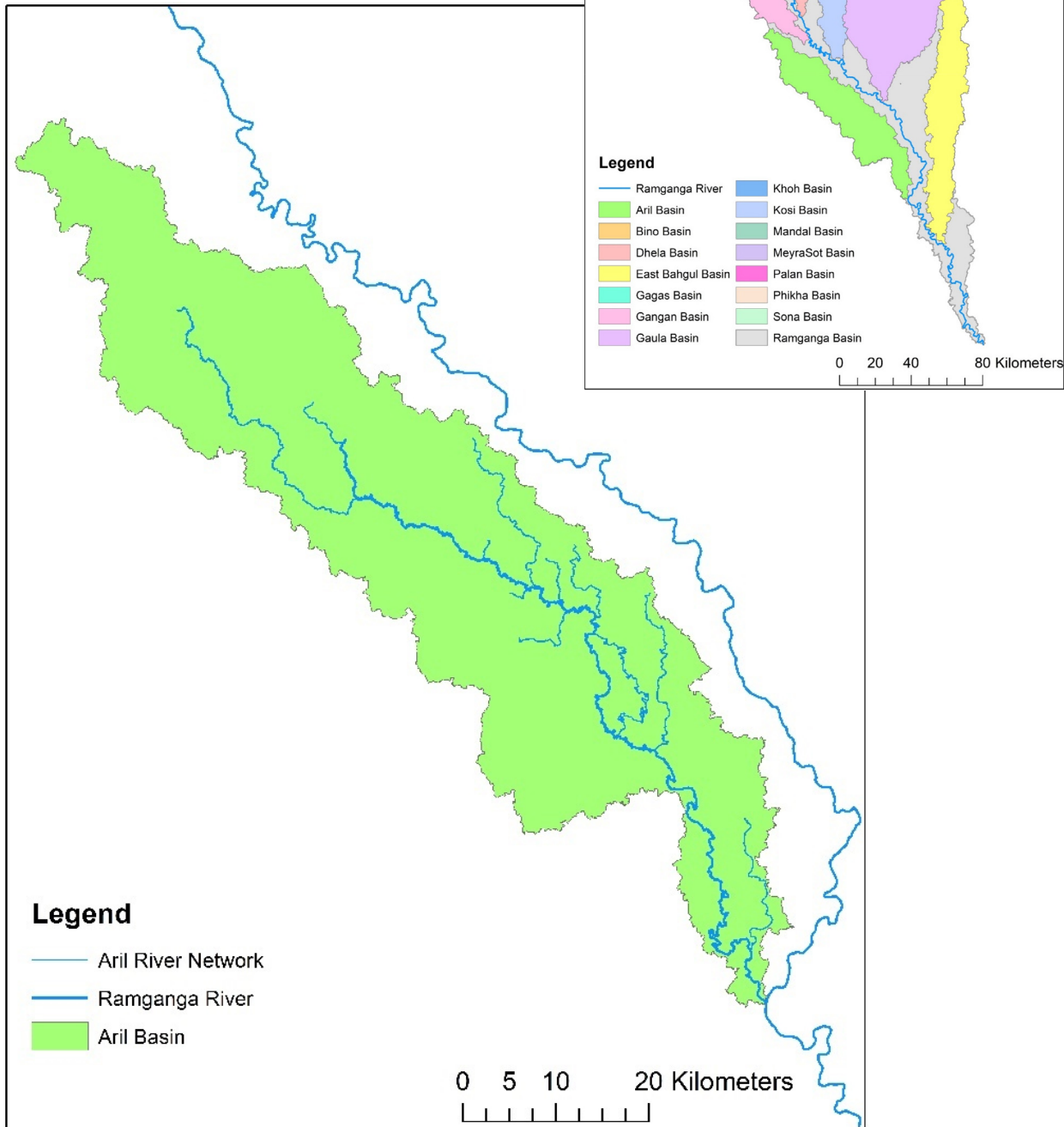


Figure: Aril River Network





ARIL RIVER MAINSTEM FLOW DIAGRAM

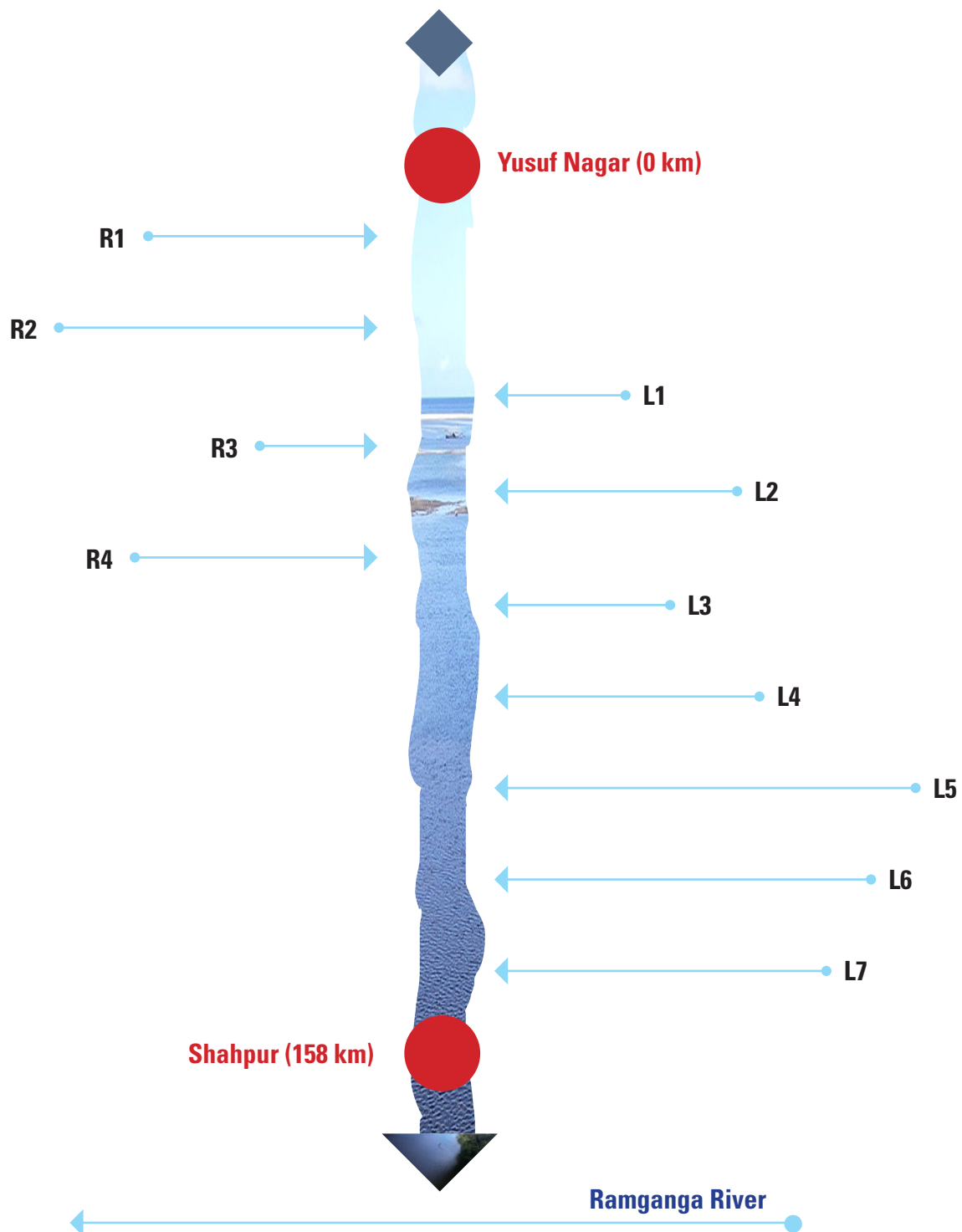


Figure: Flow Diagram of Aril River

ARIL RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Stream 7	R1	9.41	28.472317°	78.937090°	0.77
2	Aril Nala	R2	63.2	28.418296°	78.958947°	10.4
3	Stream 6	L1	2.78	28.360787°	79.095896°	38.2
4	Stream 5	R3	3	28.329273°	79.142932°	48.7
5	Pairiya Nadi	L2	28.5	28.332630°	79.157013°	50.9
6	Stream 4	L3	6.92	28.318950°	79.182493°	57.4
7	Nawab Nadi	R4	10.6	28.307577°	79.187286°	59.1
8	Stream 3	L4	15.4	28.302808°	79.220477°	66.1
9	Aril Nadi	L5	33.3	28.185871°	79.245683°	89.6
10	Bajha Nadi	L6	26.4	28.171281°	79.287500°	96.8
11	Stream 2	L7	21.3	27.975683°	79.394689°	148





BINO BASIN

Bino River UID Code:
 Basin Area: 294.68 Sq. Km.
 Number of rivers: 11
 River network: 123.81 Km

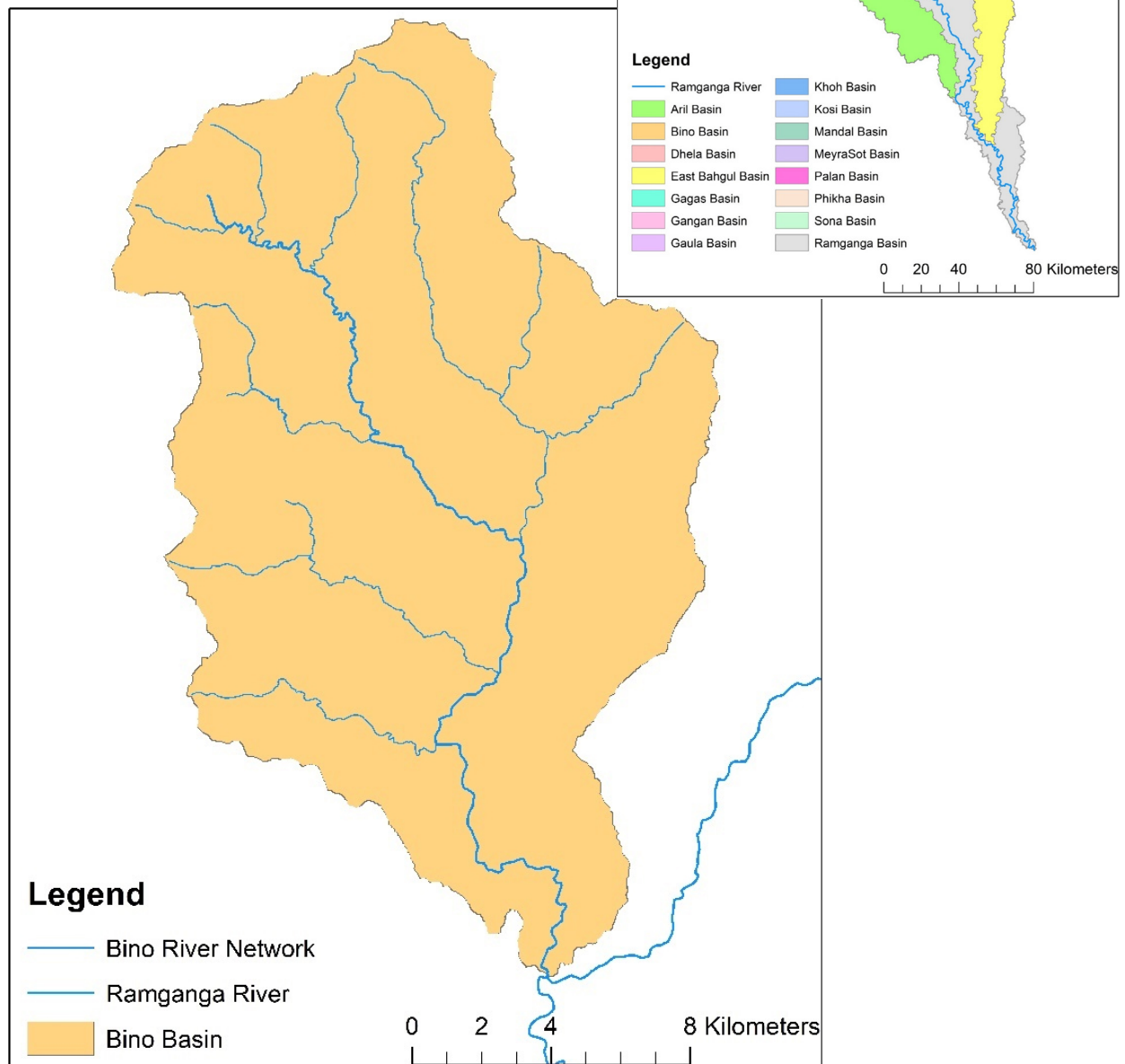


Figure: Bino River Network

BINO RIVER MAINSTEM FLOW DIAGRAM

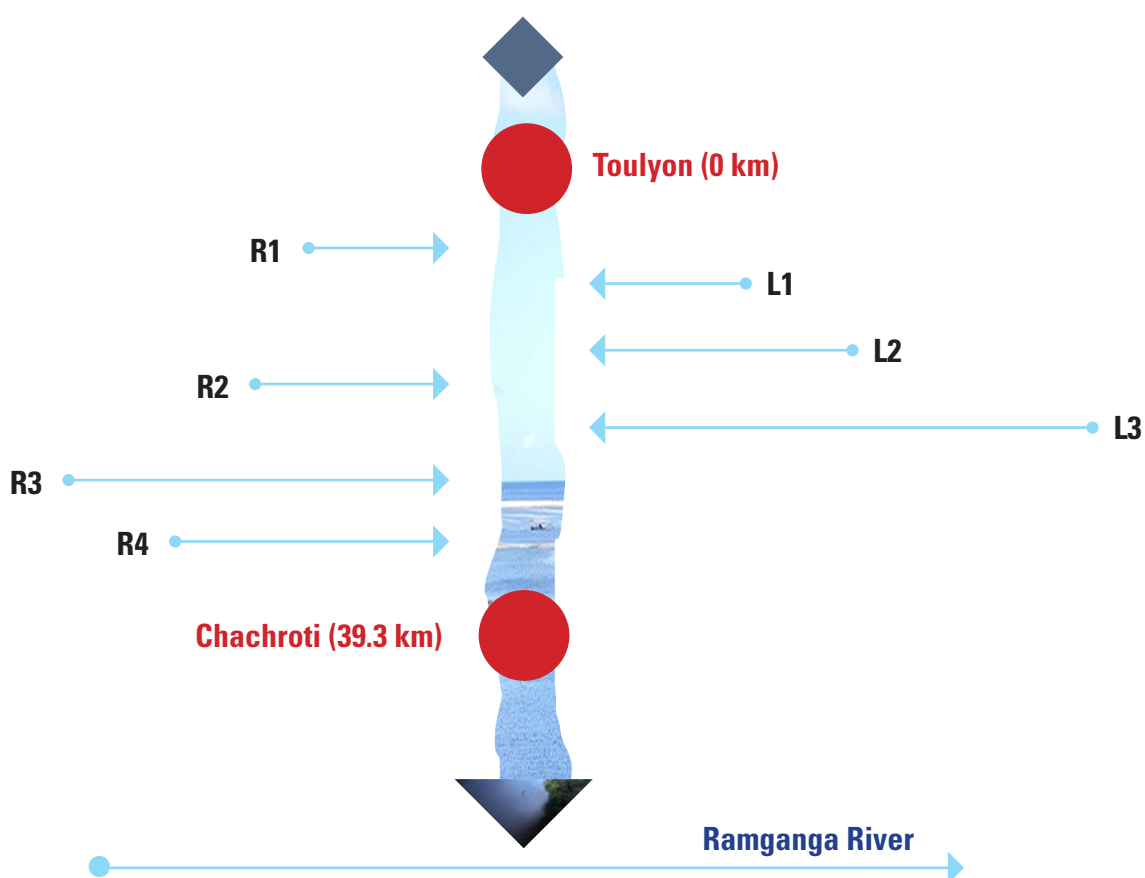


Figure: Flow Diagram of Bino River

BINO RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Bhanelu Gad	R1	3.09	29.981544°	79.136849°	1.27
2	Od ki Gad	L1	4.66	29.977341°	79.145097°	3.1
3	Bagar ki Gad	L2	7.38	29.969070°	79.163781°	6.56
4	Basola Gad	R2	7.31	29.925037°	79.181253°	14.1
5	Masangari	L3	19.6	29.898743°	79.226246°	20.2
6	Baye Gadhera	R3	12.9	29.864543°	79.219961°	24.5
7	Juniya Gadhera	R4	9.86	29.845479°	79.201036°	27.9



DHELA BASIN

Dhela River UID Code:
 Basin Area: 763.57 Sq. Km.
 Number of rivers: 20
 River network: 372.5 Km

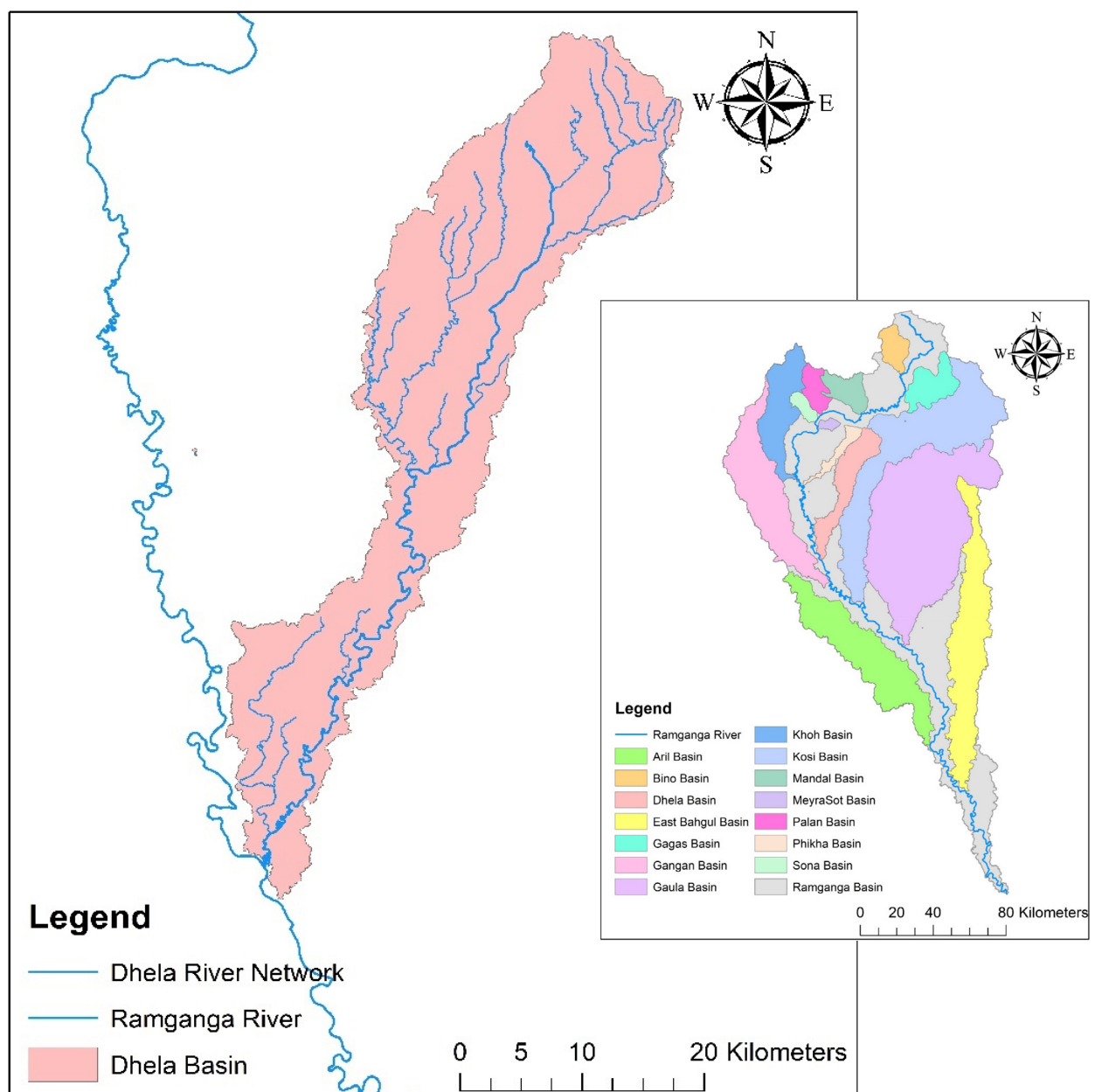


Figure: Dhela River Network

DHELA RIVER MAINSTEM FLOW DIAGRAM

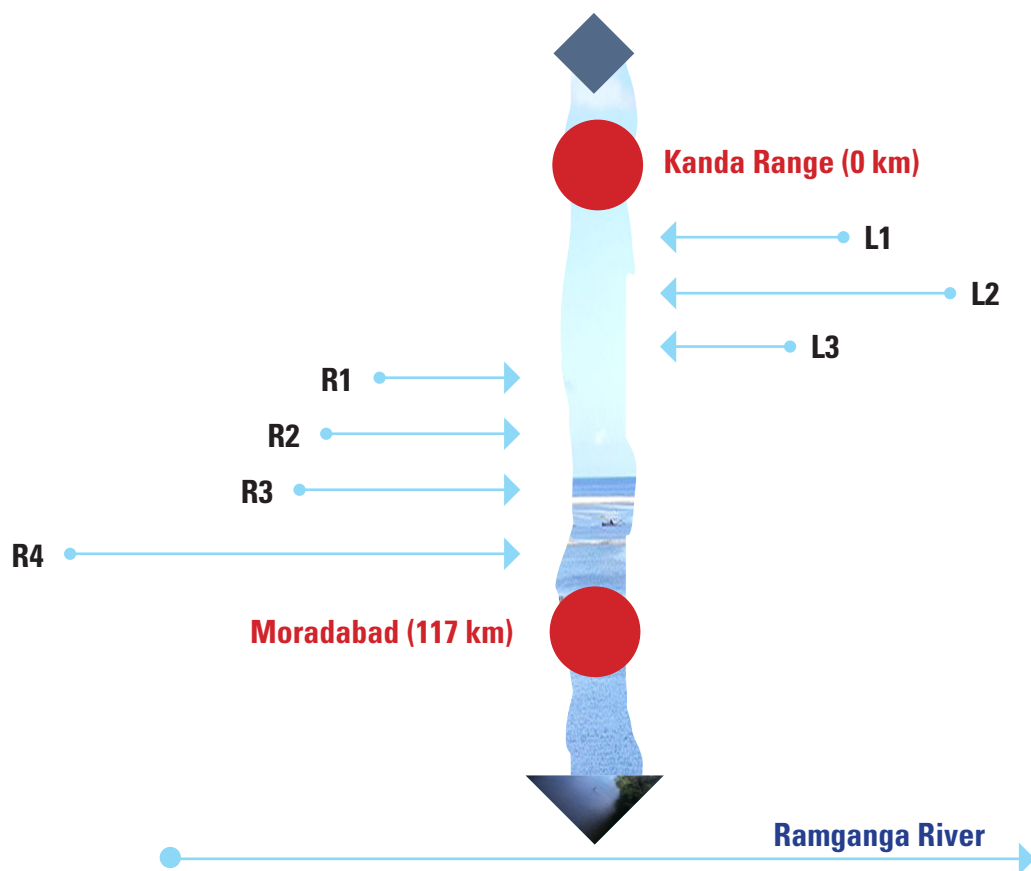


Figure: Flow Diagram of Dhela River

BINO RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Kaserwa Sot	L1	14.3	29.392072°	79.016086°	12.7
2	Sawaldeh Nadi	L2	27.3	29.350687°	79.009349°	17.6
3	Ghebia Nala	L3	6.38	29.228696°	78.951573°	35.3
4	Pachhana Nala	R1	8.63	29.181583°	78.915925°	43.2
5	Dhandhi Nadi	R2	36.1	29.178423°	78.895818°	45.6
6	Kachhia Nala	R3	10.19	29.017627°	78.840252°	81.8
7	Damdama	R4	33.34	28.899511°	78.780077°	109



EAST BAHGUL BASIN

East Bahgul River UID Code:

Basin Area: 2347.13 Sq. Km.

Number of rivers: 35

River network: 789.85 Km

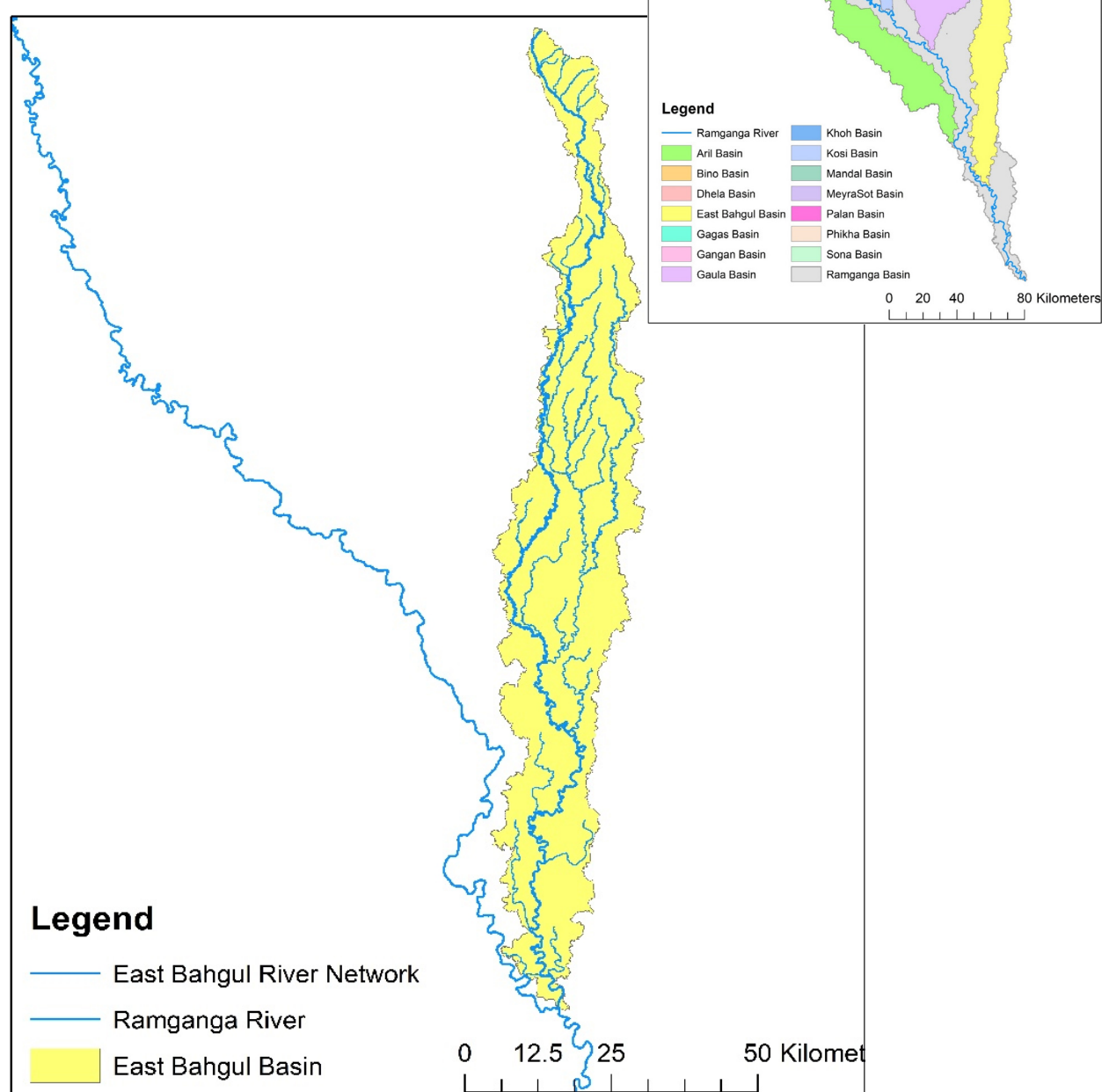


Figure: East Bahgul River Network

EAST BAHGUL RIVER MAINSTEM FLOW DIAGRAM

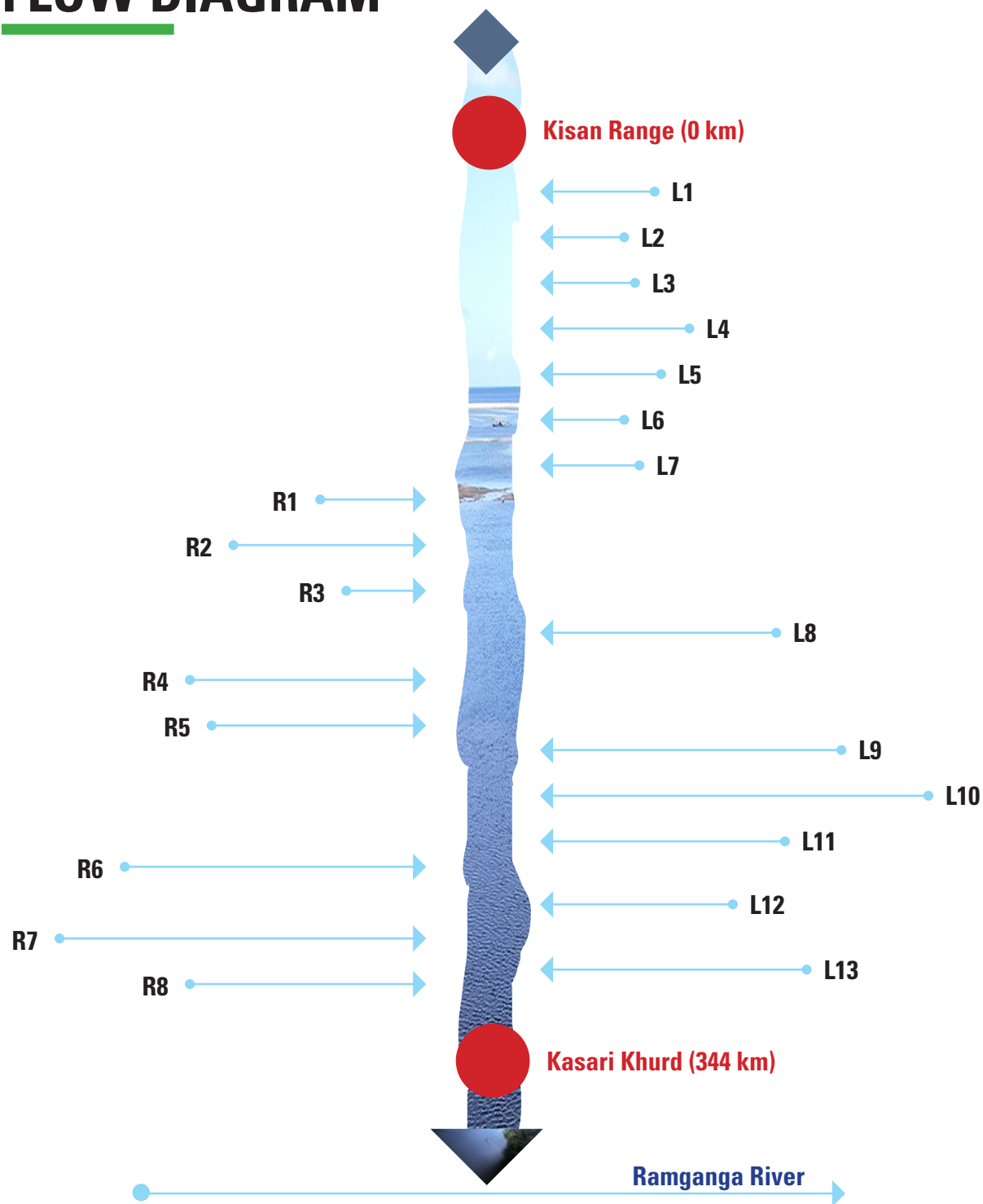


Figure: Flow Diagram of East Bahgul River





EAST BAHGUL RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Ninglan Gandhera	L1	5.73	29.213576°	79.573543°	7.88
2	Tarwa Gad	L2	5.68	29.201975°	79.581312°	9.65
3	Garkhark Nala	L3	8.01	29.169149°	79.604196°	14.3
4	Jam Raula	L4	10	29.158704°	9.613988°	16
5	Paurjiya Nala	L5	8.46	29.135033°	79.646063°	21
6	Bagul Nala	L6	5.13	29.028147°	79.668490°	37.6
7	Gorhi Nala	L7	7.68	28.990369°	79.686908°	43.9
8	Jalpanian Nala	R1	8.99	28.916919°	9.665274°	56.6
9	Tehra Nala	R2	12.5	28.887700°	9.634377°	64
10	Stream 10	R3	9	28.858788°	9.630349°	66.2
11	Stream 9	L8	13.1	28.826743°	79.636542°	72.6
12	Stream 8	R4	15.3	28.779604°	79.614144°	83.3
13	Kundu Nala	R5	14.9	28.433255°	79.548226°	169
14	Kandu Nala	L9	32.1	28.295745°	79.579558°	202
15	Kailas Nadi	L10	111	28.251085°	79.588340°	212
16	Gauneya Nala	L11	24.5	28.133237°	79.640738°	243
17	Reoti Nala	R6	23.3	28.007127°	79.573105°	276
18	Dunda Nala	L12	18.1	27.931505°	9.589653°	296
19	Andhoi Nadi	R7	27.3	27.820631°	79.564444°	315
20	Jaunra Drain	L13	31.2	27.745604°	9.601741°	334
21	Baigul	R8	12.1	27.742839°	79.602634°	335

GAGAS BASIN

Gagas River UID Code:
 Basin Area: 534.66 Sq. Km.
 Number of rivers: 14
 River network: 182.9 Km

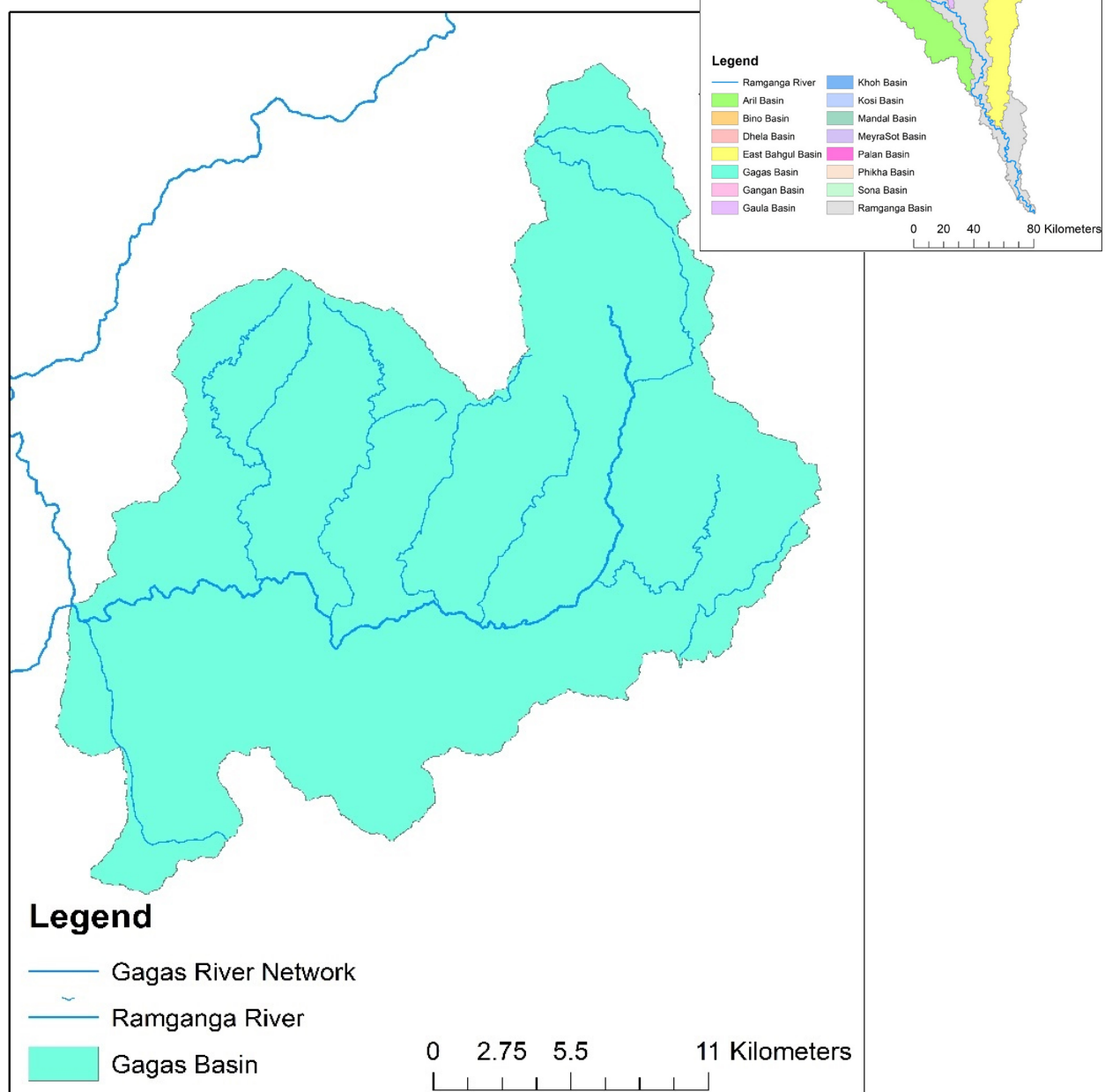


Figure: Gagás River Network



GAGAS RIVER MAINSTEM FLOW DIAGRAM

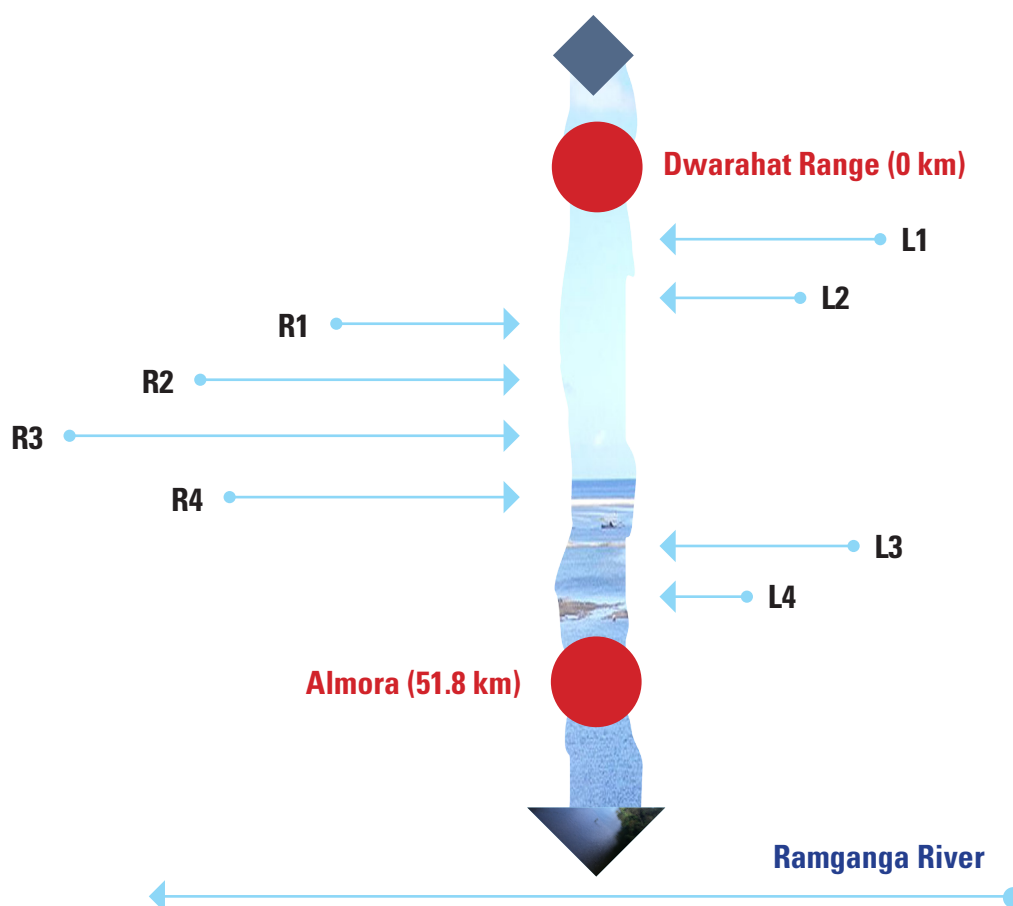


Figure: Flow Diagram of Gagas River

GAGAS RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Janatari Gad	L1	8.87	29.780872°	79.496411°	9.9
2	Malli Gad	L2	7.58	29.707463°	79.482171°	19.3
3	Dusad Gadhera	R1	13.09	29.691579°	79.431399°	26.2
4	Khirau	R2	16.27	29.697952°	79.415173°	28.3
5	Riskan Gadhera	R3	21.2	29.692842°	79.370222°	35.2
6	Khar Gandhera	R4	16.4	29.707339°	79.342316°	39.6
7	Kanari Gadhera	L3	7.88	29.702482°	79.312869°	44
8	Naurar	L4	1.44	9.691495°	79.265904°	50.9

GANGAN BASIN

Gangan River UID Code:
 Basin Area: 1968.35 Sq. Km.
 Number of rivers: 09
 River network: 644 Km

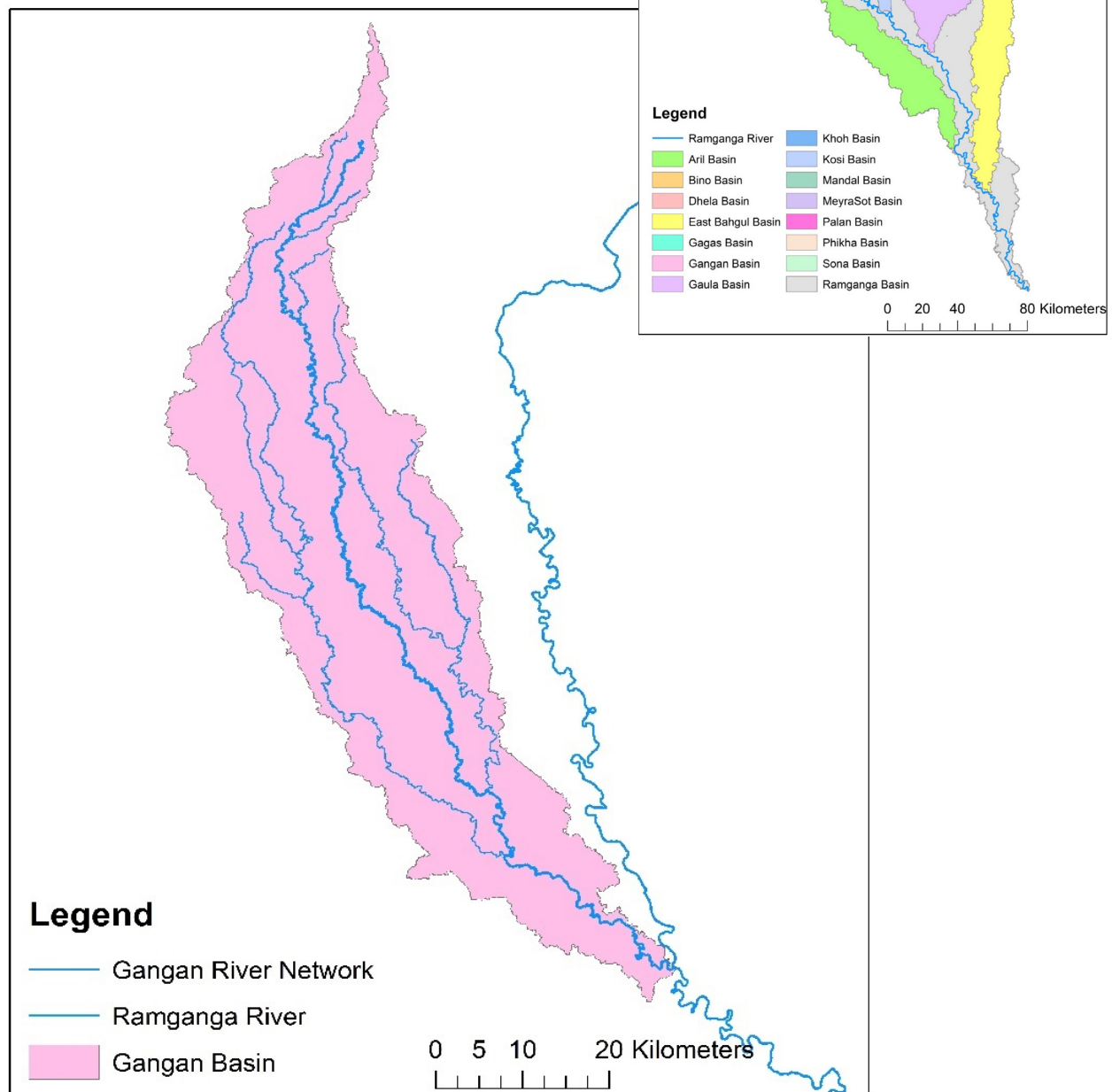


Figure: Gangan River Network



GANGAN RIVER MAINSTEM FLOW DIAGRAM

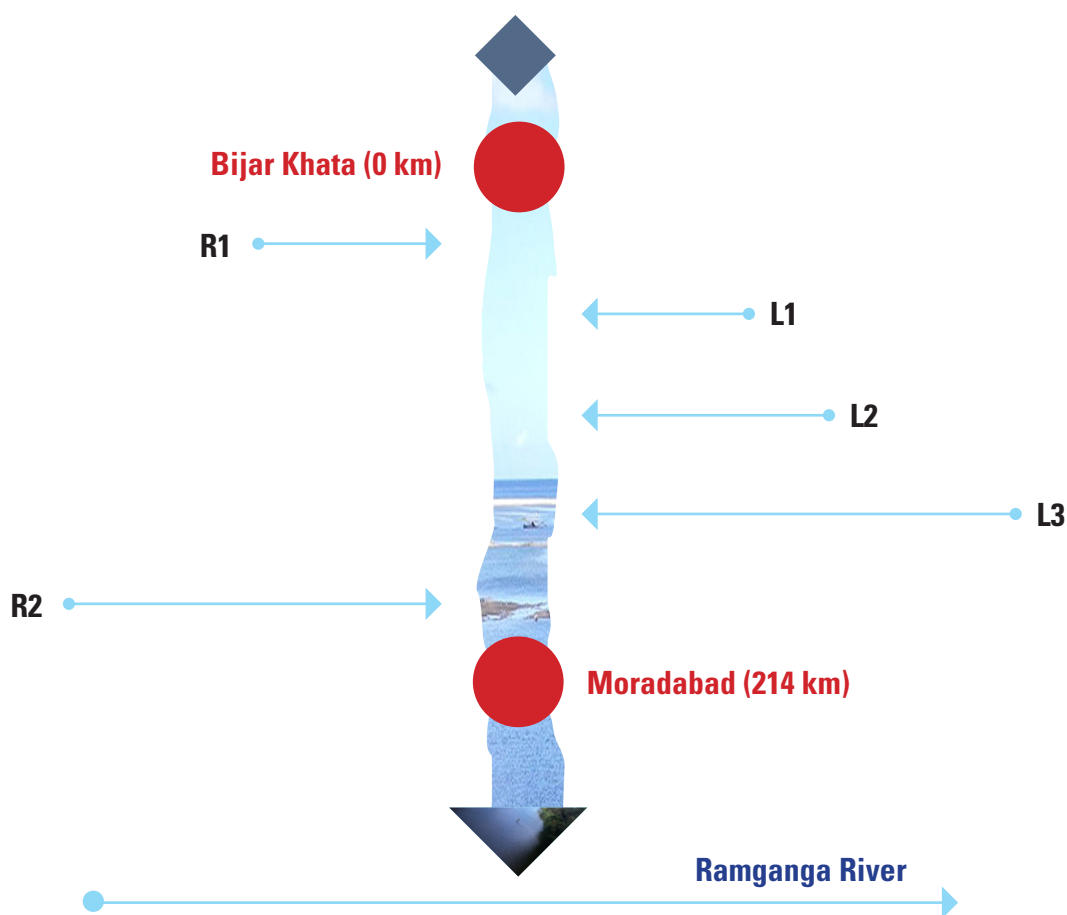


Figure: Flow Diagram of Gangan River

GANGAN RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Katheni Nala	R1	15.4	29.57	78.40	15
2	Pelkhala River	L1	17.2	29.54	78.36	24
3	Karula Nala	L2	18.8	29.45	78.37	42.7
4	Karula River	L3	119	28.93	78.61	180
5	Ban River	R2	132	28.86	78.63	198

GAULA BASIN

Gaula River UID Code:
 Basin Area: 4795.53 Sq. Km.
 Number of rivers: 173
 River network: 2999.63 Km

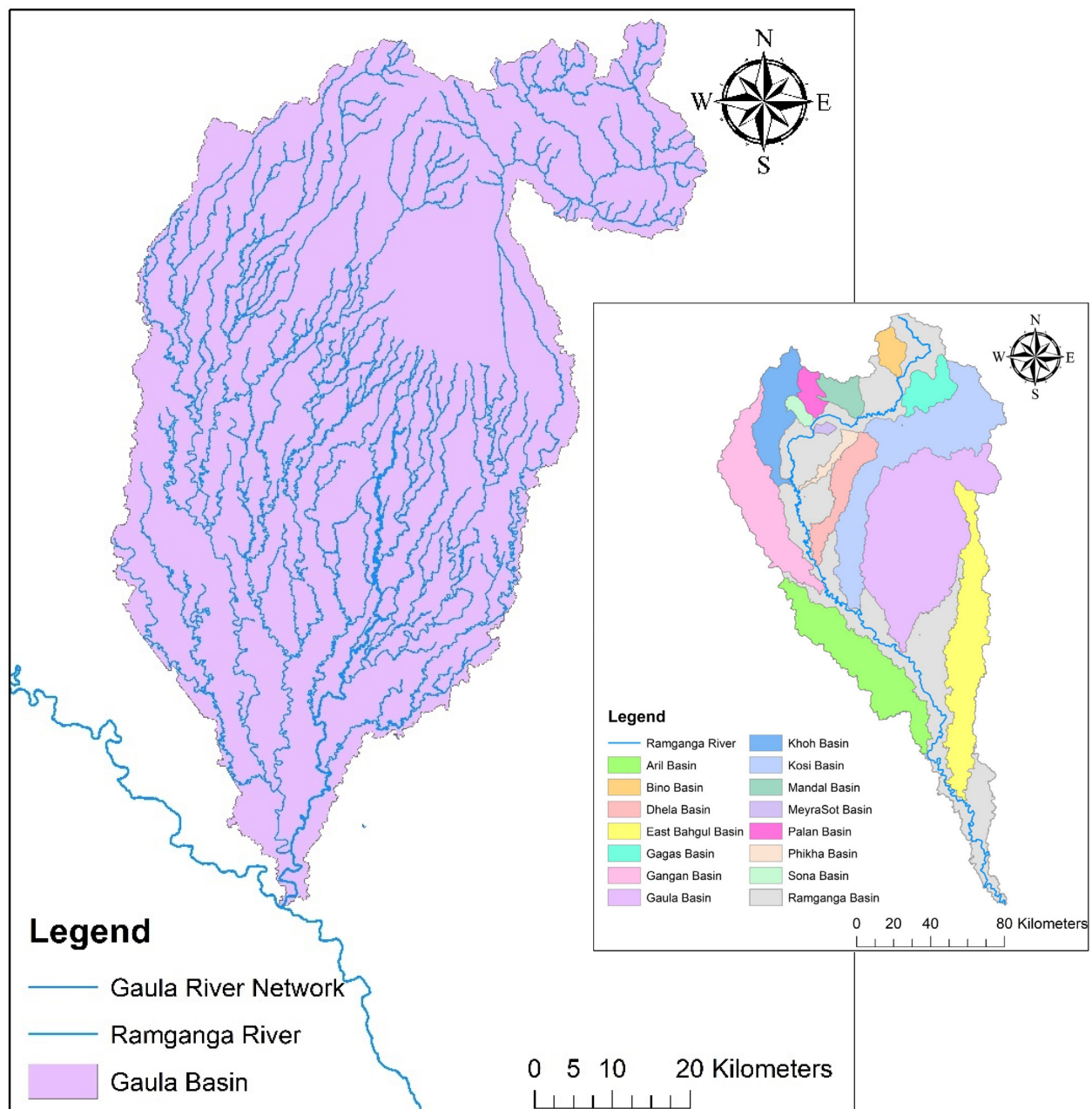


Figure: Gaula River Network



GAULA RIVER MAINSTEM FLOW DIAGRAM

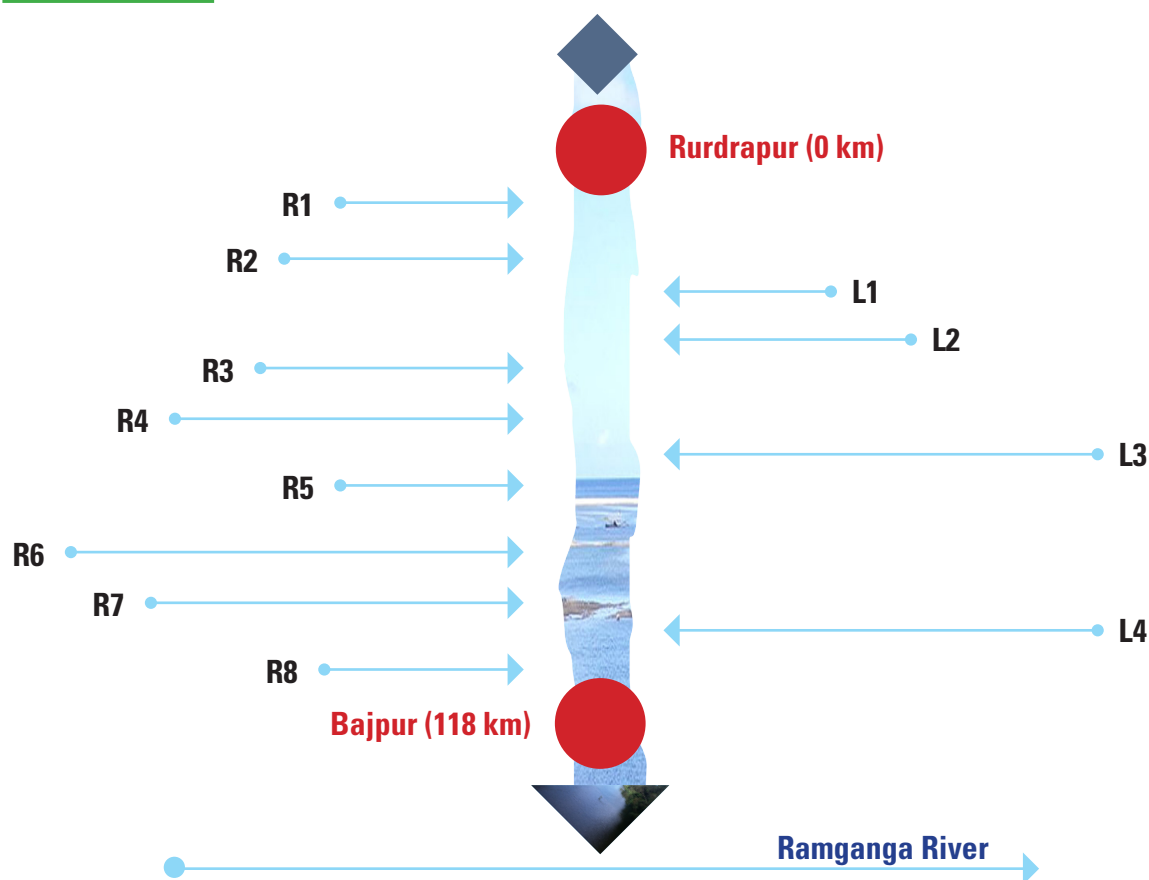


Figure: Flow Diagram of Gaula River Network

GAULA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Patthar Chatta Nadi	R1	17.2	28.971199°	79.403399°	3.31
2	Khaira Nadi	R2	26.7	28.922696°	79.382269°	14.9
3	Stream 1	L1	3.92	28.872687°	79.386048°	25.8
4	Barai Nadi	L2	53	28.825498°	79.383755°	39.5
5	Kahlaiya Nadi	R3	18.4	28.799591°	79.377972°	45.5
6	Baraur Nadi	R4	56.4	28.786904°	79.388029°	48
7	Bahral	L3	8.83	8.758585°	79.385969°	52.4
8	Bagaiya	R5	6.36	28.716858°	79.347199°	61.5
9	Kichha Nadi	R6	166	28.682364°	79.338671°	67.4
10	Kuli Nadi	R7	67.3	8.639366°	79.297691°	77
11	Dhora River	L4	124	28.575060°	9.320196°	88.3
12	Gaula River	R8	13.4	28.482076°	79.268848°	105

KHOH BASIN

Khoh River UID Code:
Basin Area: 1034.38 Sq. Km.
Number of rivers: 68
River network: 693.49 Km

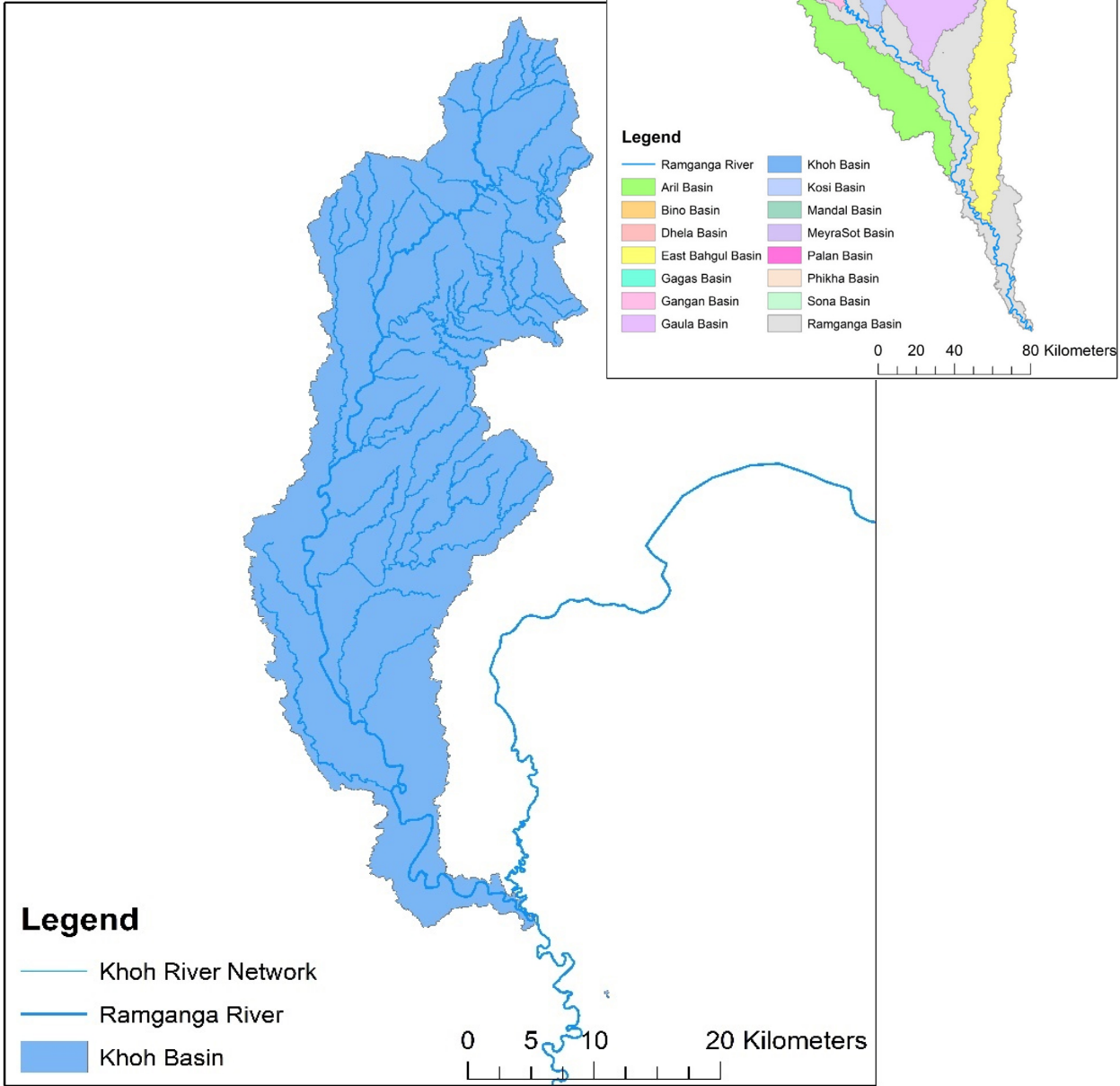


Figure: Khoh River Network





KHOH RIVER MAINSTEM FLOW DIAGRAM

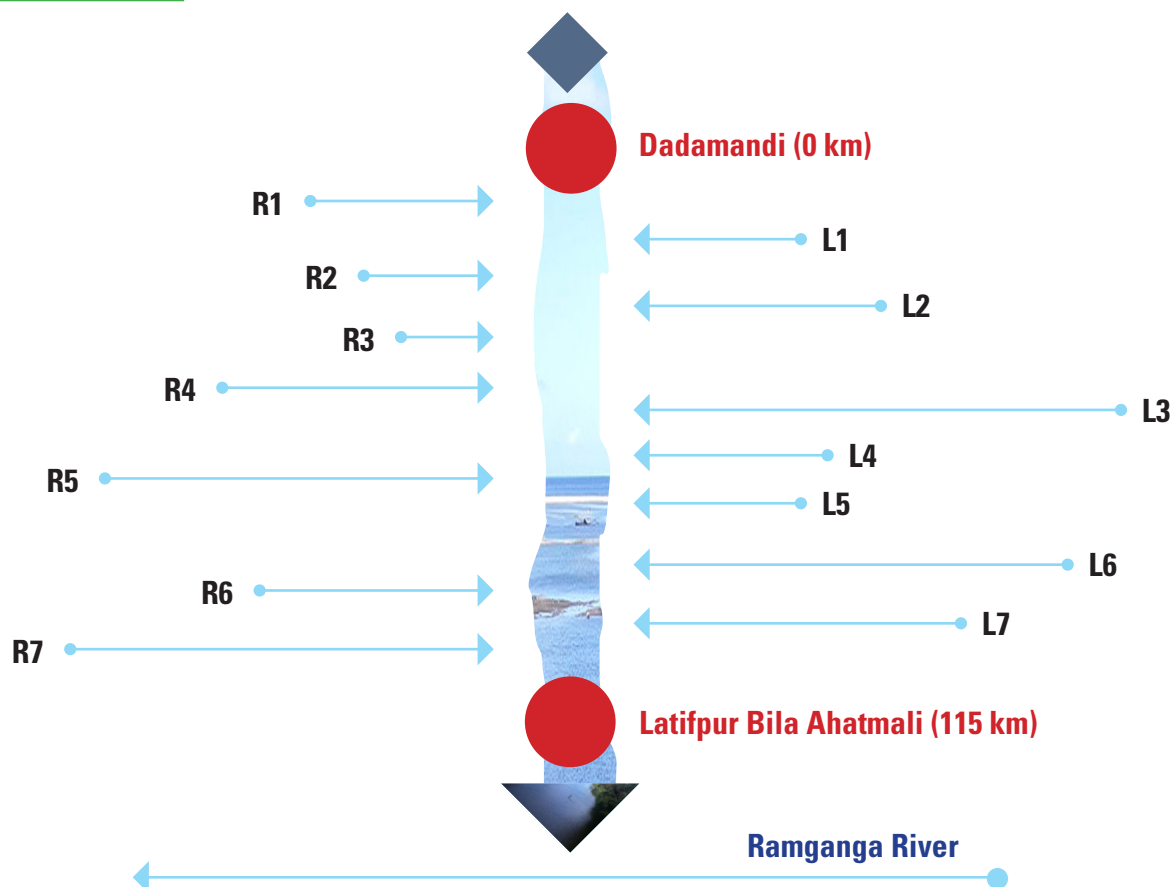


Figure: Khoh River Network

KHOH RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Pawai Gad	R1	8.1	29.865715°	78.610337°	0
2	Bhairam Nadi	L1	8.18	29.865572°	78.610725°	0
3	Jhand Dhar	R2	5.46	29.859808°	78.602731°	0.99
4	Sil Gad	L2	15.7	29.806584°	78.607087°	9.63
5	Giwain Sot	R3	7.1	9.752284°	78.528547°	24.9
6	Paniyali Sot	R4	10	29.720776°	78.515099°	28.8
7	Sabeh Nadi	L3	33.2	29.691233°	78.521954°	32.4
8	Sarkara Sot	L4	13.2	29.603347°	78.497729°	44.5
9	Sukh Rao	R5	34	9.590933°	8.479220°	46.9
10	Khala Nala	L5	10	9.550040°	78.476893°	53.4
11	Uni River	L6	30.9	9.499711°	78.466060°	61.4
12	Stream 18	R6	10.4	9.480305°	78.470992°	63.6
13	Lalbra Sot	L7	21	29.409627°	8.497232°	72.5
14	Padhoi Nadi	R7	34.1	9.343994°	78.533279°	85.5

KOSI BASIN

Kosi River UID Code:
Basin Area: 3167.96 Sq. Km.
Number of rivers: 128
River network: 1516.01 Km

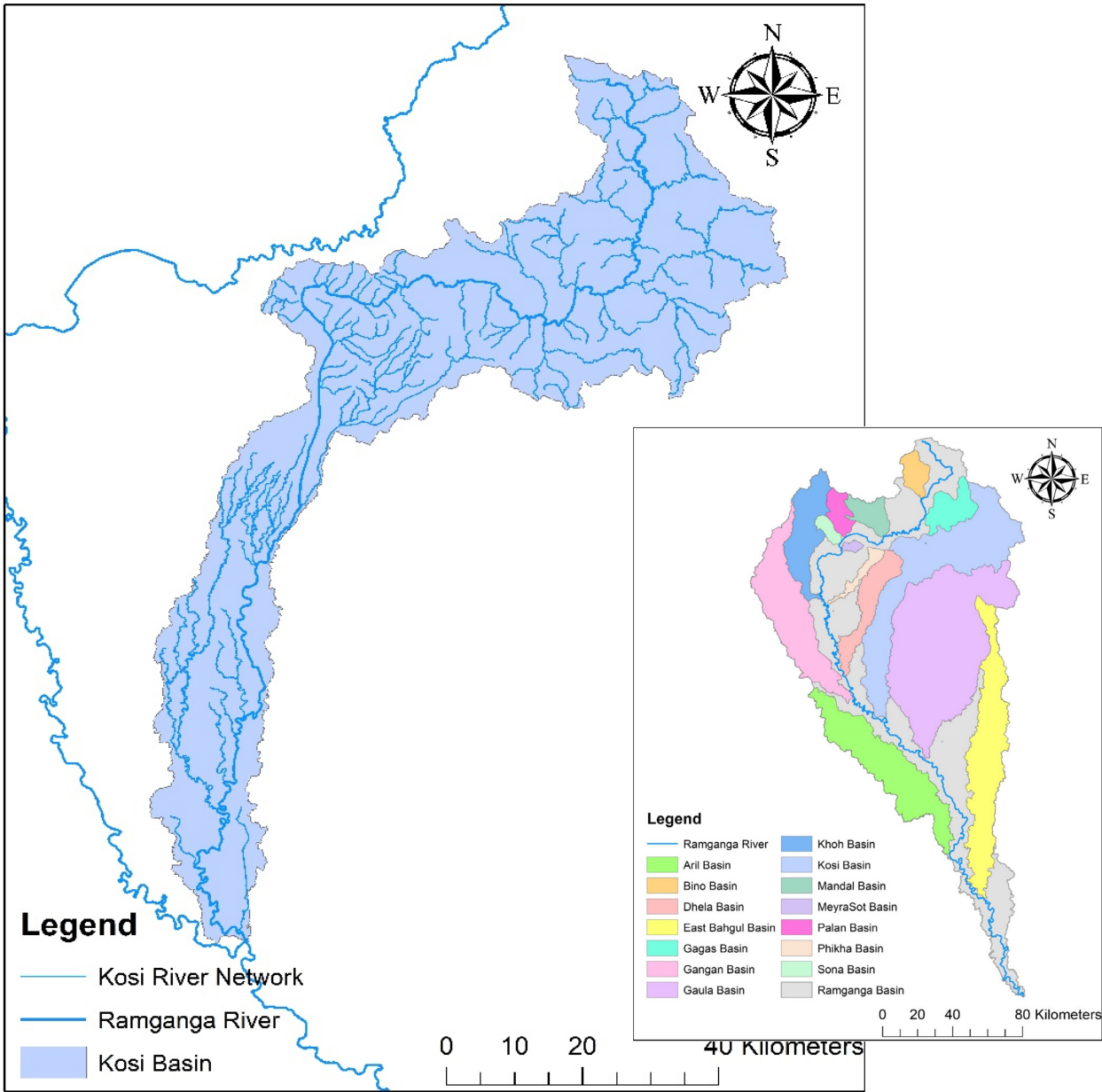
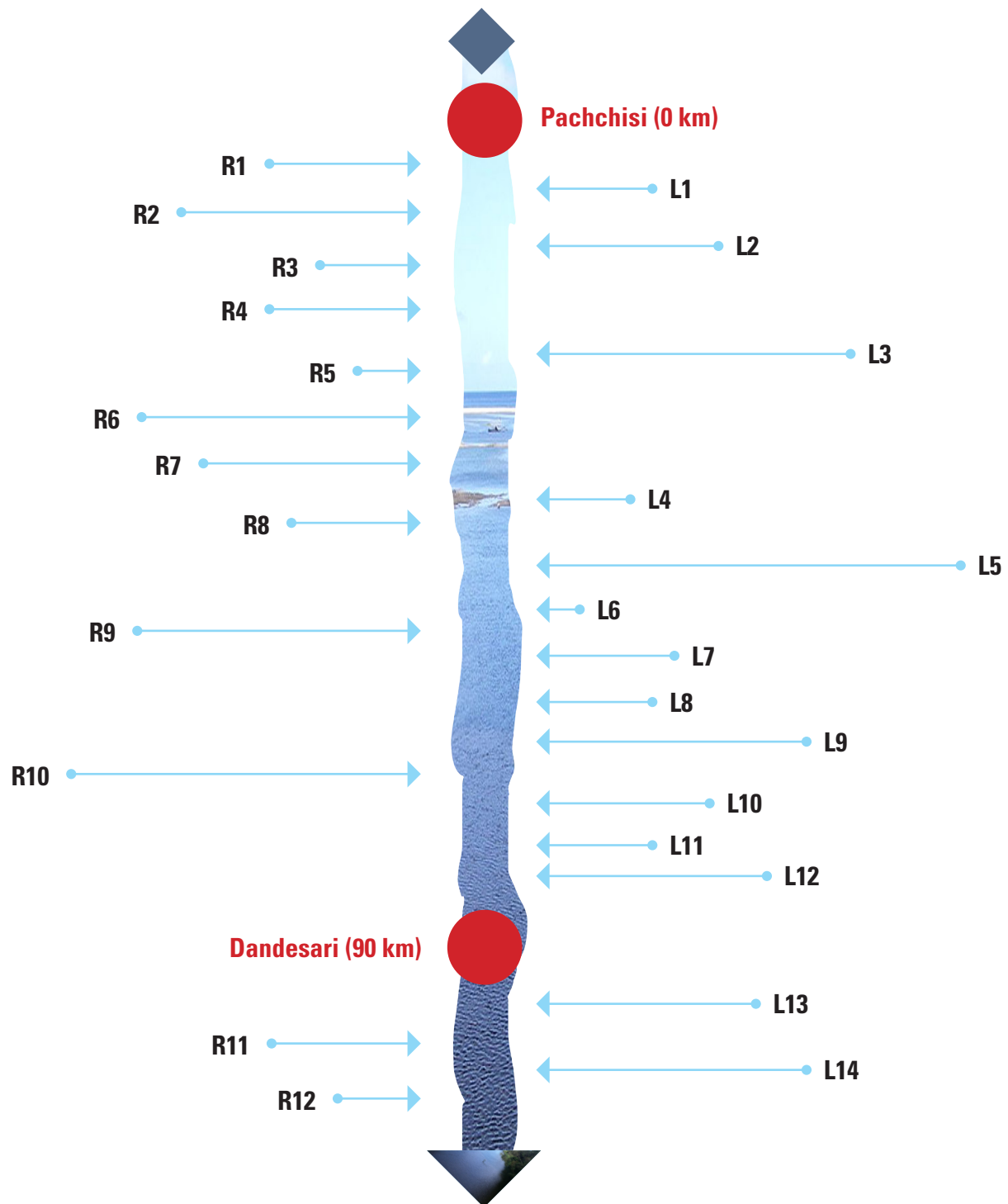
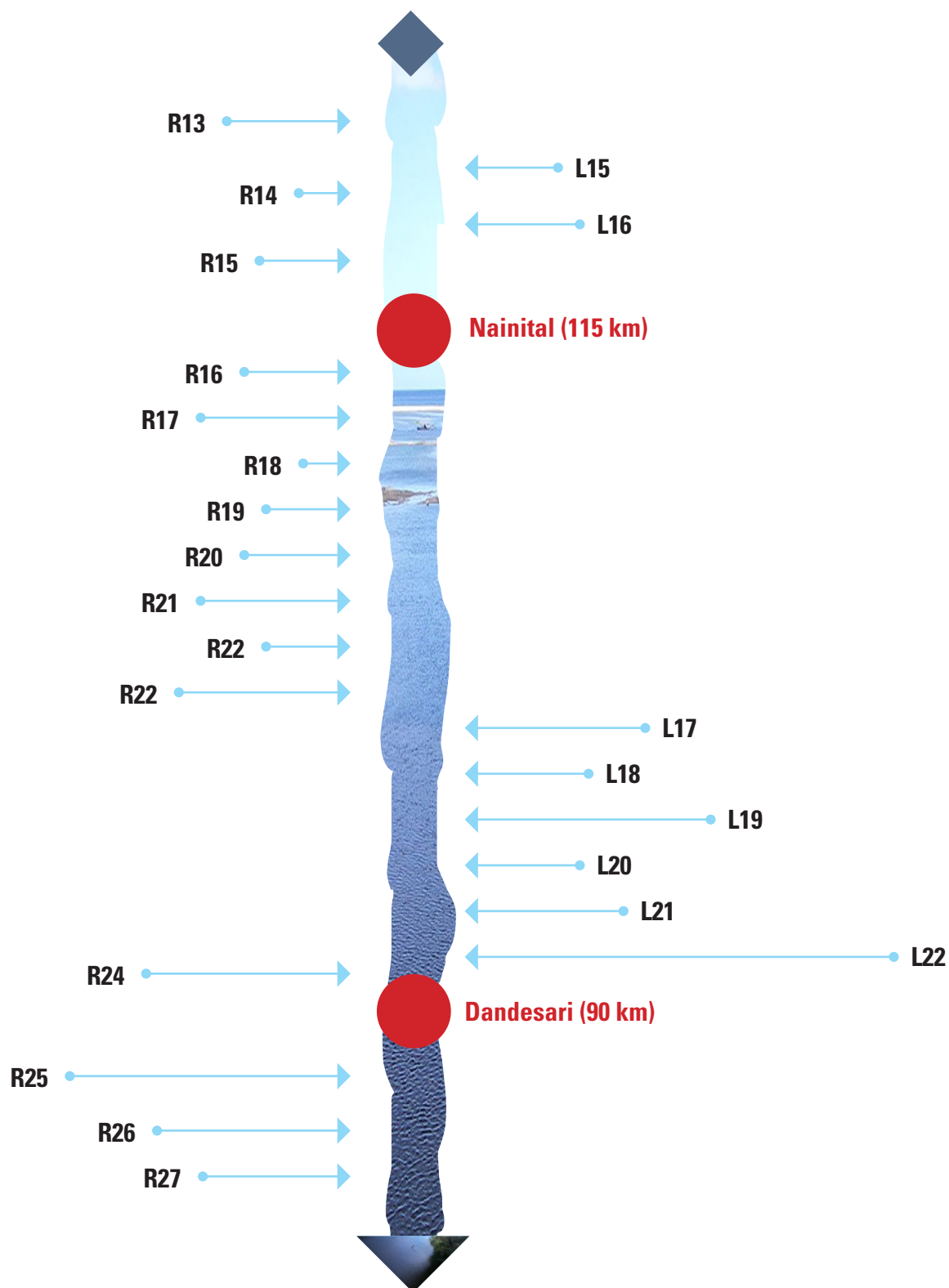


Figure: Kosi River Network



KOSI RIVER MAINSTEM FLOW DIAGRAM





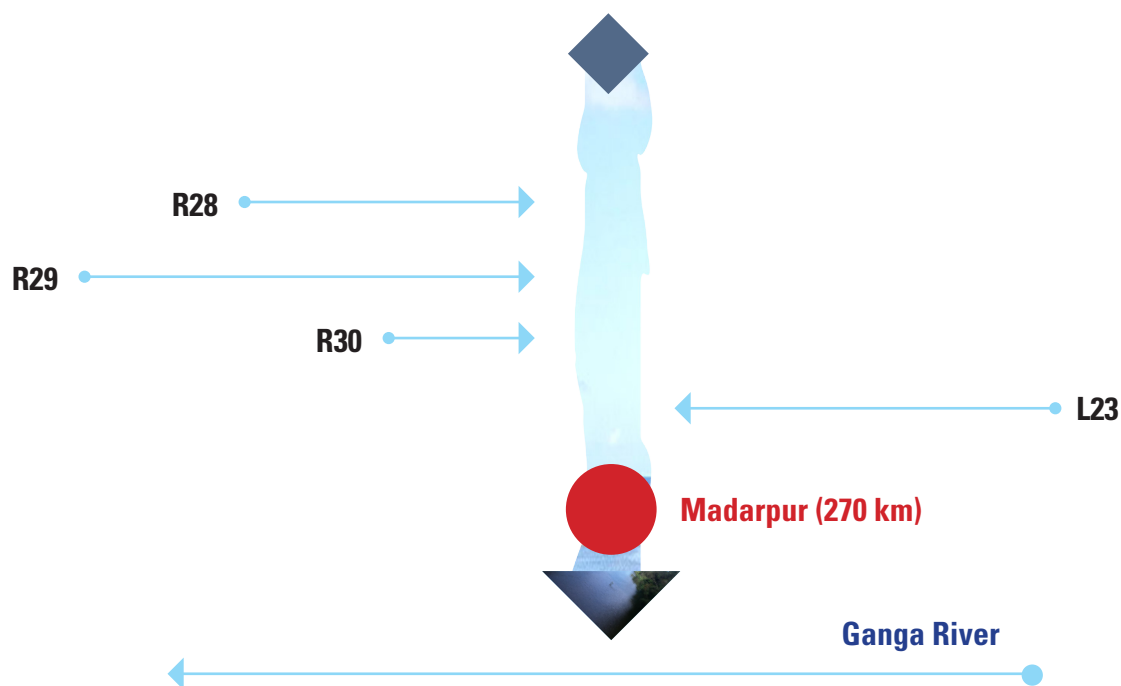


Figure: Flow Diagram of Kosi River

KOSI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Deb Gad	R1	6.2	29.840635°	79.576121°	0
2	Menol Gad	L1	7	29.808510°	79.616289°	7.36
3	Kshetrapal Gad	R2	8.2	29.777490°	79.606912°	11.5
4	Stream 1	L2	10.1	29.771295°	79.617266°	12.9
5	Ban Gad	R3	5.62	29.727316°	79.616121°	20.5
6	Jainal Gad	R4	6.81	29.699348°	79.632433°	27.1
7	Sim Gad	L3	19.2	29.686025°	79.647466°	30
8	Rain Gad	R5	4.88	29.653797°	79.634298°	34.6
9	Nan Kosi	R6	16.1	29.638819°	79.626359°	37.3
10	Khul Gad	R7	10.5	29.610961°	79.615356°	41.9
11	Jamehara Gad	L4	5.07	29.605982°	79.616688°	42.9
12	Kunai Gad	R8	6.6	29.593841°	79.618273°	44.8

KOSI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
13	Drain 2/Swal Nadi	L5	28.9	29.552769°	79.602849°	51.5
14	Halkula Gadhera	L6	2.1	29.539009°	79.566644°	55.8
15	Sarod Gad	R9	14.4	29.547844°	79.527428°	61.6
16	Chamria Gad	L7	6.13	29.504364°	79.510447°	66.9
17	Sukha Gad	L8	4.72	29.503909°	79.509543°	67
18	Khairna Nadi	L9	12.3	29.496179°	79.478305°	71.2
19	Kuj Gad	R10	22.2	9.510305°	79.474497°	73.1
20	Ghat Gad	L10	7.94	29.506441°	79.456184°	75.2
21	Simrar	L11	5.46	29.505671°	79.441660°	77.2
22	Kaluwa Gad	L12	9.41	29.553452°	79.402917°	84.9
23	Ghirauli Nala	L13	8.57	9.556858°	79.354161°	89.8
24	Khodan Gadhera	R11	7.69	29.549641°	79.264129°	101
25	Khaula	L14	10.3	29.547984°	79.258652°	102
26	Dhamni Gadhera	R12	3.43	29.551548°	79.251012°	103
27	Thakulari Gad	R13	4.77	9.544780°	79.250357°	104
28	Gharani Sot	L15	3.4	9.529568°	79.231208°	107
29	Kyari Gadhera	R14	2.82	29.525199°	79.211835°	109
30	Kamehiya Sot	L16	4.65	9.524300°	79.203015°	110
31	Khop Gadhera	R15	4.66	29.529572°	79.189839°	111
32	Dhauri Gadhera	R16	5.13	29.533800°	79.181429°	112
33	Baurar Gadhera	R17	6.85	29.538855°	79.153798	115
34	Kaphalgari Sot	R18	2.25	29.547316°	79.144258°	117
35	Khalgari Sot	R19	3.84	29.553267°	79.138265°	118



KOSI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
36	Amathola Gad	R20	4	29.549005°	79.128861°	119
37	Bhutgarhi Sot	R21	4.19	29.537506°	79.097949°	122
38	Dhangarhi Sot	R22	4.9	9.528398°	79.101411°	123
39	Malla Panod	R23	5.35	9.517594°	79.112423°	124
40	Kali gad	L17	6.57	29.494094°	79.140367°	128
41	Runiyani Sot	L18	5.82	29.480553°	79.148674°	130
42	Bhangajala Nadi/kutaliya Sot	L19	11.5	29.467823°	79.154568°	131
43	Babliya Sot	L20	4.49	29.434329°	79.134924°	135
44	Terha Sot	L21	7.92	9.407777°	79.132684°	138
45	Drain 1/Dabka Nadi	L22	43.3	9.241992°	79.105518°	161
46	Kelawali Nala	R24	14.2	29.178497°	79.059429°	166
47	Burhi Kosi	R25	19.5	29.161183°	79.040078°	170
48	Bihar or Parkiya Nadi	R26	27.2	28.945836°	79.014673°	205
49	Narai Nala	R27	12.8	28.923775°	79.008558°	209
50	Kachha Nala	R28	19.8	28.858904°	78.992353°	219
51	Saryu River/ Bahalla Nadi	R29	98.6	8.818638°	78.981234°	277
52	Harya Nala	R30	11.2	28.741111°	78.948622°	244
53	Pila, Terha Nala	L23	23.5	28.647521°	79.019796°	268

MANDAL BASIN

Mandal River UID Code:
 Basin Area: 367.22 Sq. Km.
 Number of rivers- 28
 River network: 203.98 Km

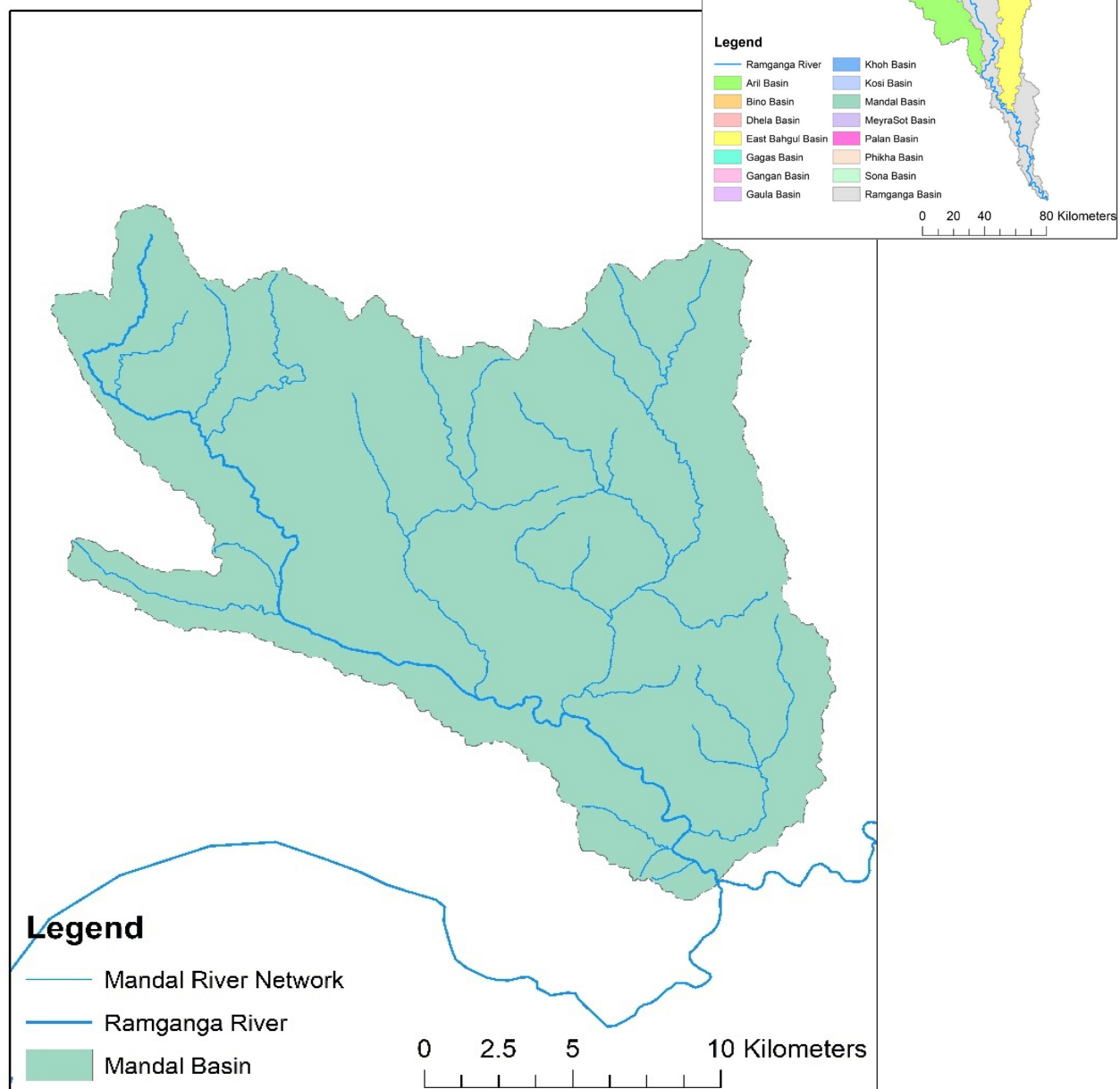


Figure: Mandal River Network



MANDAL RIVER MAINSTEM FLOW DIAGRAM

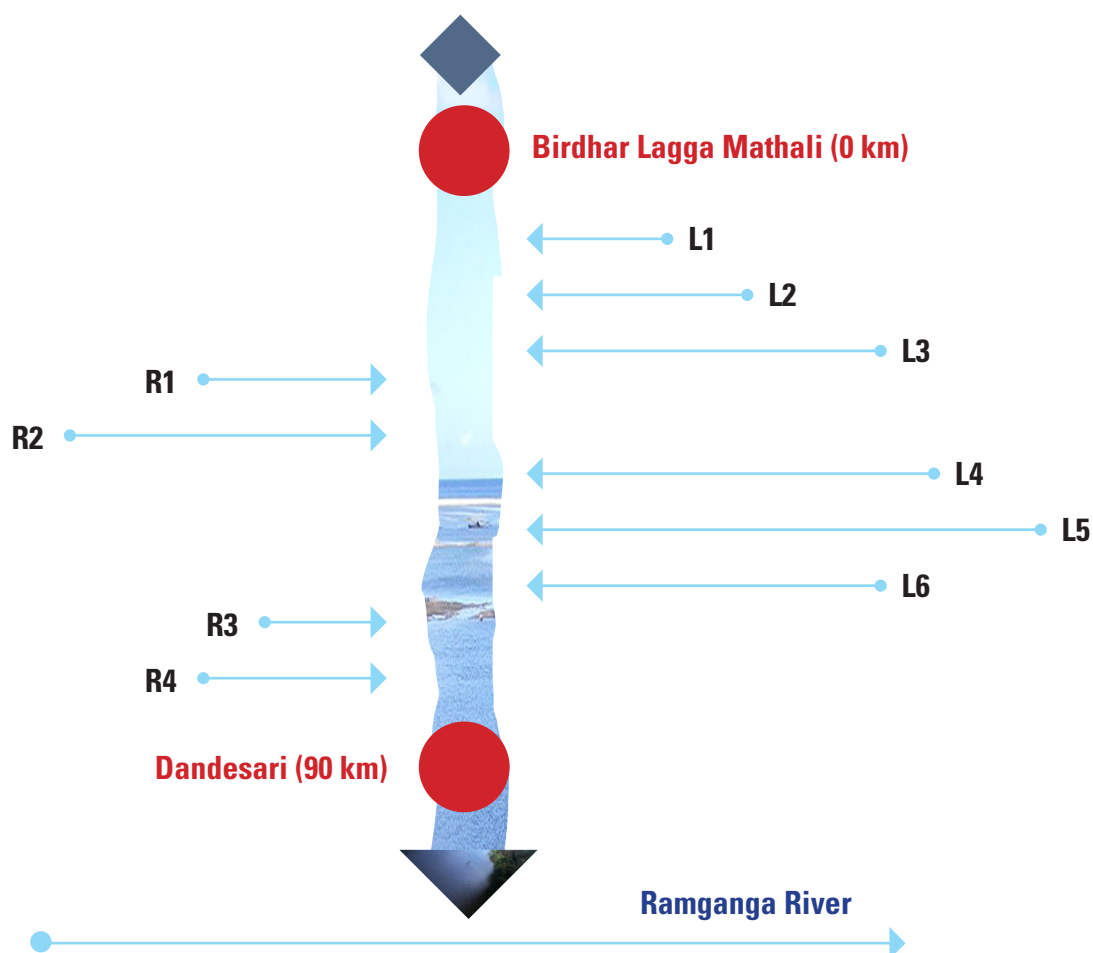


Figure: Flow Diagram of Mandal River

KOSI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Sain Gad	L1	5.42	29.740871°	78.794120°	5.26
2	Bangalgarhi Gad	L2	6.18	29.734026°	78.820585°	8.44
3	Wuder Gad	L3	11.14	29.726675°	78.825593°	9.59
4	Amleda Sot	R1	3.31	29.680204°	78.852119°	17.3
5	Nuni Raula	R2	4.61	29.671670°	78.852469°	18.3
6	Katera Raula	L4	13.7	29.644672°	78.922651°	26
7	Kalli River	L5	23.5	29.640185°	78.953135°	31
8	Khamalda Sot or Kamand Nala	L6	10.4	29.602597°	78.997580°	38.6
9	Vel Gad	R3	1.4	29.596678°	78.991918°	39.5
10	Okliya Nala	R4	1.67	29.592730°	78.999971°	40.4

MEYRASOT BASIN

MeyraSot River UID Code:

Basin Area: 57.95 Sq. Km.

Number of rivers: 07

River network: 51.21 Km

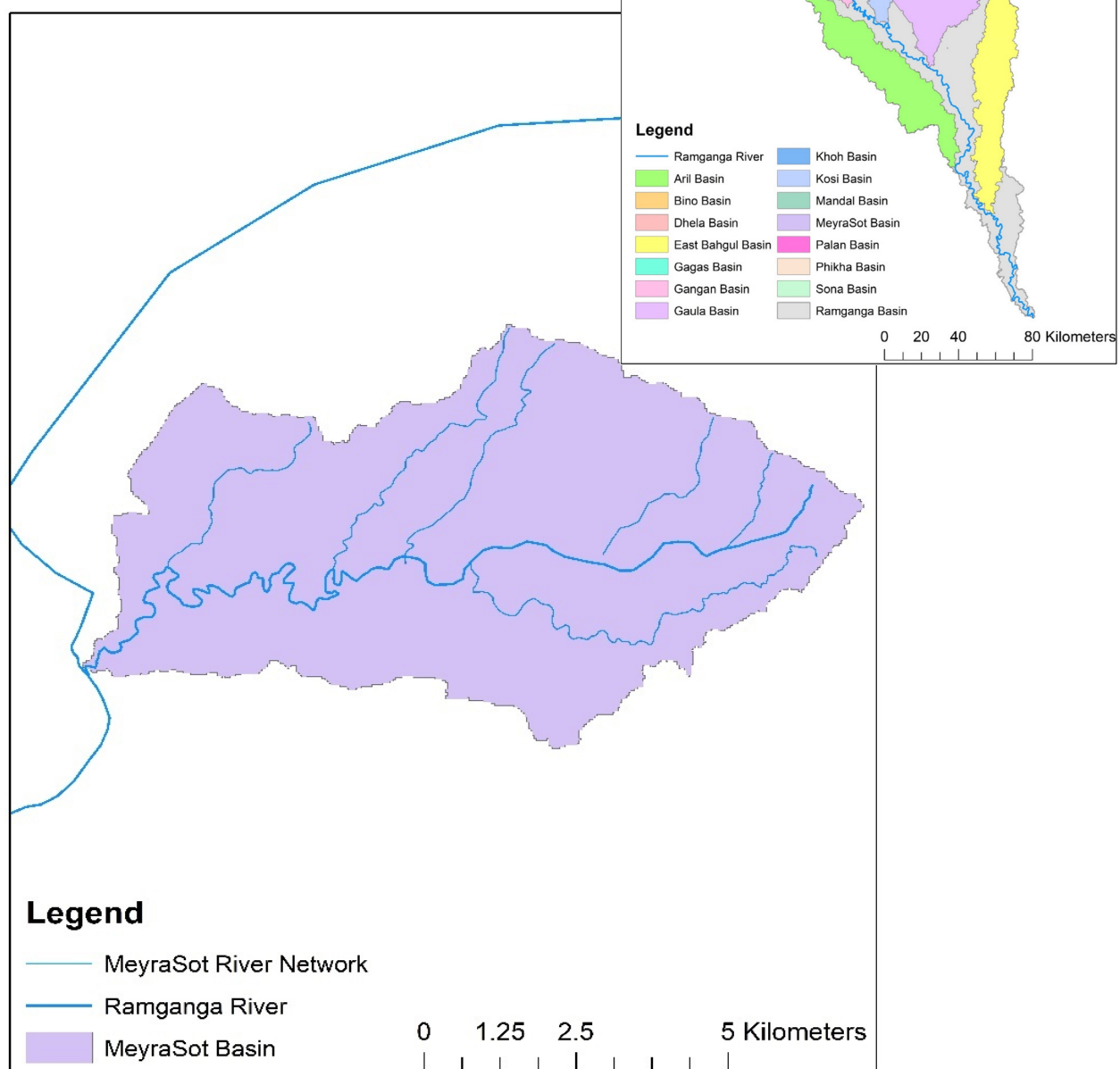


Figure: Meyrasot River Network



MEYRASOT RIVER MAINSTEM FLOW DIAGRAM

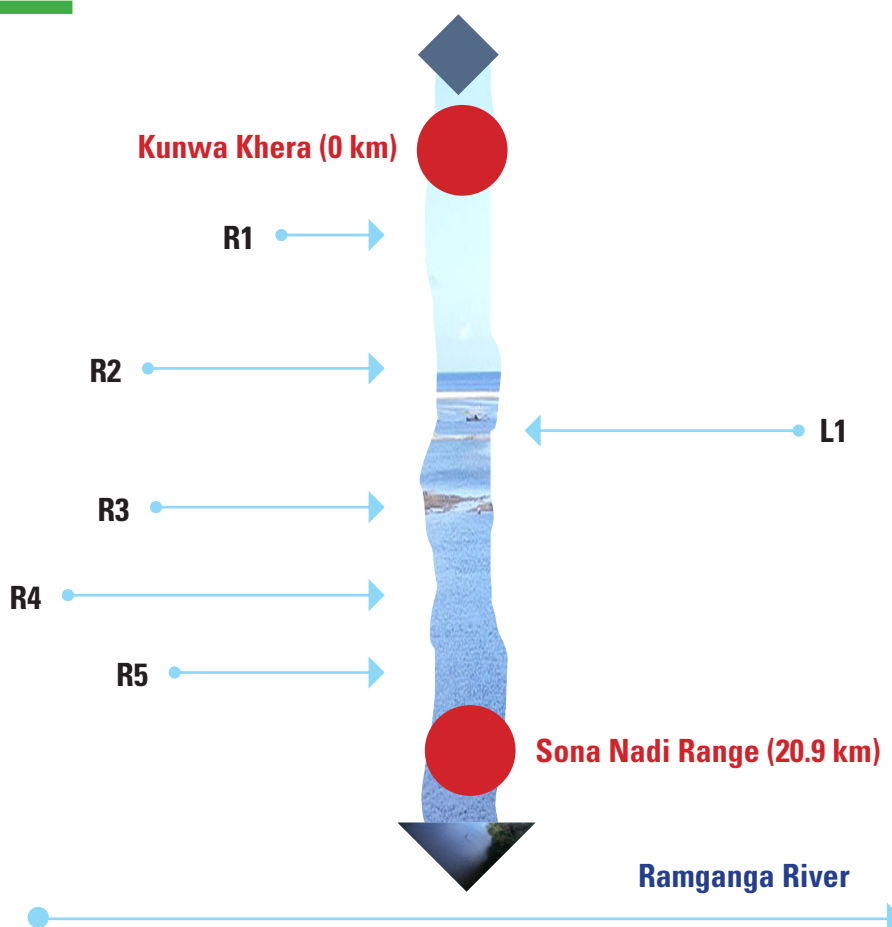


Figure: Flow Diagram of meyrasot River

MEYRASOT RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Stream 1	R1	2	29.528567°	78.868293°	3.45
2	Jaman Sot	R2	3.48	29.525946°	78.846302°	10.5
3	Pipal Sot	L1	8.95	29.525802°	78.824126°	12.4
4	Manor Gad	R3	5.35	29.526958°	78.813156°	14
5	Chhapa Ka Nala	R4	6.25	29.524600°	78.800378°	16.5
6	Chui Sot	R5	4.28	29.524595°	78.771875°	18.8

PALAN BASIN

Palan River UID Code:
 Basin Area: 285.19 Sq. Km.
 Number of rivers: 33
 River network: 197.17 Km

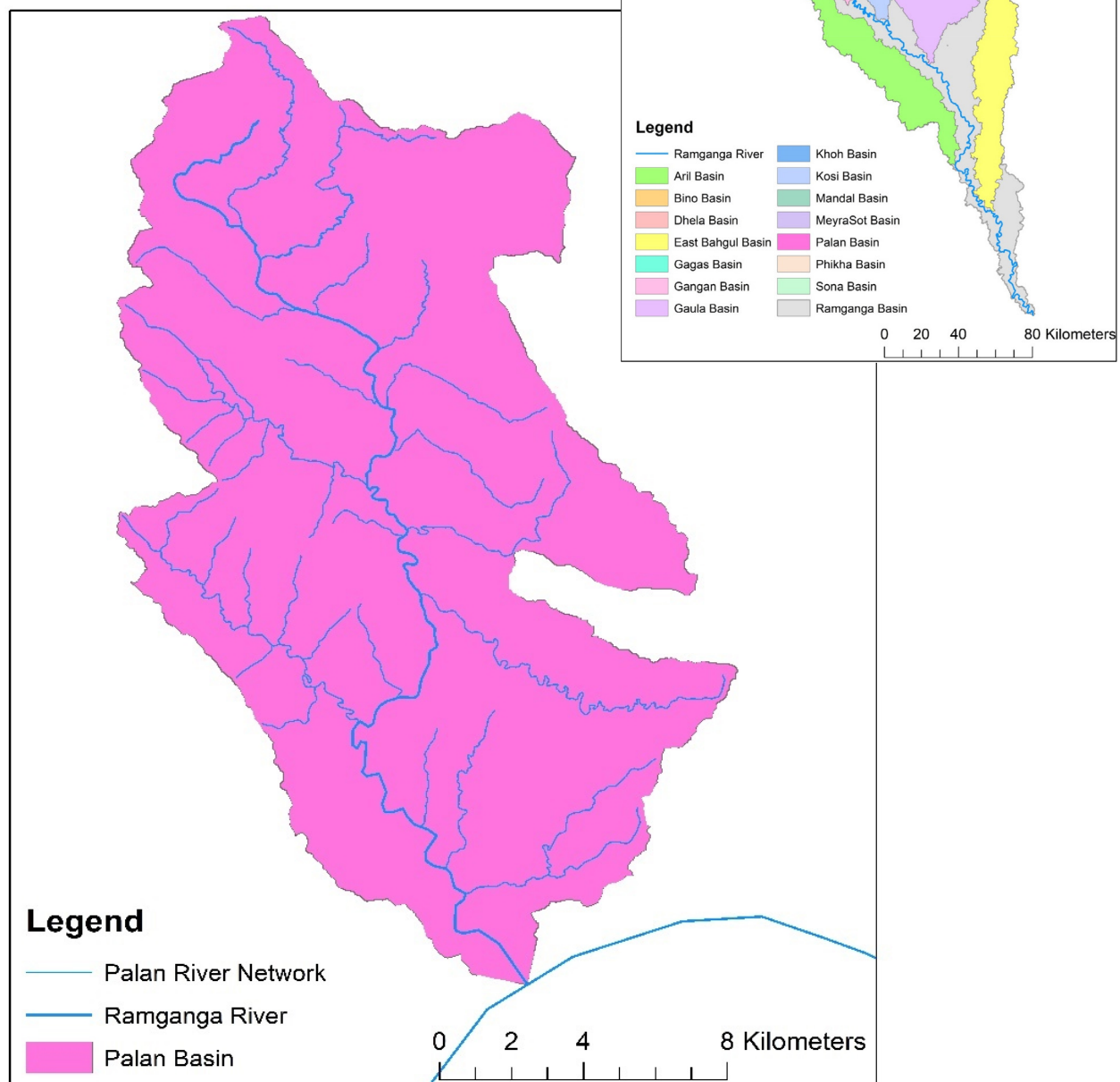


Figure: Palan River Network



PALAN RIVER MAINSTEM FLOW DIAGRAM

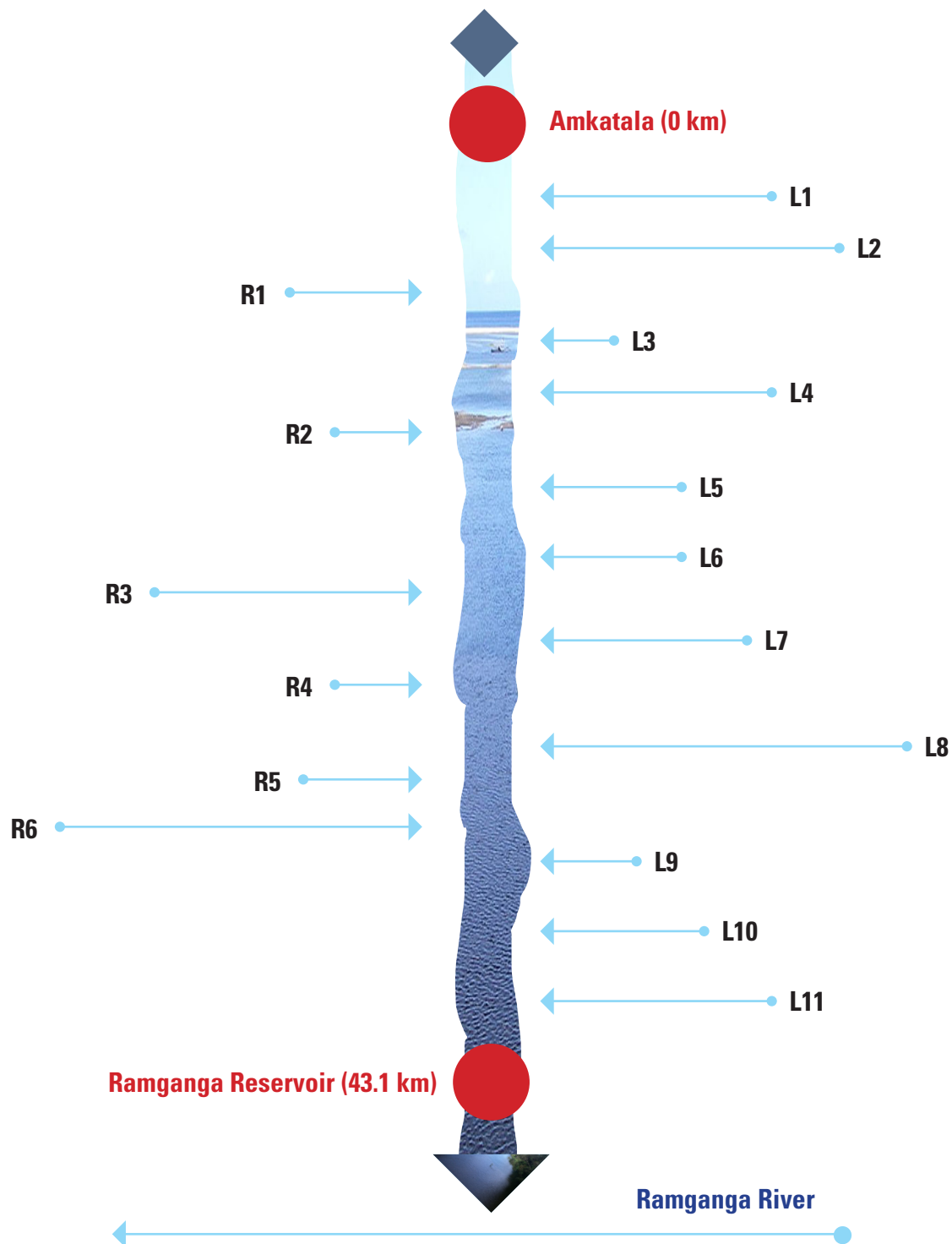


Figure: Flow Diagram of Palan River

PALAN RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Kaduri Gad	L1	9.99	29.781313°	78.698310°	8.62
2	Bajir Nadi Or Ghat Gad	L2	11.3	29.772783°	78.703740°	9.79
3	Kugadda	R1	5.8	29.759863°	78.714786°	12
4	Ghudtiya Gad	L3	3.54	29.758387°	78.720605°	12.6
5	Tair Gad	L4	9.7	29.748745°	78.738326°	14.7
6	Gariyon Sot	R2	3.2	29.735306°	78.738624°	16.6
7	Khubangadda Sot	L5	6.22	9.733313°	78.741250°	17
8	Bodil Sot	L6	6.03	29.722154°	78.743351°	18.4
9	Khansur Sot	R3	11.2	29.712441°	78.735610°	20
10	Haldgadi Rao	L7	8.88	29.700751°	78.747452°	22.4
11	Bhanriwala Sot	R4	2.47	29.698893°	78.746124°	22.7
12	Adnalo Rao	L8	15.6	29.684313°	78.750952°	25.2
13	Sindhuwali Sot	R5	3.32	29.655771°	78.744674°	29.3
14	Mandalti Sot	R6	13.3	29.648863°	78.733671°	30.9
15	Khairab Sot	L9	3.12	29.620950°	78.752500°	36
16	Malani Sot	L10	6.18	29.610022°	78.759316°	38
17	Chita Nala	L11	6.74	29.603255°	78.765319°	39



PHIKHA BASIN

Phikha River UID Code:
 Basin Area: 189.25 Sq. Km.
 Number of rivers: 08
 River network: 135.22 Km

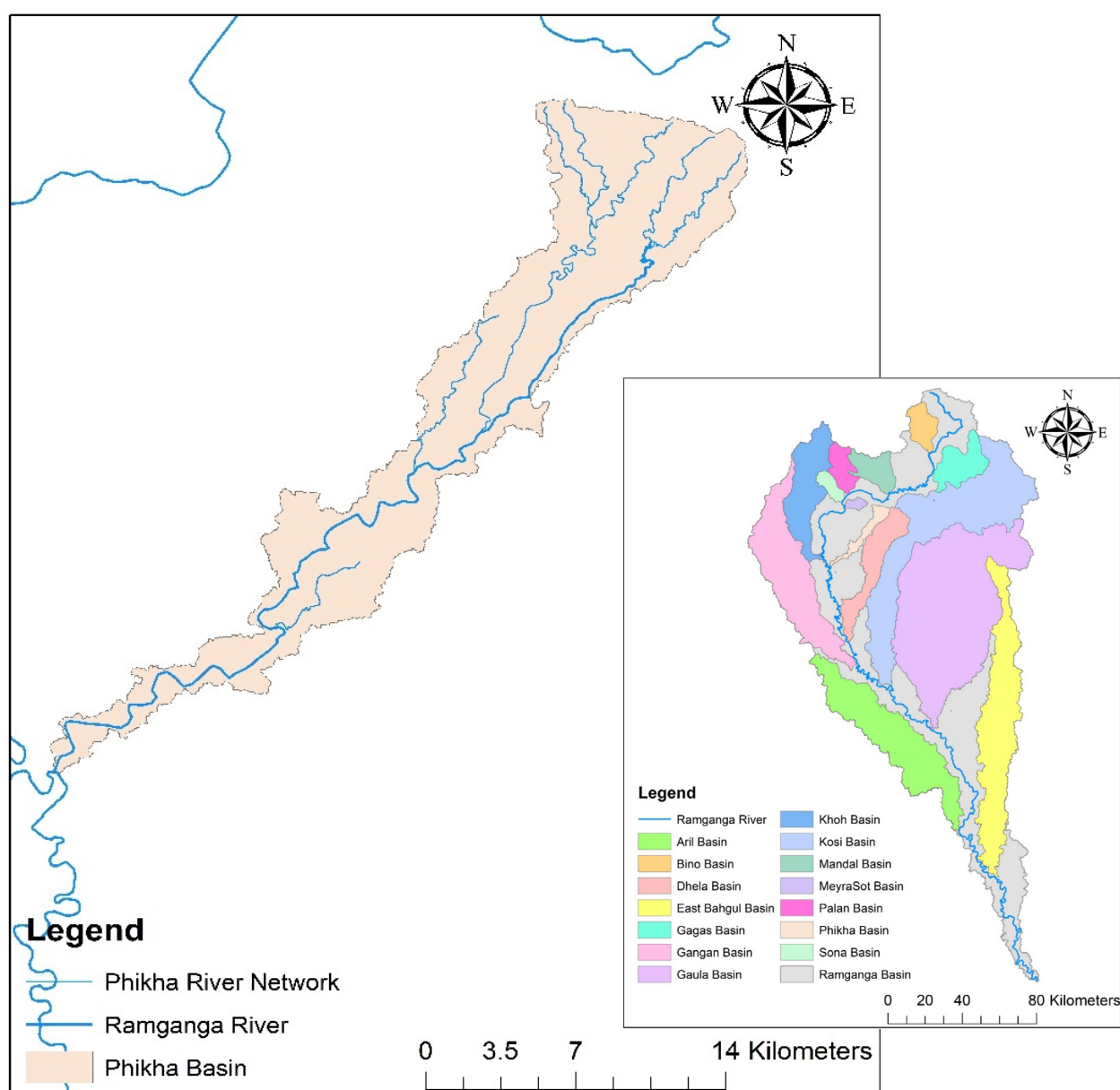


Figure: Phikha River Network

PHIKHA RIVER MAINSTEM FLOW DIAGRAM

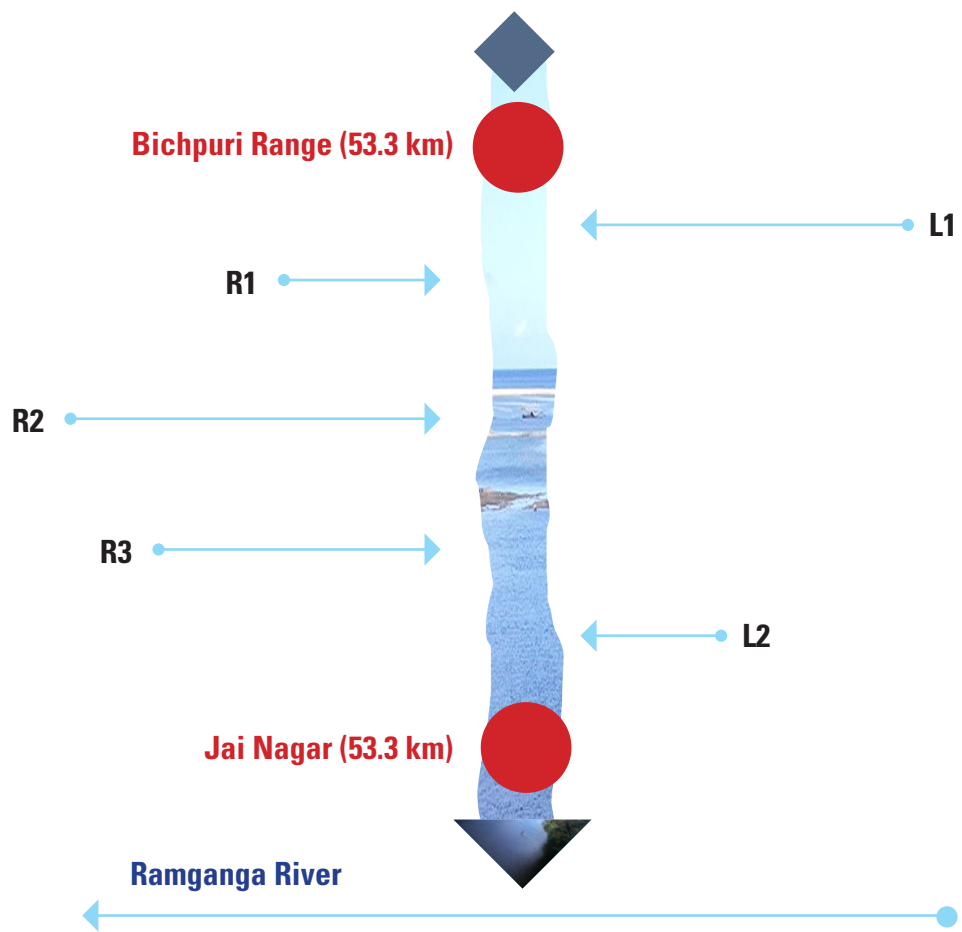


Figure: Flow Diagram of Phikha River

PHIKHA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Hari Rao	L1	9.75	29.461455°	78.969627°	0
2	Sukha Sot	R1	9.1	29.461558°	78.967795°	0.2
3	Koti Rao	R2	27	29.376935°	78.886391°	14.8
4	khaliya Nala	R3	12	29.358743°	78.854217°	19.5
5	Chorkhala Nala	L2	7.54	29.285980°	78.791071°	35.4



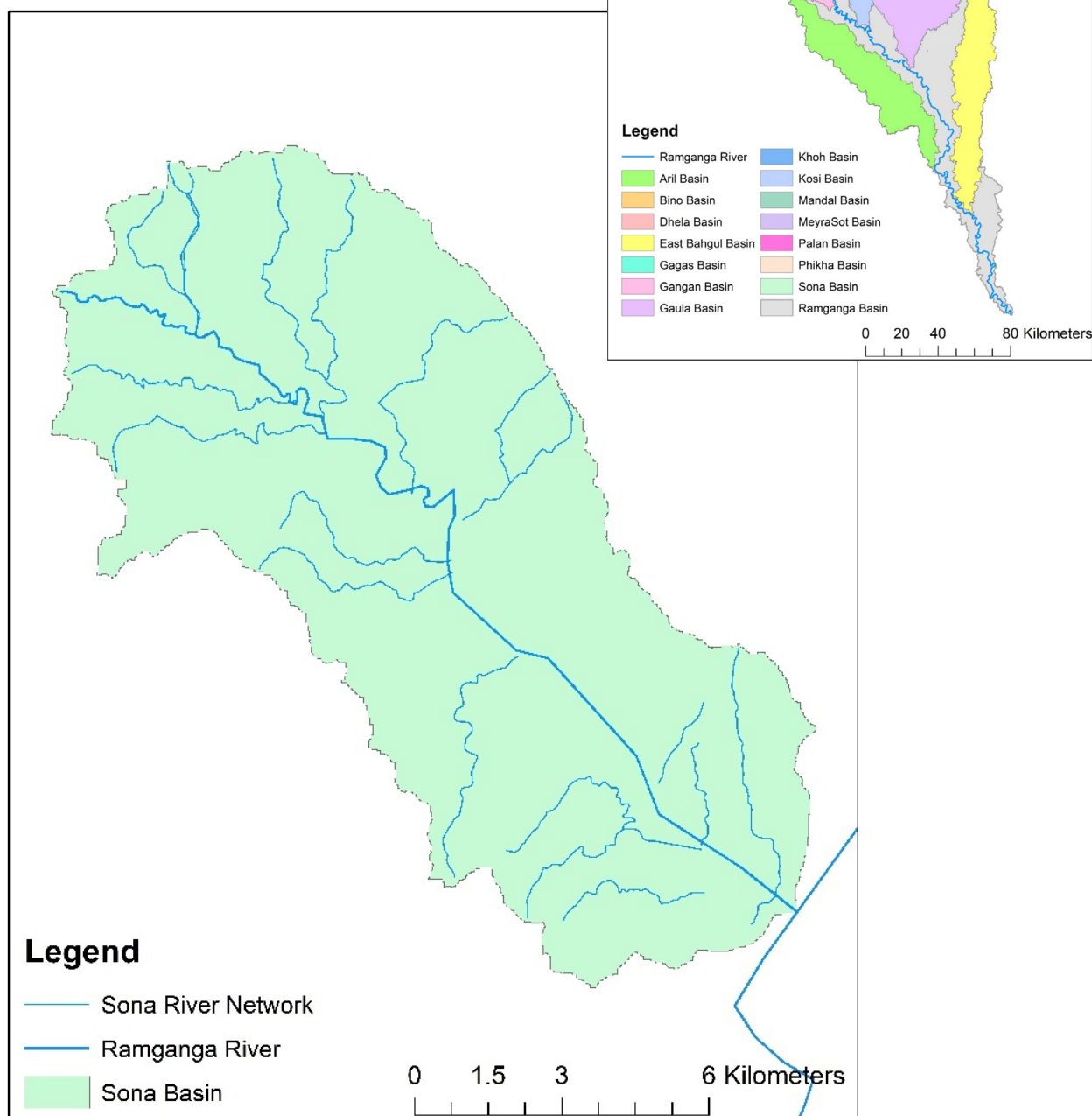
SONA BASIN

Sona River UID Code: 02L01R12

Basin Area: 135.75 Sq. Km.

Number of rivers: 19

River network: 111.63 Km



SONA RIVER MAINSTEM FLOW DIAGRAM

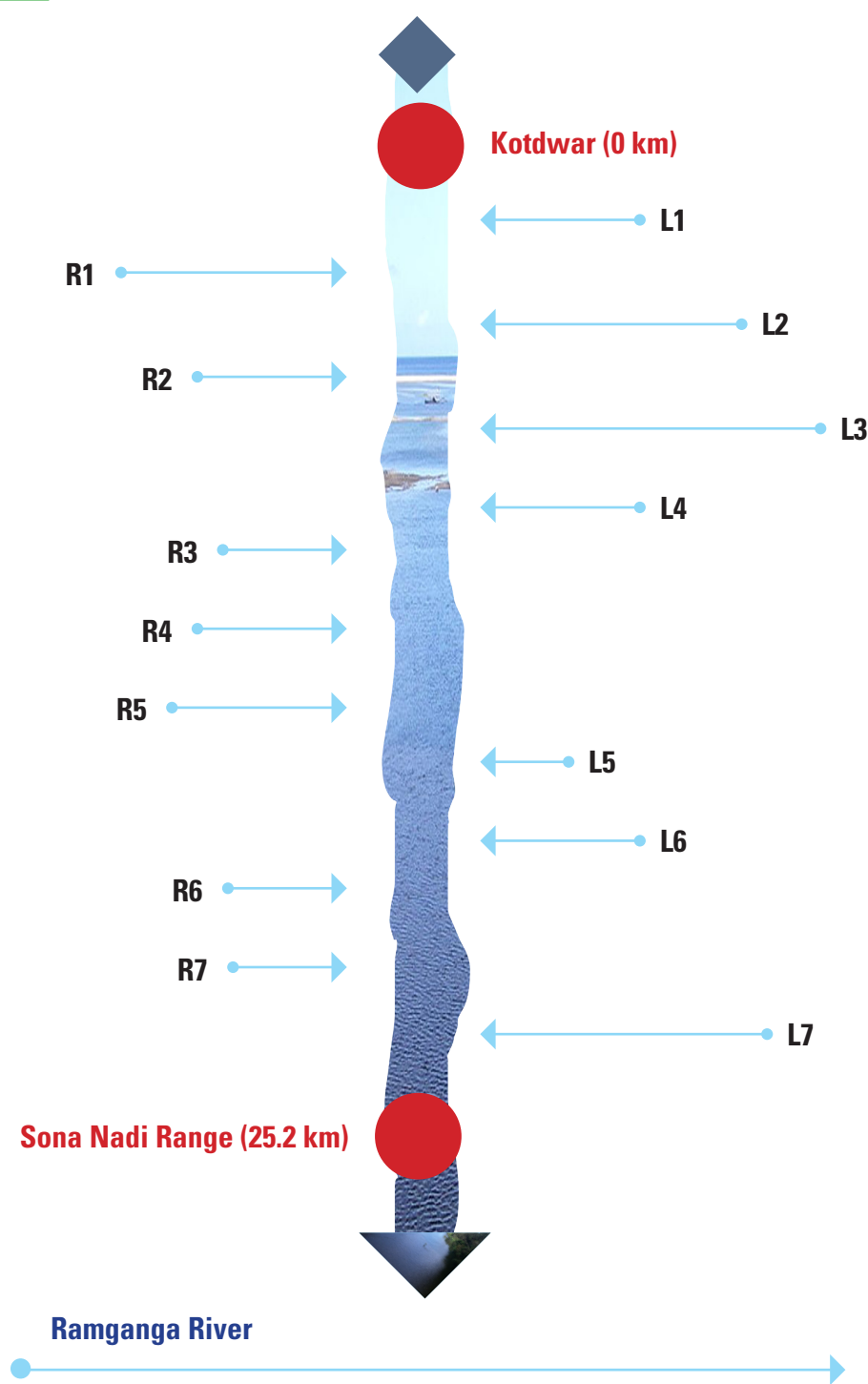


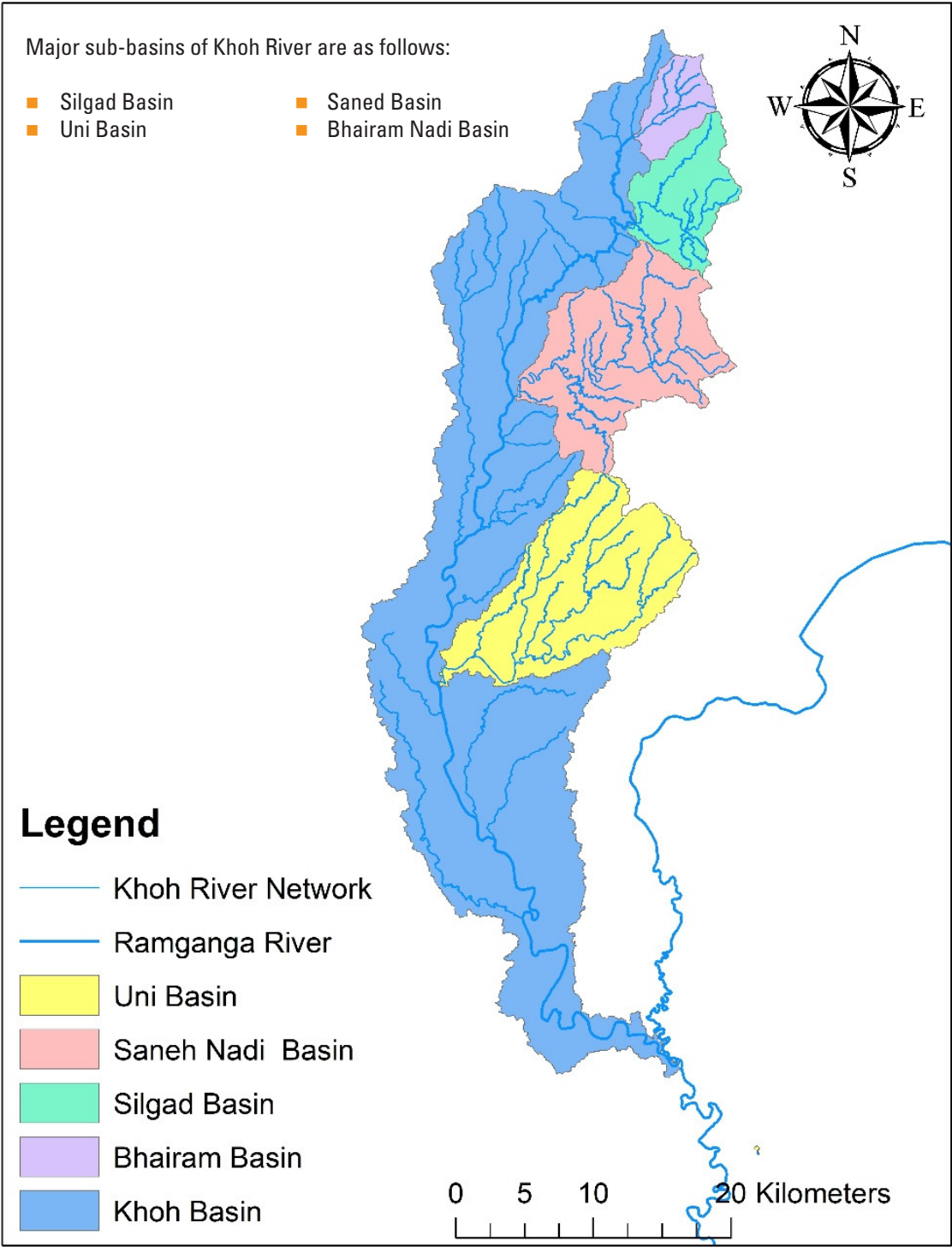
Figure: Flow Diagram of Sona River





SONA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Sukha Sot	L1	3.92	29.657694°	78.625788°	1.25
2	Andheriya Sot	R1	6.2	29.646296°	78.646200°	3.82
3	Kanlya Sot	L2	6.8	29.643156°	78.653266°	6.78
4	Garphuwala Sot	R2	6.35	29.640551°	78.653959°	8.4
5	Sua Sot	L3	6.3	29.630059°	78.672413°	8.65
6	Tut Gadhera	L4	4.01	9.624267°	78.682848°	11.6
7	Surajgarhi Sot	R3	5.23	9.616904°	78.680148°	13.7
8	Kalon Sot	R4	5.11	9.614613°	78.680653°	14.6
9	Nalkwali Sot	R5	6.27	9.599242°	78.695483°	14.9
10	Gujar Sot	L5	1.96	29.575506°	78.725572°	17
11	Sara Sot	L6	2.44	29.565004°	78.734884°	21.2
12	Belamwali Sot	R6	5.17	29.563461°	78.735119°	22.8
13	Pathniya Sot	R7	3.79	29.555568°	78.735647°	22.9
14	kukrad Sot	L7	6.47	29.555244°	78.750794°	24.7

KHOH BASIN: MAJOR SUB-BASINS





SILGAD BASIN

Silgad River UID Code:
 Basin Area: 55.69 Sq. Km.
 Number of rivers: 09
 River network: 53.84 Km

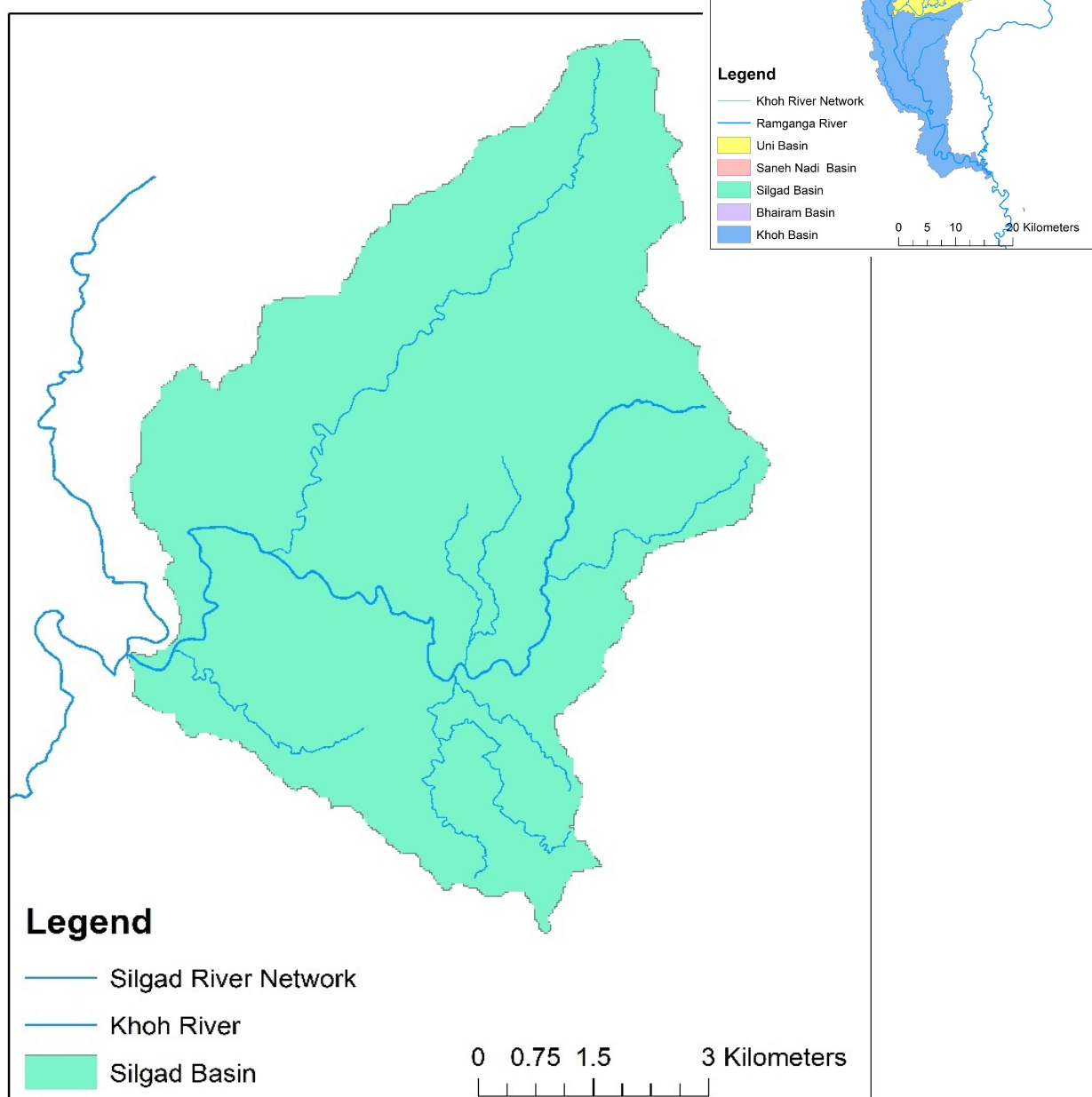


Figure: Silgad River Network

SILGAD RIVER MAINSTEM FLOW DIAGRAM

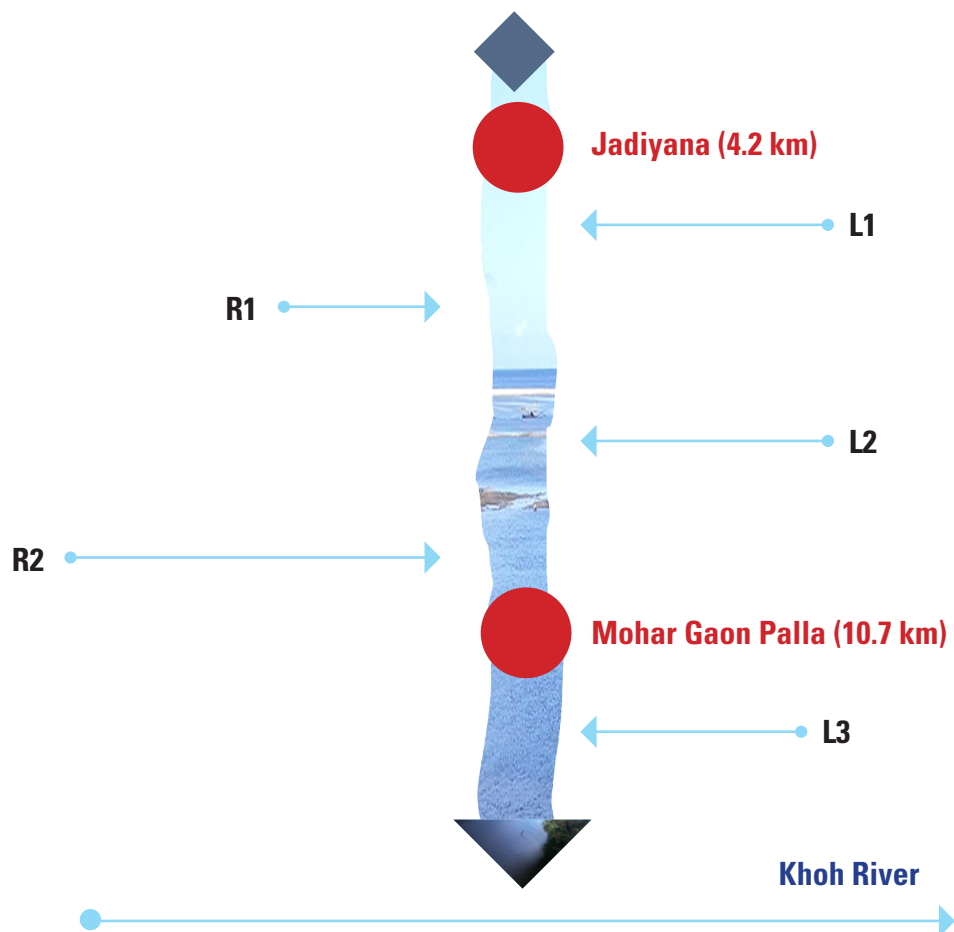


Figure: Flow Diagram of Silgad River

SILGAD RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Stream 3	L1	4.1	29.82	78.66	4.2
2	Stream 2	R1	3.92	29.81	78.65	6.79
3	Stream 1	L2	4.47	29.80	78.65	7.05
4	Mohara Gad	R2	11.6	29.82	78.63	10.7
5	Dhotiyal Gad	L3	4.44	29.81	78.61	14.18



SANEH BASIN

Saneh River UID Code:
 Basin Area: 141.38 Sq. Km.
 Number of rivers: 19
 River network: 139.26 Km

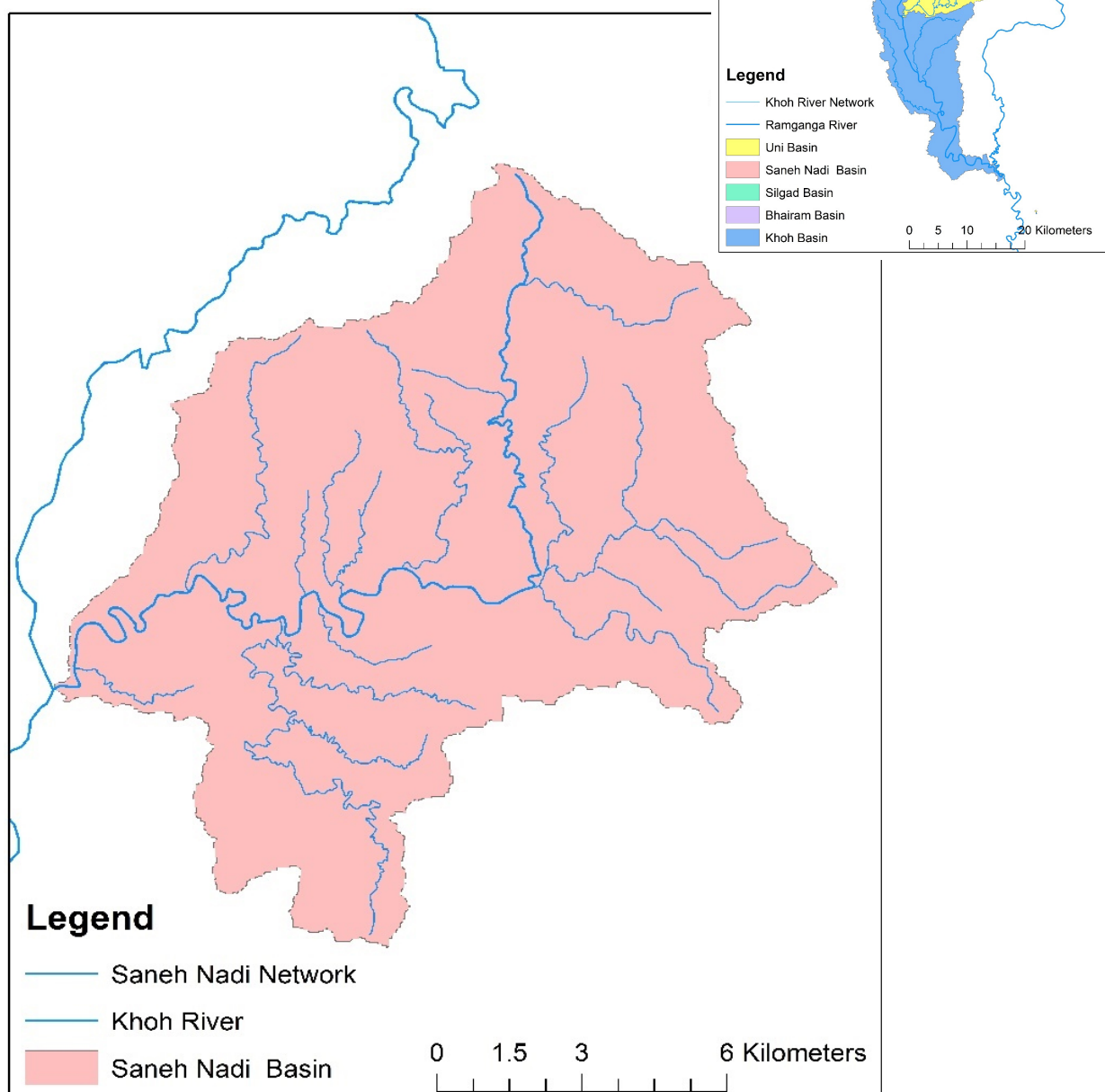


Figure: Saneh River Network

SANEH RIVER MAINSTEM FLOW DIAGRAM

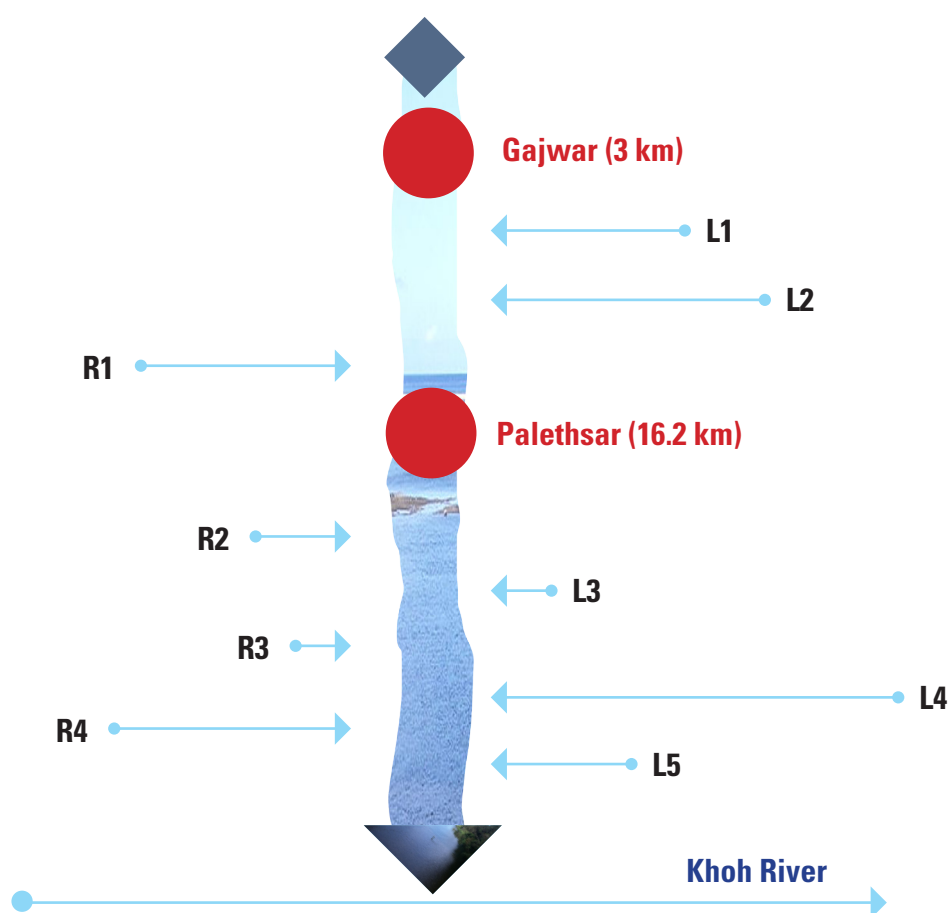


Figure: Flow Diagram of Saneh River

SANEH RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Cheula Sot	L1	5.25	29.77	78.62	3
2	Dhimki Sot	L2	7.5	29.71	78.63	12.8
3	Gaunch Gad	R1	9.78	29.72	78.60	16.2
4	Kaingadh Sot	R2	4.9	29.71	78.58	17.8
5	Dhonawal Sot	L3	3.64	29.71	78.58	20.2
6	Majnuwala Sot	R3	2.68	29.71	78.58	20.7
7	Lakharwala Sot	L4	16.6	29.71	78.57	22.4
8	Siya Sot	R4	9.53	29.71	78.55	26.2
9	Chotta Sal	L5	3.58	29.70	78.53	32.22



UNI BASIN

Uni River UID Code:
 Basin Area: 135.75 Sq. Km.
 Number of rivers: 09
 River network: 132.87 Km

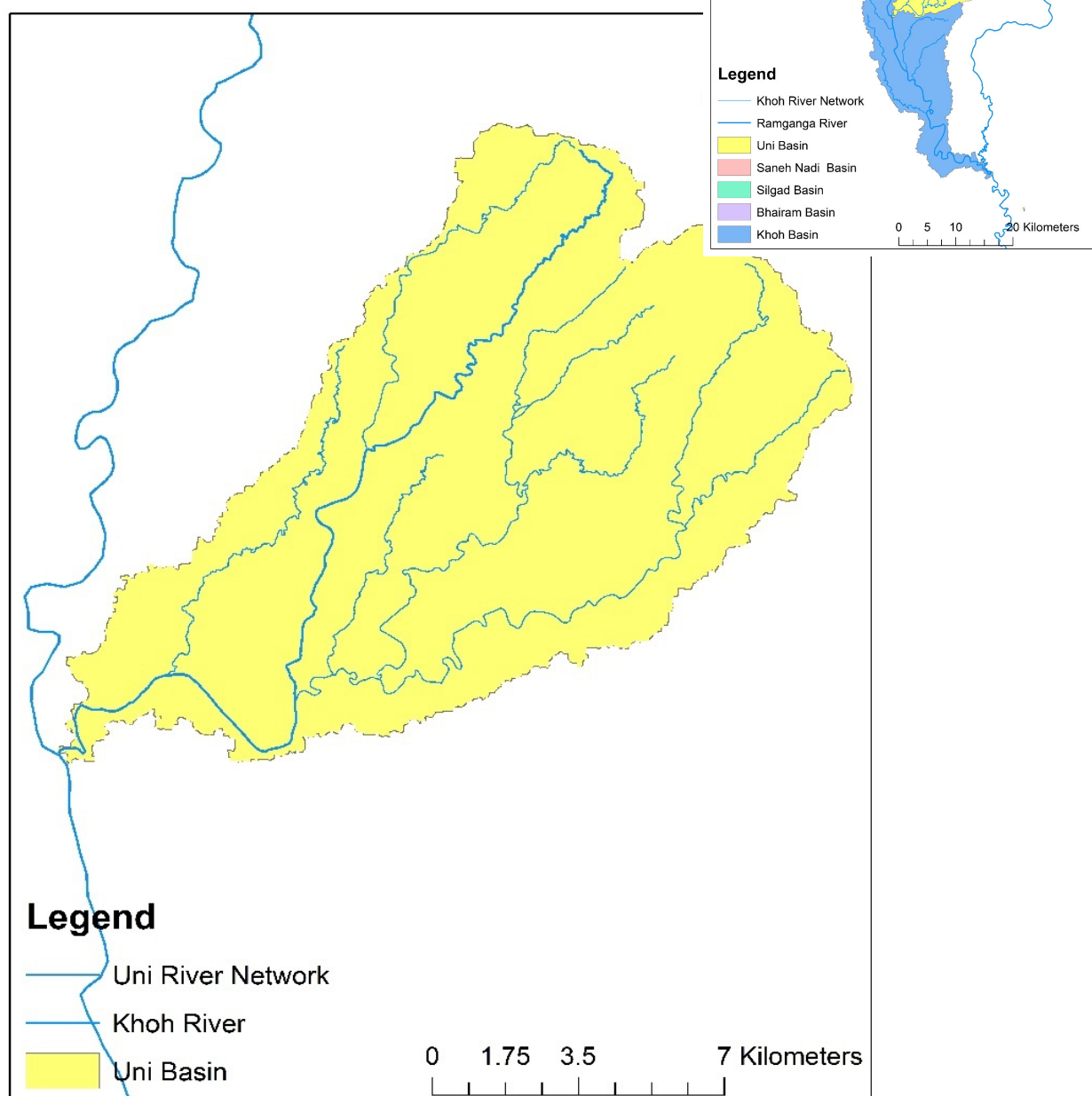


Figure: Uni River Network

UNI RIVER MAINSTEM FLOW DIAGRAM

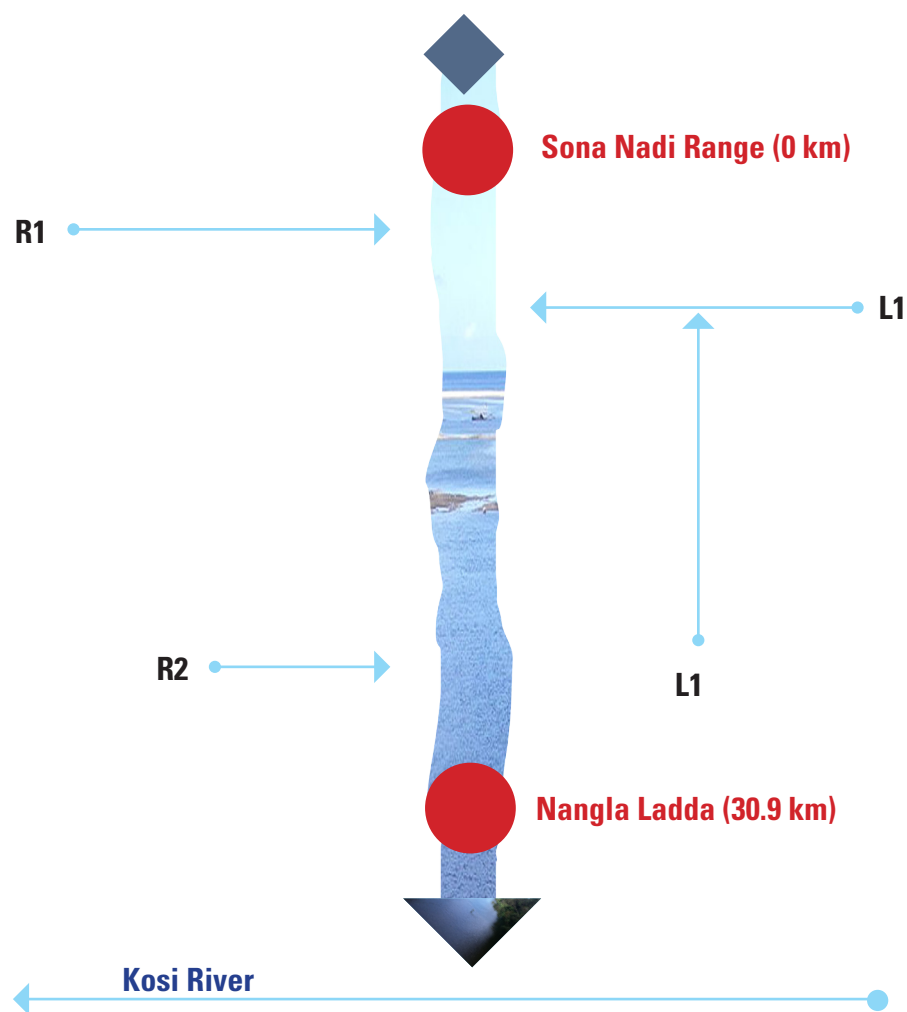


Figure: Flow Diagram of Uni River

UNI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Gujar Sot	R1	29.57	78.54	12.8	13.7
2	Gula Nala	L1	29.51	78.53	10.2	20.2
3		L1	29.52	78.53	20.7	21.4
4	Surankhal Nala	R2	29.52	78.49	15	26.4



BHAIRAM NADI BASIN

Bhairam Nadi UID Code:
 Basin Area: 27.77 Sq. Km.
 Number of rivers: 05
 River network: 25.25 Km

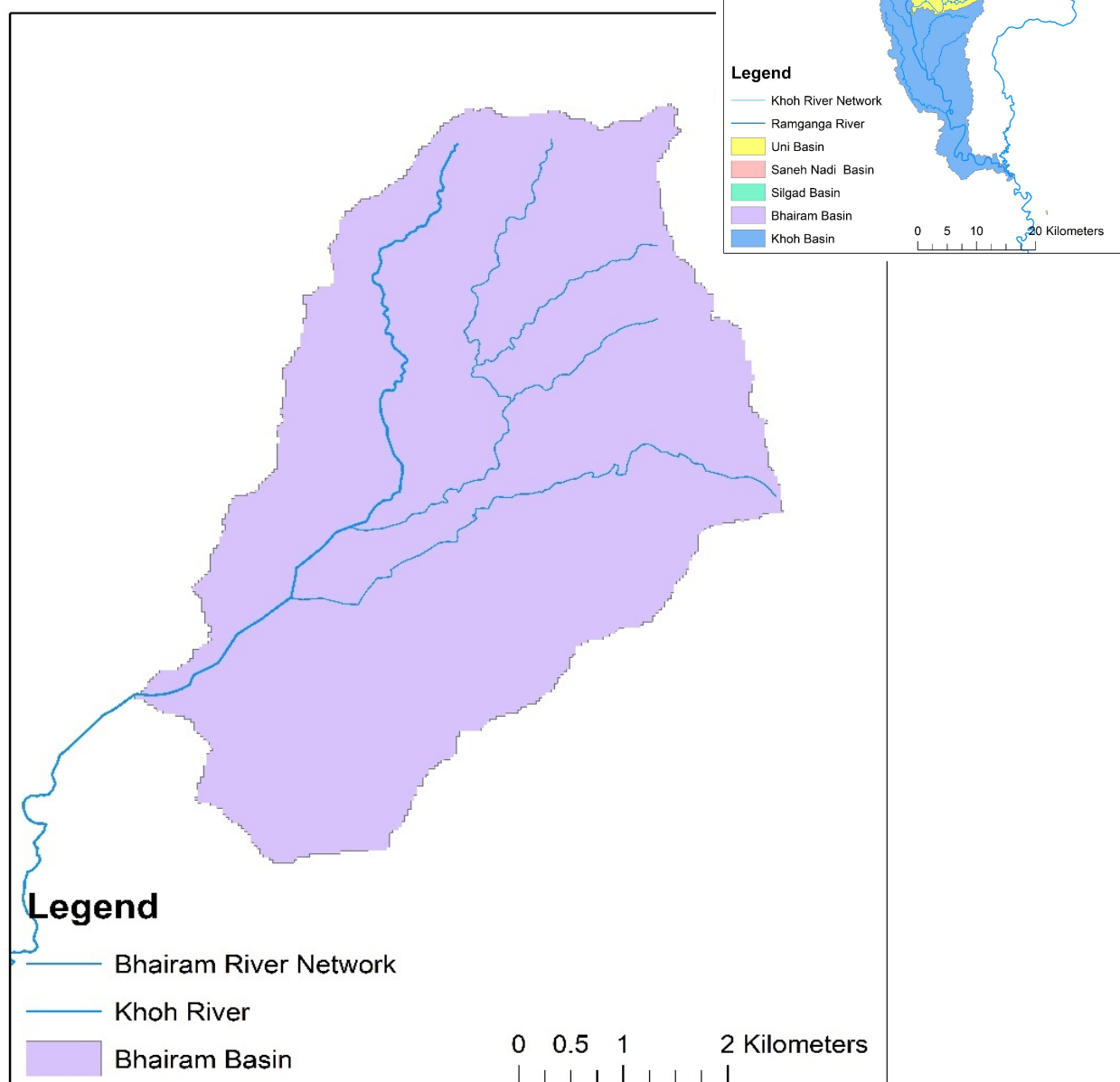


Figure: Bhairam River Network

BHAIRAM RIVER MAINSTEM FLOW DIAGRAM

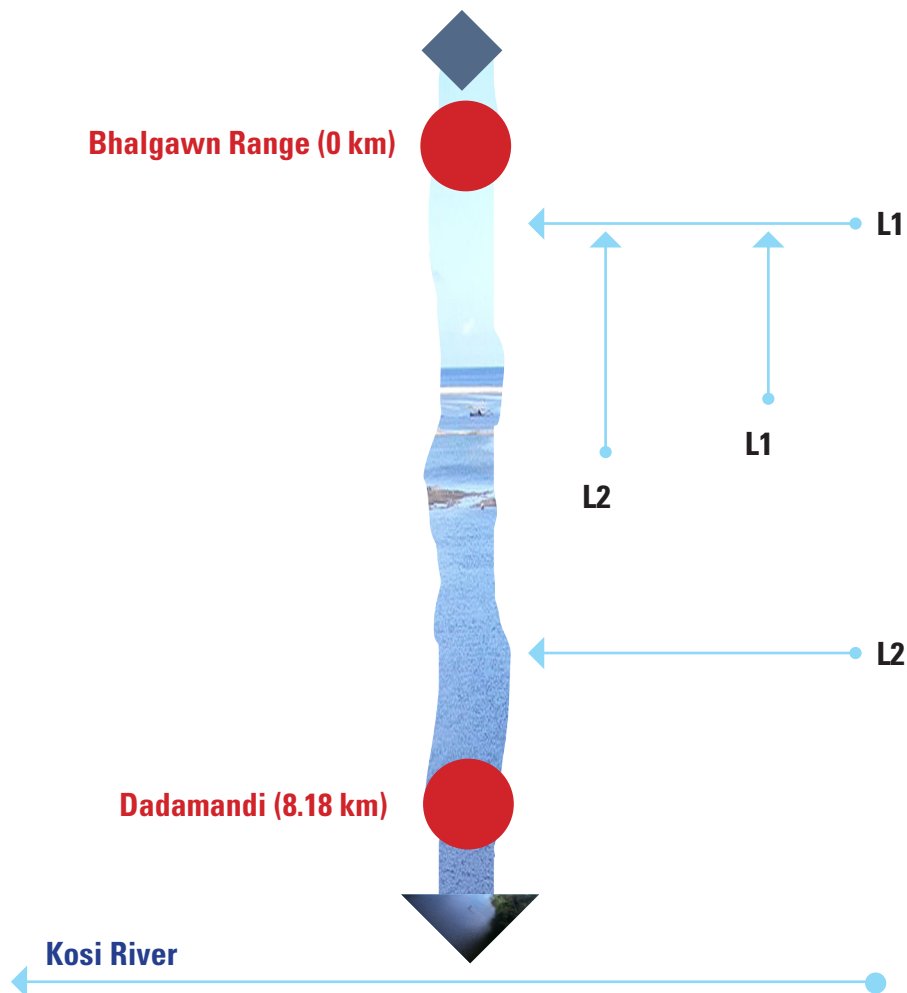


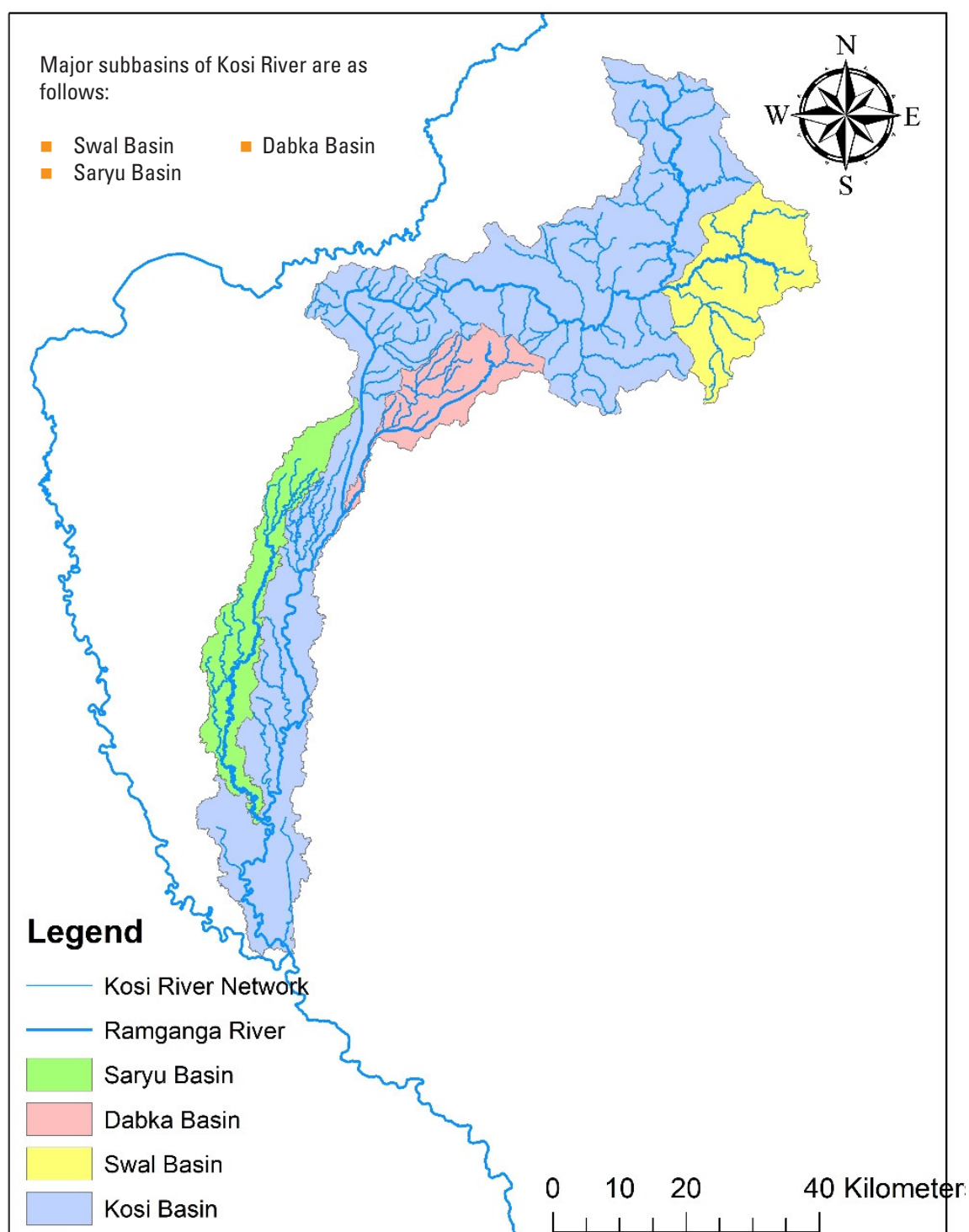
Figure: Flow Diagram of Bhairam River

BHAIRAM RIVER MAINSTEM NETWORK							
S.No.	River Name	Tributary	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
					Lat	Long	
1	Jameli Canal		L1	6.43	29.88	78.63	5.27
2		Stream 2	L1	2.57	29.90	78.64	3.12
3		Stream1	L2	1.86	29.89	78.65	3.78
4	Kali Gum Gadhera		L2	6.21	29.87	78.63	6.26





KOSI BASIN: MAJOR SUB-BASINS



SWAL BASIN

Swal River UID Code:
 Basin Area: 400.81 Sq. Km.
 Number of rivers: 14
 River network: 154.55 Km

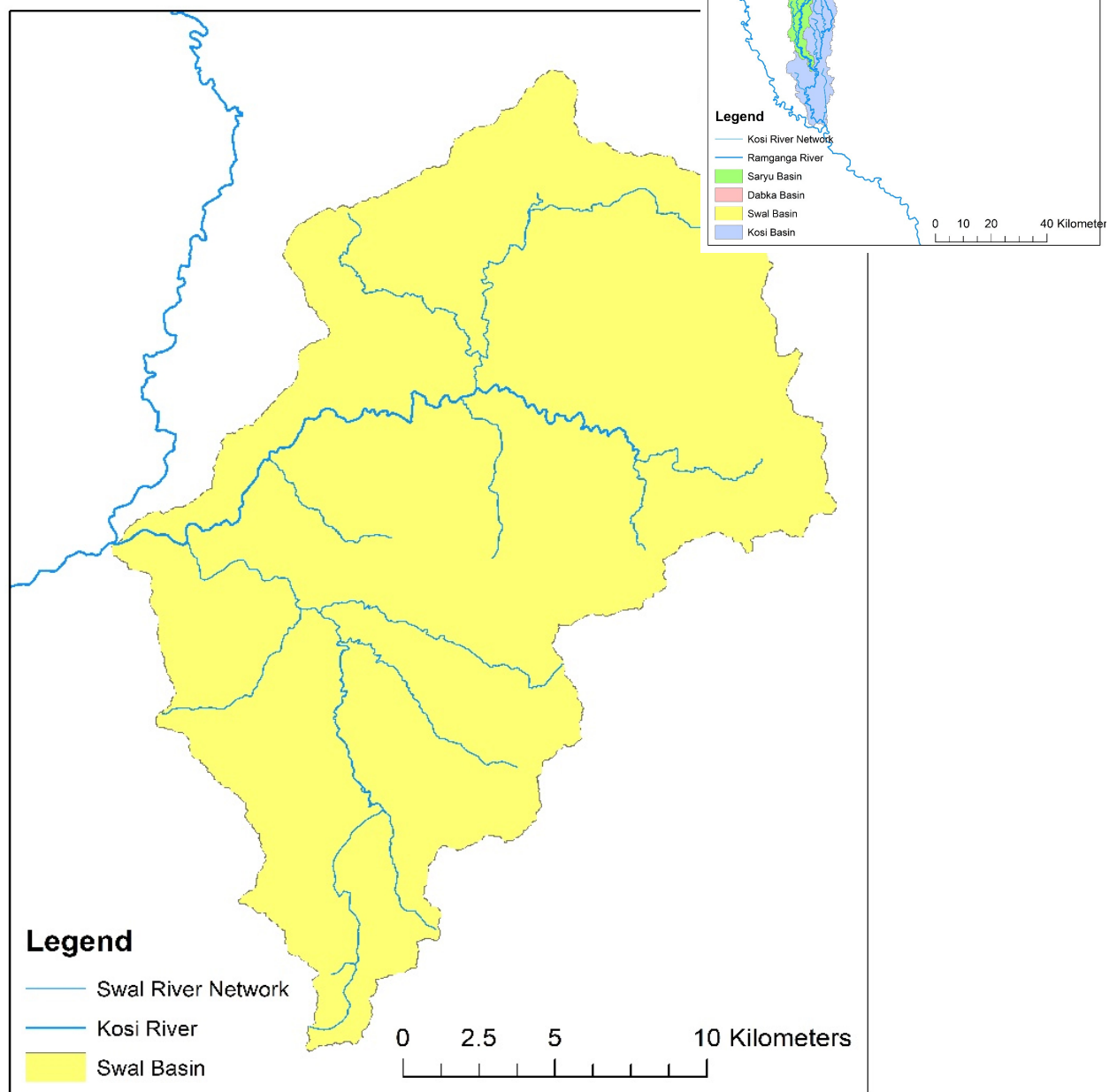


Figure: Swal River network



SWAL RIVER MAINSTEM FLOW DIAGRAM

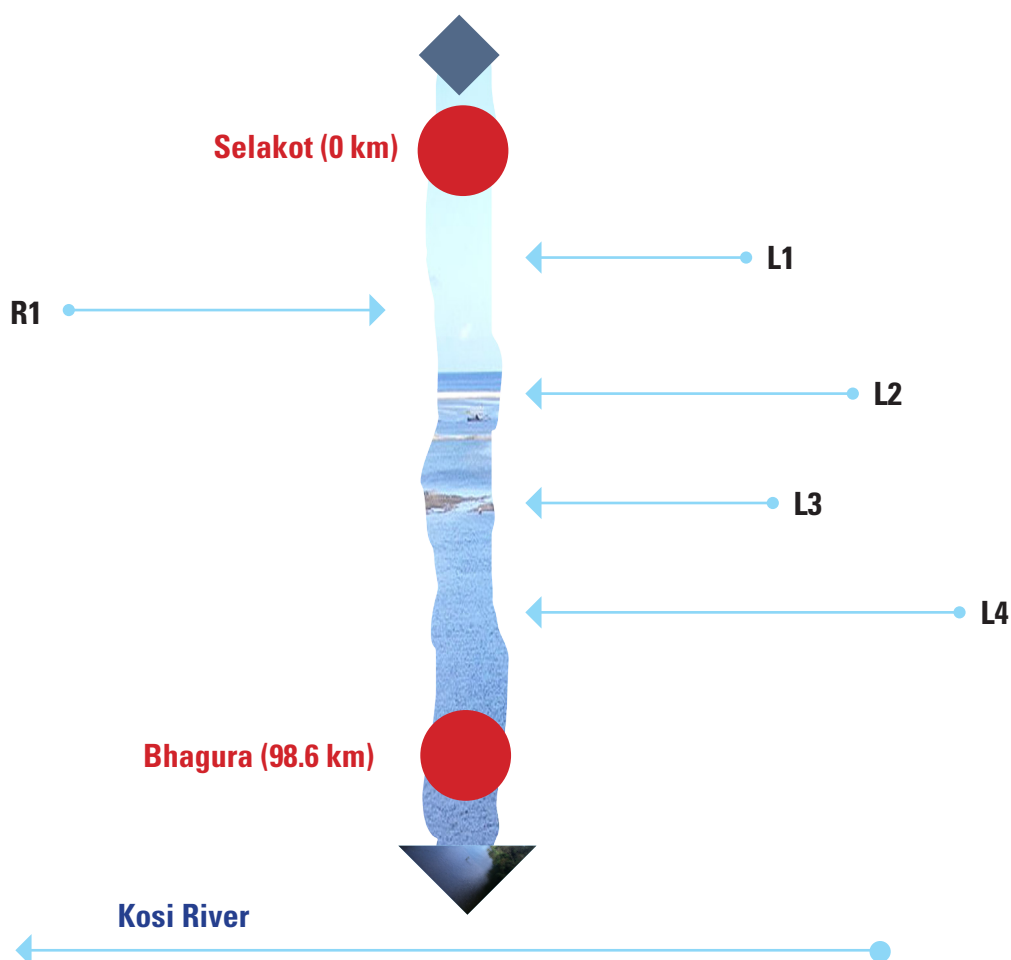


Figure: Flow Diagram of Swal River

SWAL RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Stream 1	L1	4.21	29.58	79.78	6.36
2	That Gad	R1	12.6	29.60	79.73	16
3	Maingali Gad	L2	6.81	29.60	79.72	16.7
4	Beni Gad	L3	6.15	29.58	79.66	27
5	Kali Rao	L4	16.9	29.55	79.63	32.4

DABKA BASIN

Dabka River UID Code:
 Basin Area: 238.35 Sq. Km.
 Number of rivers: 15
 River network: 139.71 Km

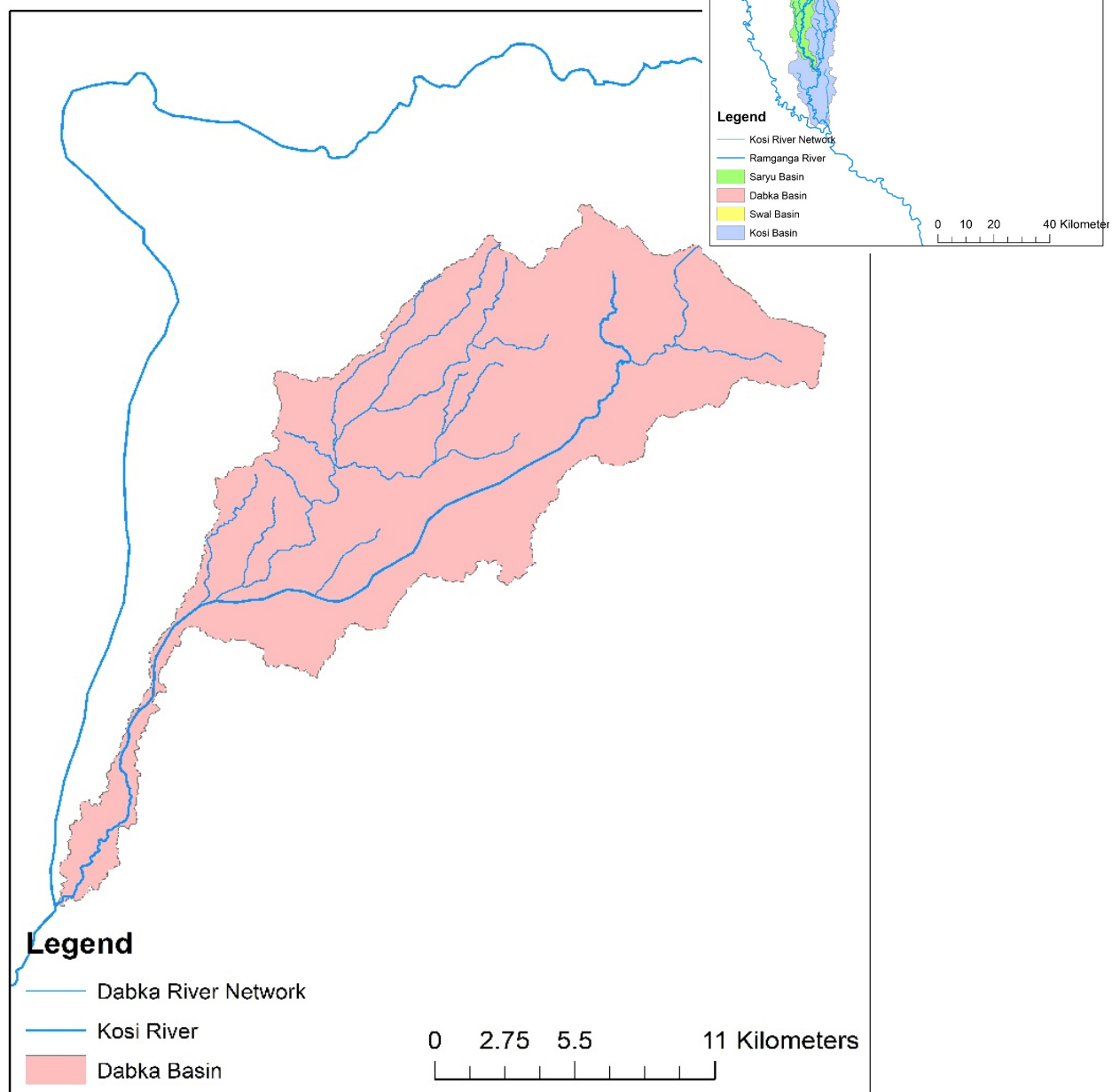


Figure: Dabka River network



DABKA RIVER MAINSTEM FLOW DIAGRAM

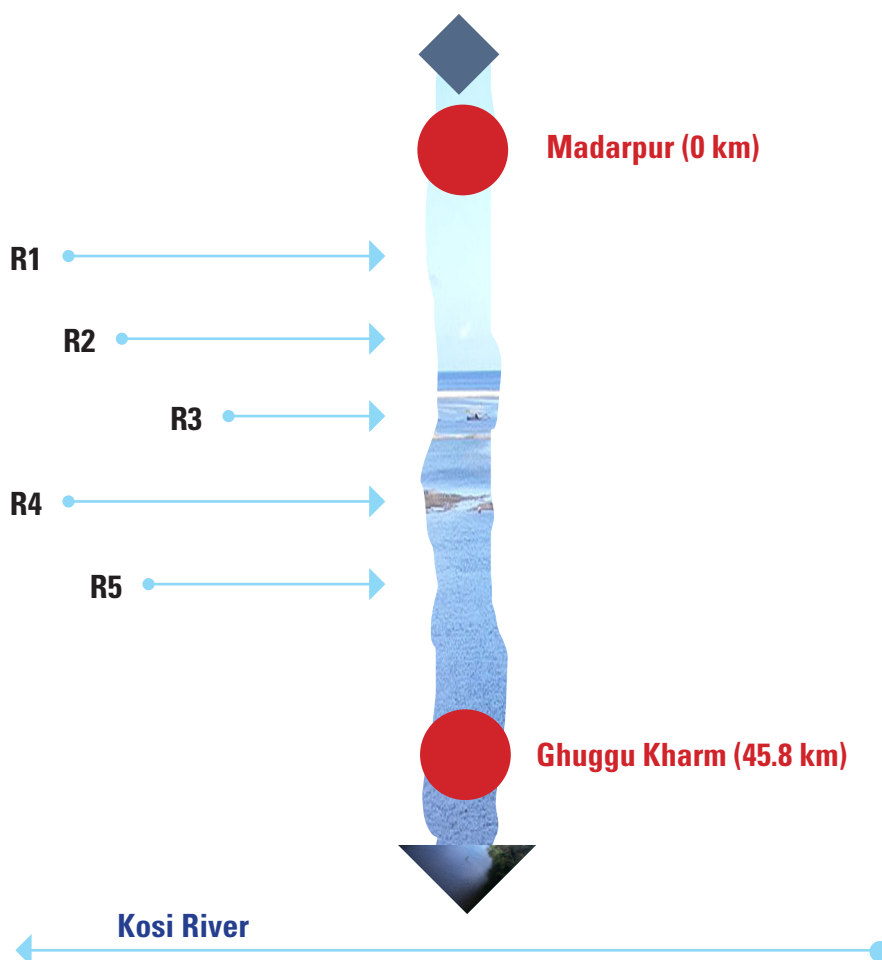


Figure: Flow Diagram of Dabka River

DABKA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Buransi Gadhera	R1	5.03	29.45	79.36	16
2	Kanwan Gadhera	R2	5	29.45	79.34	16.6
3	Timliya Rauli	R3	3.91	29.36	79.21	20.8
4	Ausani Sot	R4	5.71	29.36	79.17	38.5
5	Bhadragarhi Sot	R5	4.61	29.35	79.16	40.9

SARYU BASIN

Saryu River UID Code:
Basin Area: 342.48 Sq. Km.
Number of rivers: 07
River network: 227.40 Km

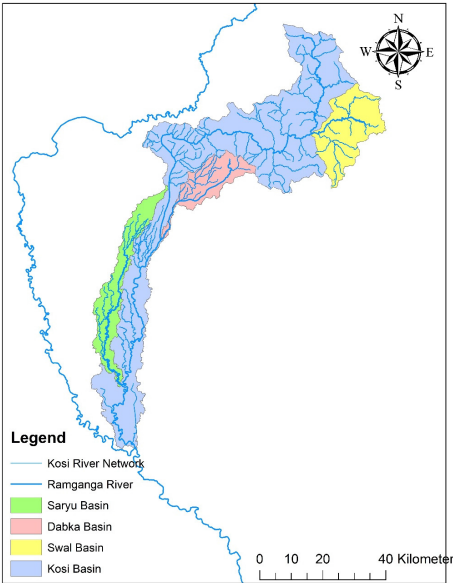
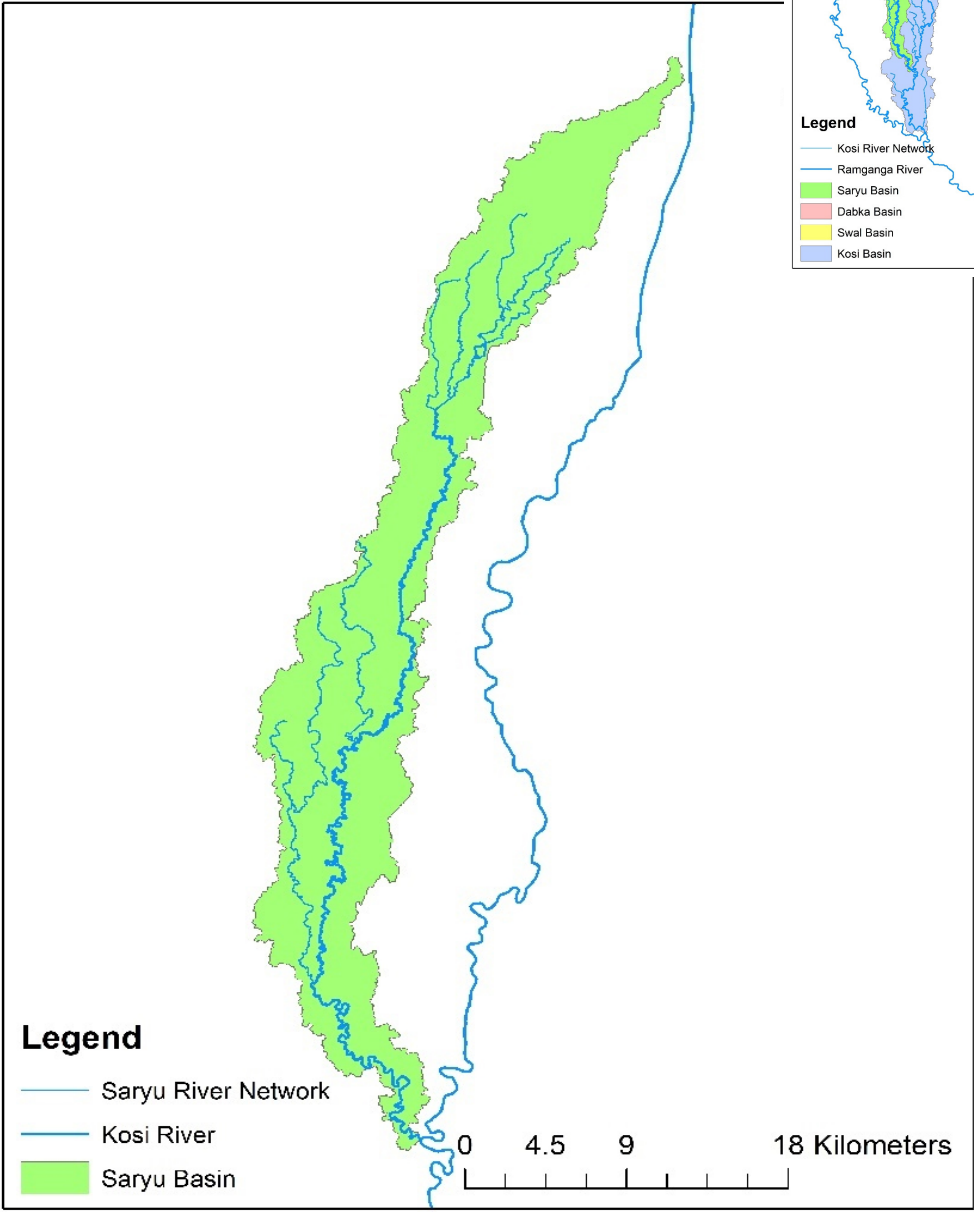


Figure: Saryu River Network





SARYU RIVER MAINSTEM FLOW DIAGRAM

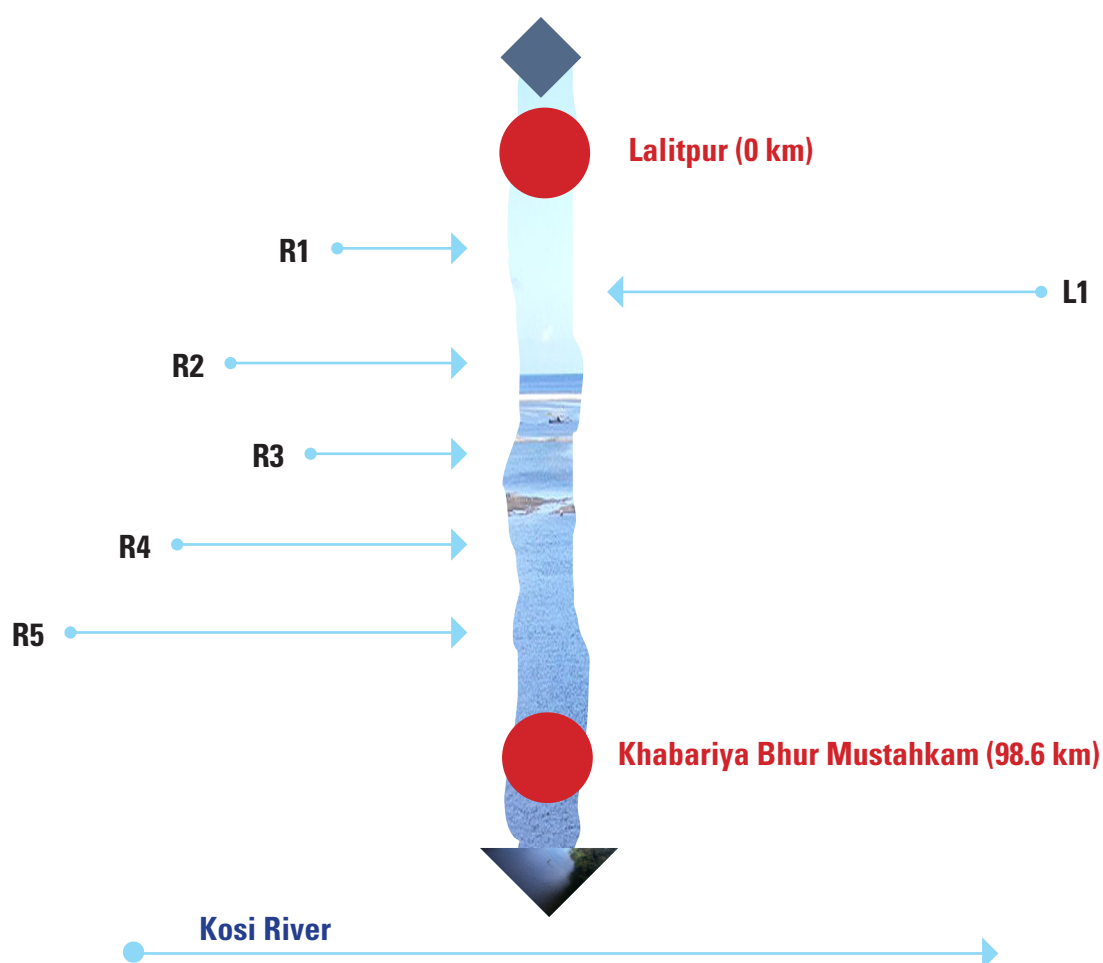
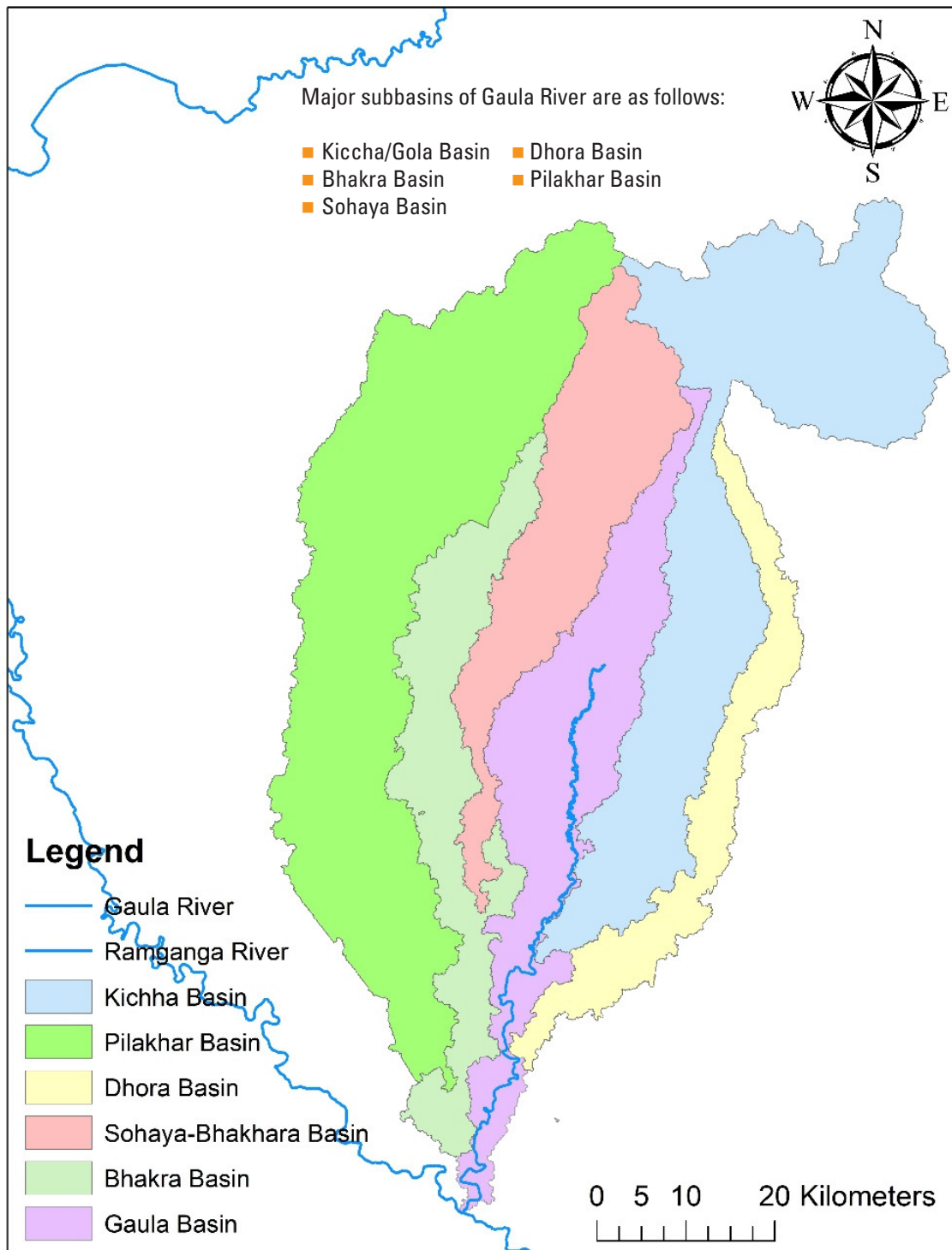


Figure: Flow Diagram of Saryu River

SARYU RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Baliya or Bah Nala	R1	8	29.26	79.03	7.12
2	Stream 1	L1	13.4	29.24	79.01	12.9
3	Gangli Nala	R2	12	29.22	79.00	18.2
4	Nakti Nala	R3	10.3	29.21	78.99	19.5
5	Nachna Nala 2	R4	21.4	29.03	78.94	58.7
6	Nachna Nala	R5	44.3	28.90	78.92	91.8

GAULA BASIN: MAJOR SUB-BASINS





KICCHA/GOLA BASIN

Kiccha/Gola River UID Code:

Basin Area: 1188.54 Sq. Km.

Number of rivers: 58

River network: 624.89 Km

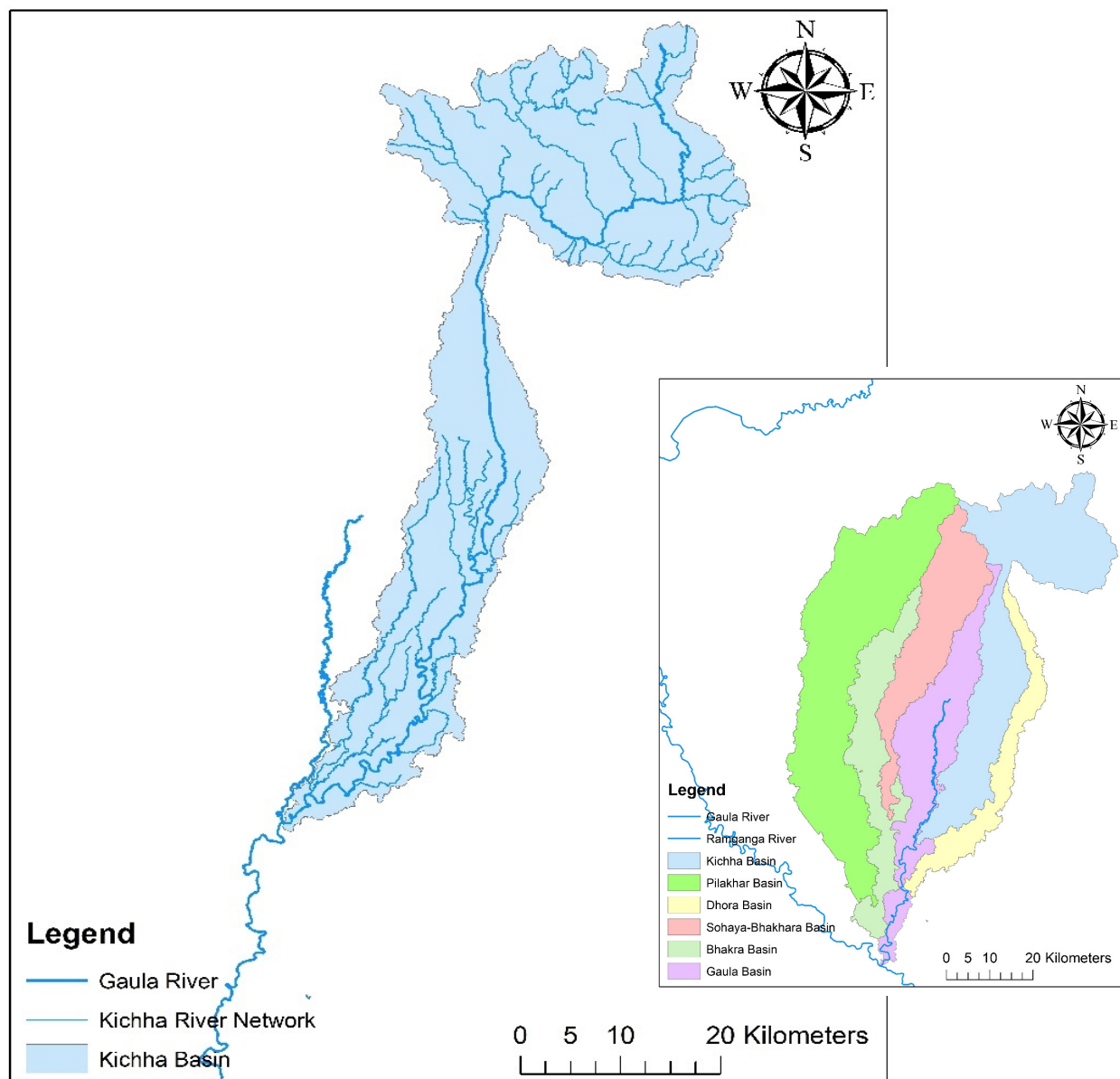
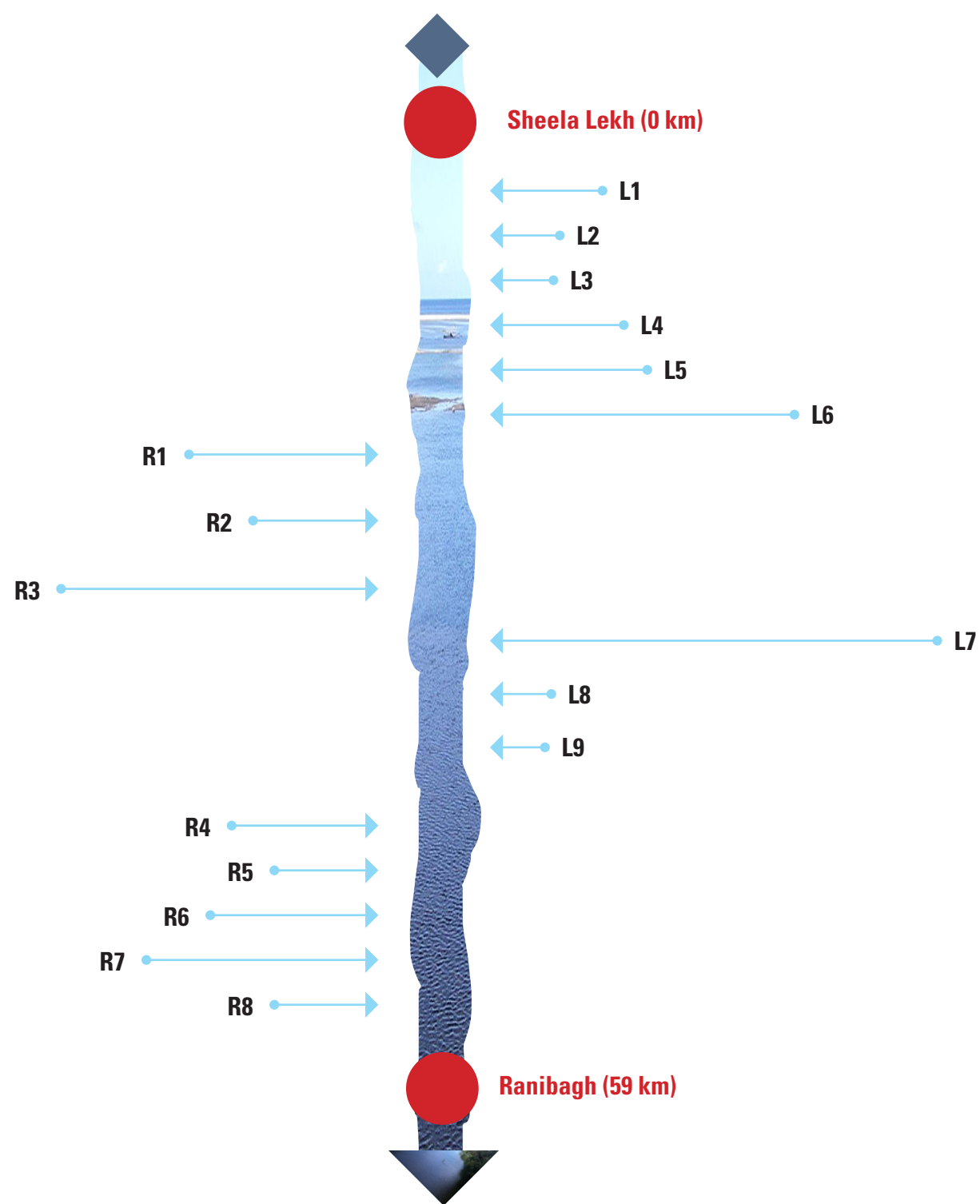


Figure: Kiccha River Network

KICCHA RIVER MAINSTEM FLOW DIAGRAM



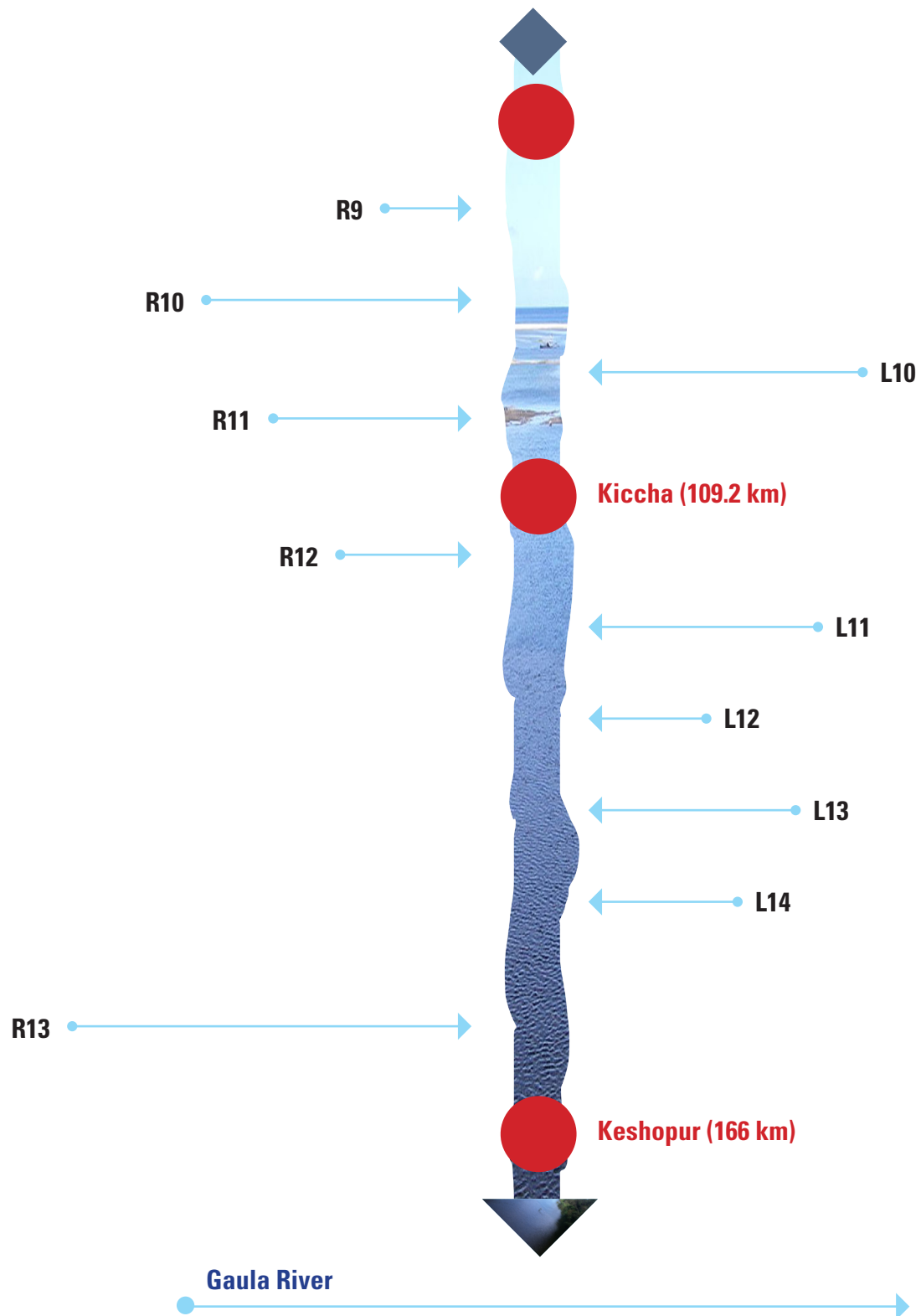


Figure: Flow Diagram of Kiccha River

KICCHA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Thall Gad	L1	5.54	29.43	79.73	4
2	Ghat Gad	L2	4.46	29.40	79.73	10
3	Dal Gad	L3	4.27	29.39	79.72	11
4	Gangoli Gad	L4	6.05	29.38	79.73	12
5	Kargara Nala	L5	6.75	29.31	79.75	26
6	Jhargaon Gad	L6	9.1	29.29	79.75	28
7	Bourgara Nala	R1	10.1	29.29	79.73	30
8	Stream 3	R2	9.52	29.29	79.70	34
9	Kalsa River	R3	39.2	29.27	79.67	39
10	Logar Gad	L7	14.8	29.25	79.66	42
11	Syura Gadhera	L8	3.06	29.25	79.65	44
12	Shinar Gadhera	L9	3.11	29.25	79.64	45
13	Barjala Gadhera	R4	4.58	29.28	79.60	50
14	Khalghagala Gad	R5	3.94	29.29	79.59	52
15	Bhimtal Gadhera	R6	7.1	29.30	79.56	56
16	Baliya	R7	14.8	29.29	79.55	58
17	Hat Gadhera	R8	2.43	29.28	79.55	59
18	Stream2	R9	4.55	29.27	79.55	60
19	Paha or Gola Nala	R10	24	28.94	79.53	102
20	Bhuta Nala	L10	15.7	28.93	79.54	106
21	Baini Nadi	R11	21.4	28.91	79.52	109.2
22	Kilwa Nala	R12	13.3	28.84	79.48	121.3
23	Andhara Nala	L11	14.6	28.81	79.49	128.7
24	Stream 1	L12	4.75	28.80	79.49	129.4
25	Ganda Nala	L13	12.5	28.75	79.46	139.8
26	Kharra	L14	7.3	28.71	79.41	152.5
27	Khalwa Nala	R13	39.3	28.71	79.36	160



DHORA BASIN

Dhora River UID Code:
 Basin Area: 354.39 Sq. Km.
 Number of rivers: 10
 River network: 238.29 Km

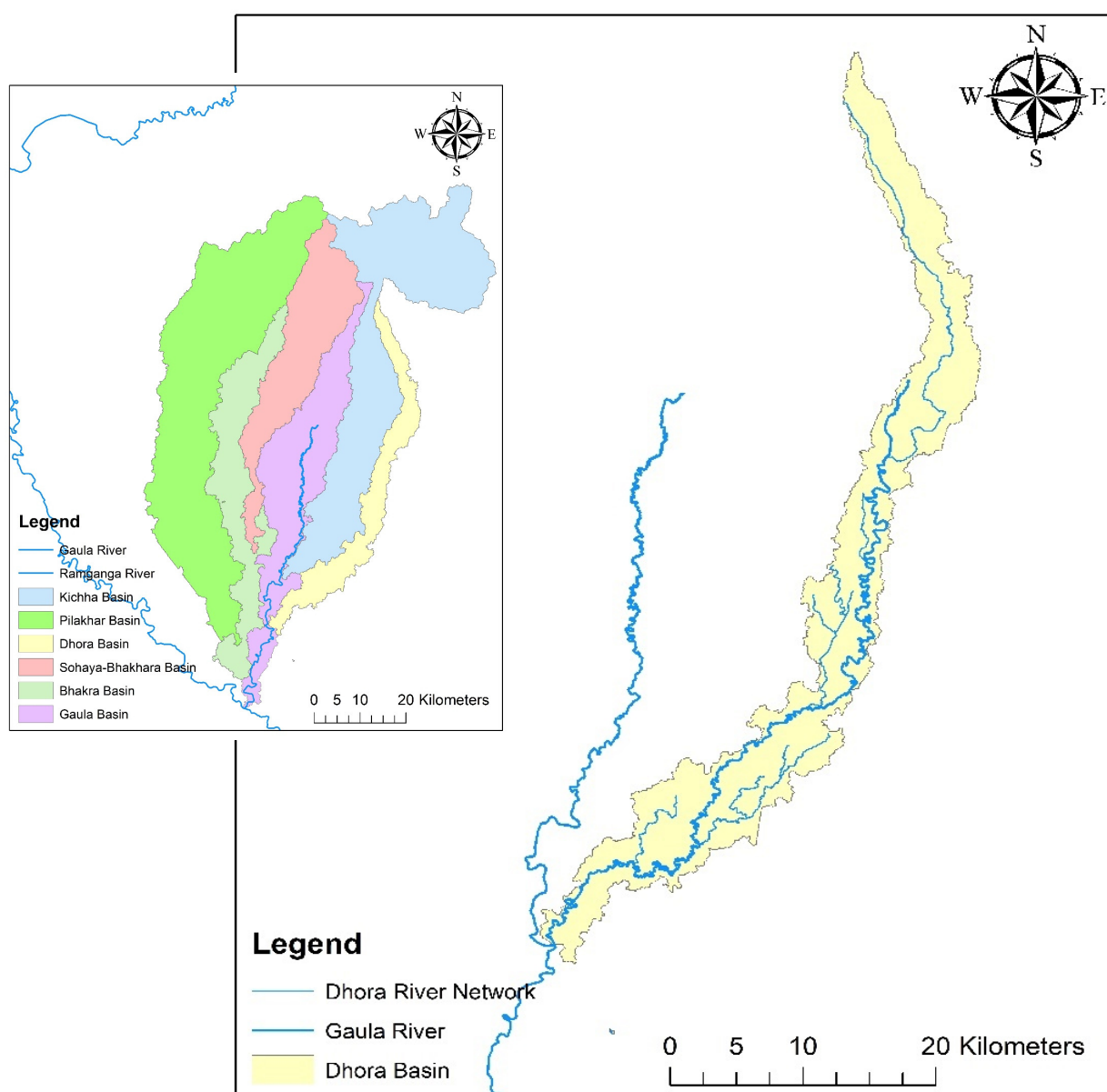


Figure: Dhora River Network

DHORA RIVER MAINSTEM FLOW DIAGRAM

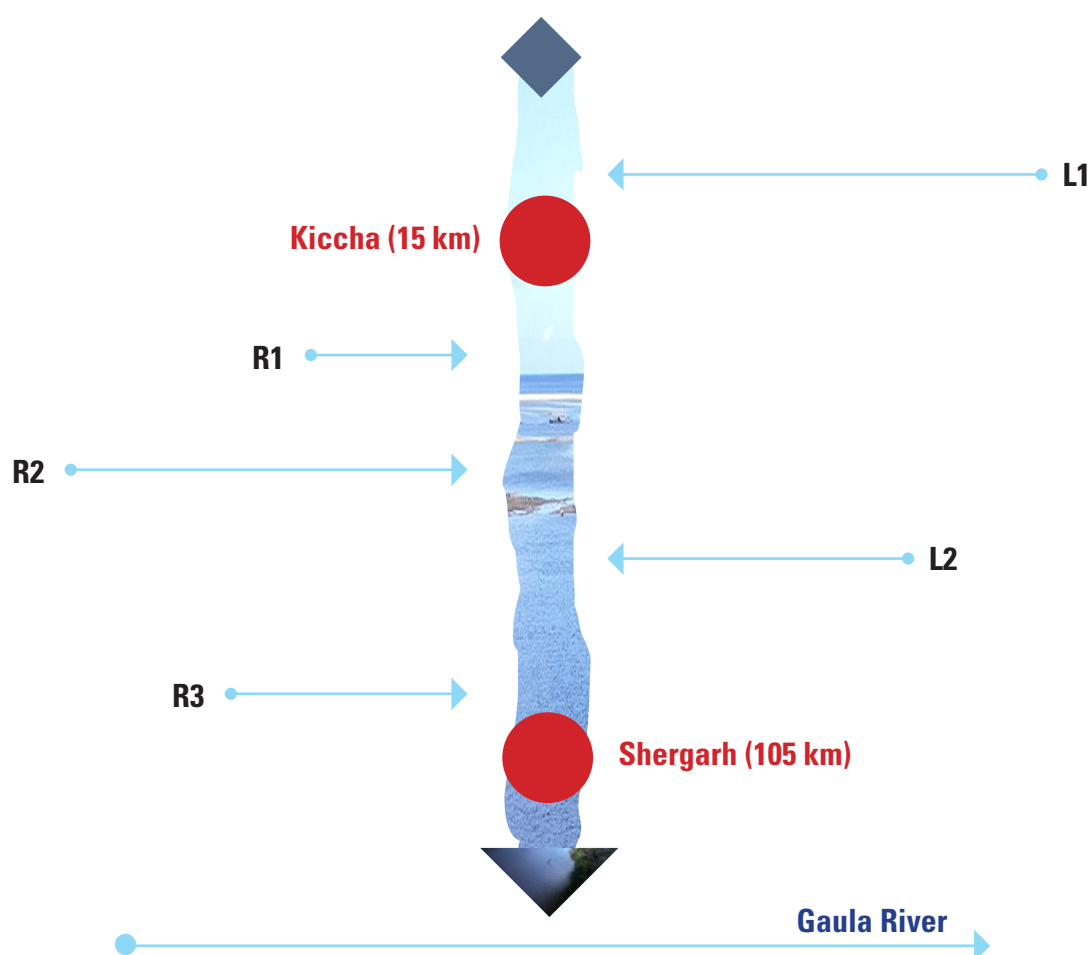


Figure: Flow Diagram of Dhora River

DHORA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Katna	L1	42.4	28.94	79.58	9
2	Andhara nala	R1	6.56	28.86	79.56	26.3
3	Kharra nala	R2	18.2	28.75	79.52	60.1
4	Kharra nala N	L2	18.5	28.65	79.43	86.8
5	Khalmacha Nala	R3	11.2	28.64	79.38	105.5



BHAKRA BASIN

Bhakra River UID Code:
 Basin Area: 2584.27 Sq. Km.
 Number of rivers: 87
 River network: 1625.20 Km

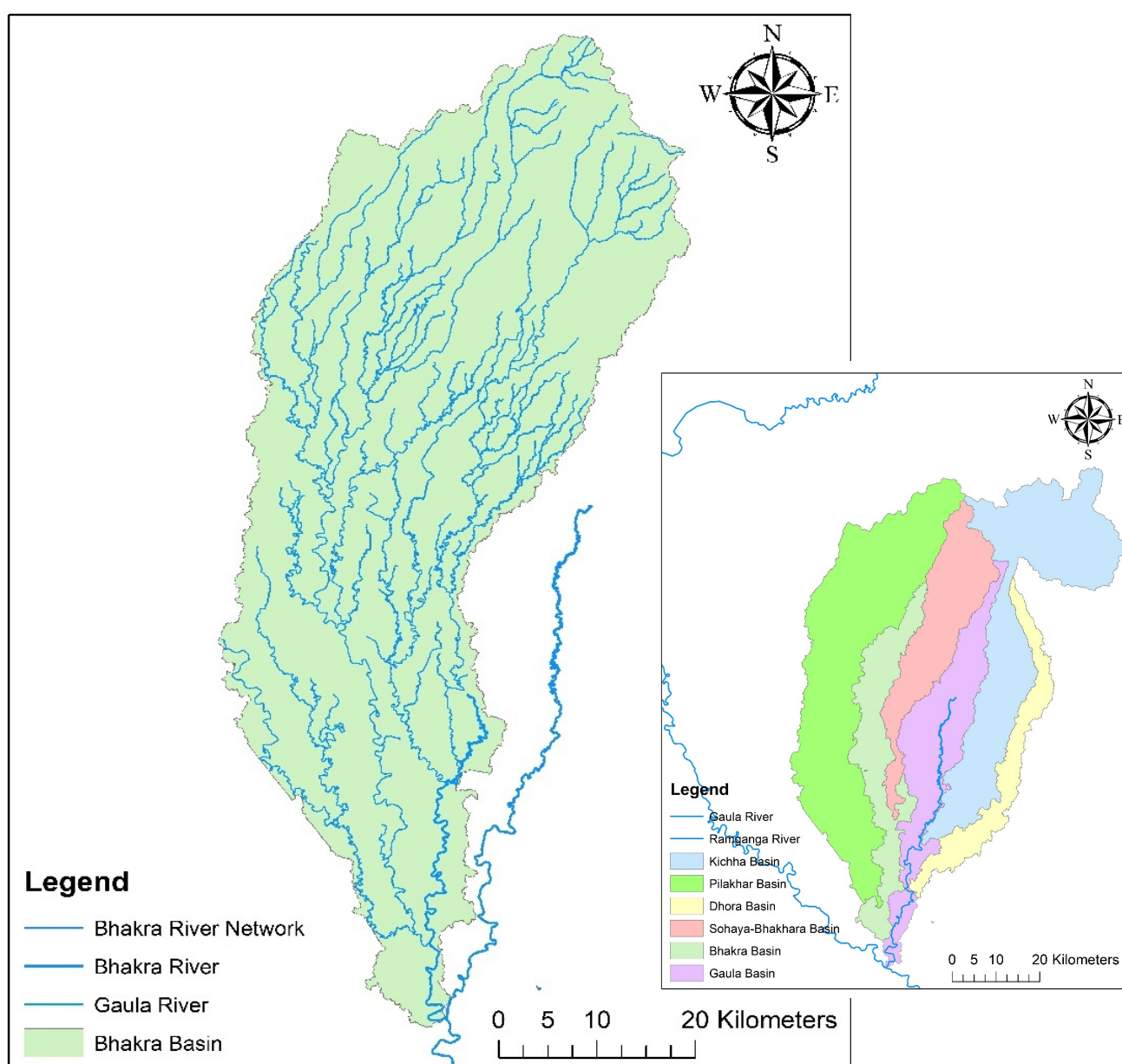


Figure: Bhakra River Network

BHAKRA RIVER MAIN STEM FLOW DIAGRAM

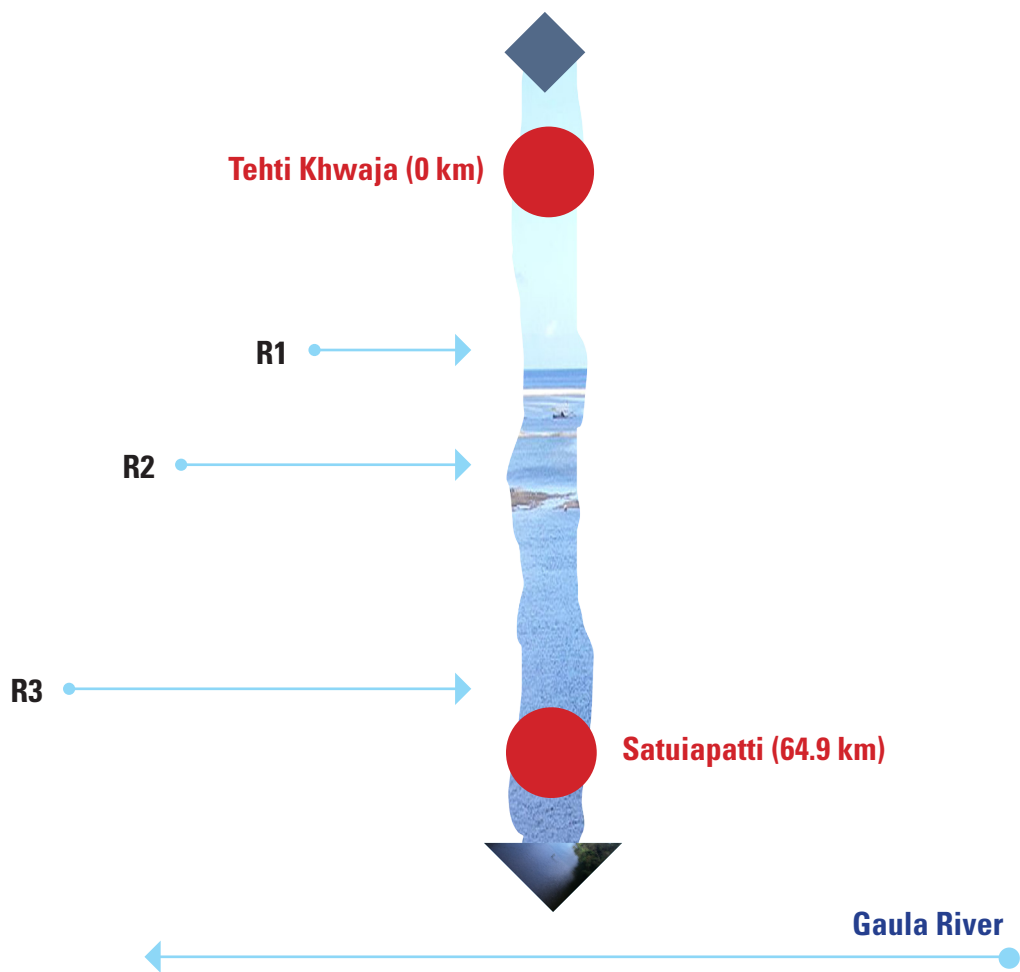


Figure: Flow Diagram of Bhakra River

BHAKRA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Sohaya River	R1	16.5	28.73	79.28	15.9
2	Sainjini, Thandapani	R2	110	28.71	79.27	20.9
3	Pilakhar River	R3	148	28.56	79.25	50.3



PILAKHAR BASIN

Pilakhar River UID Code:
 Basin Area: 1458.80 Sq. Km.
 Number of rivers: 49
 River network: 968.70 Km

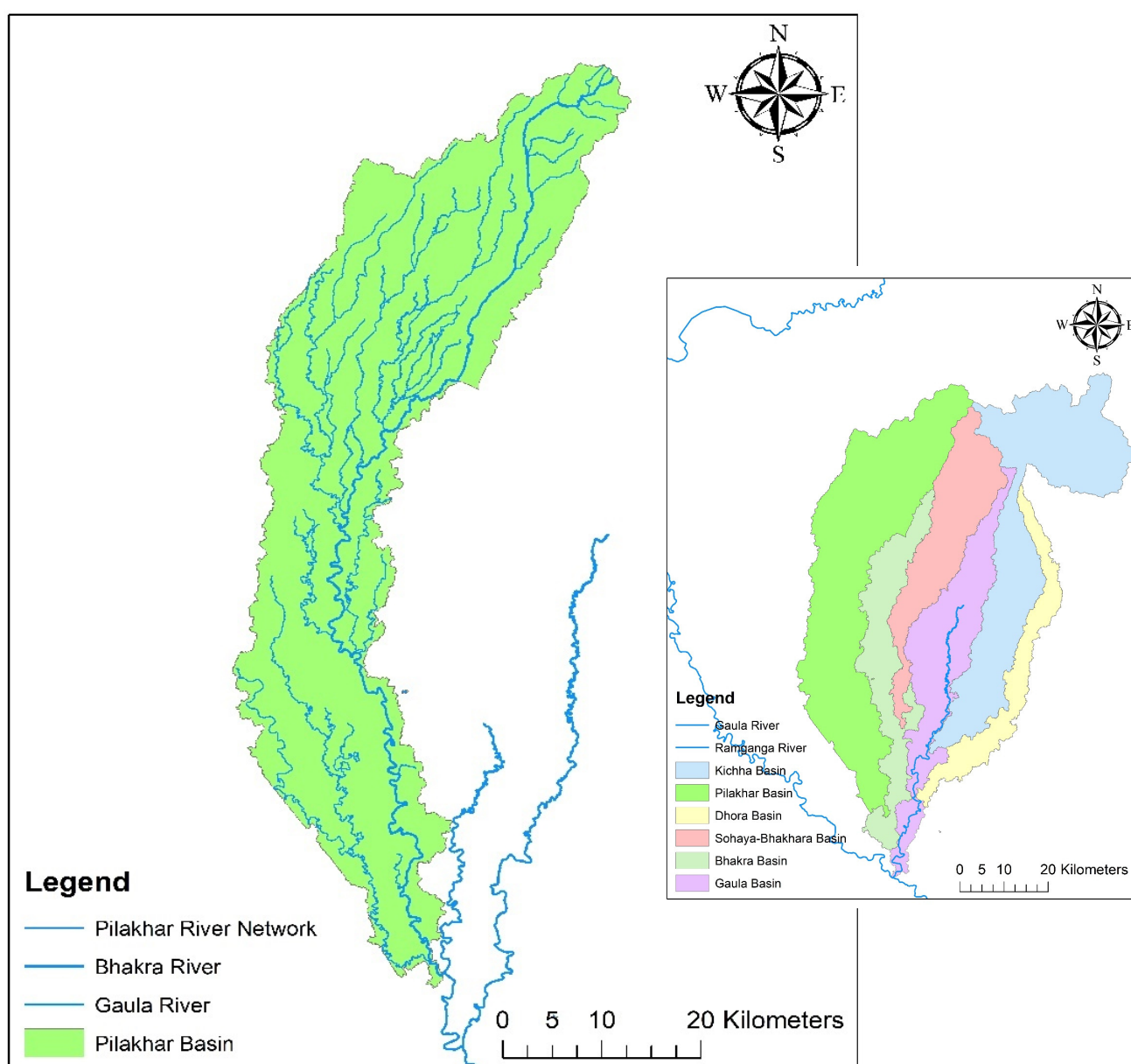


Figure: Pilakhar River Network

PILAKHAR RIVER MAINSTEM FLOW DIAGRAM

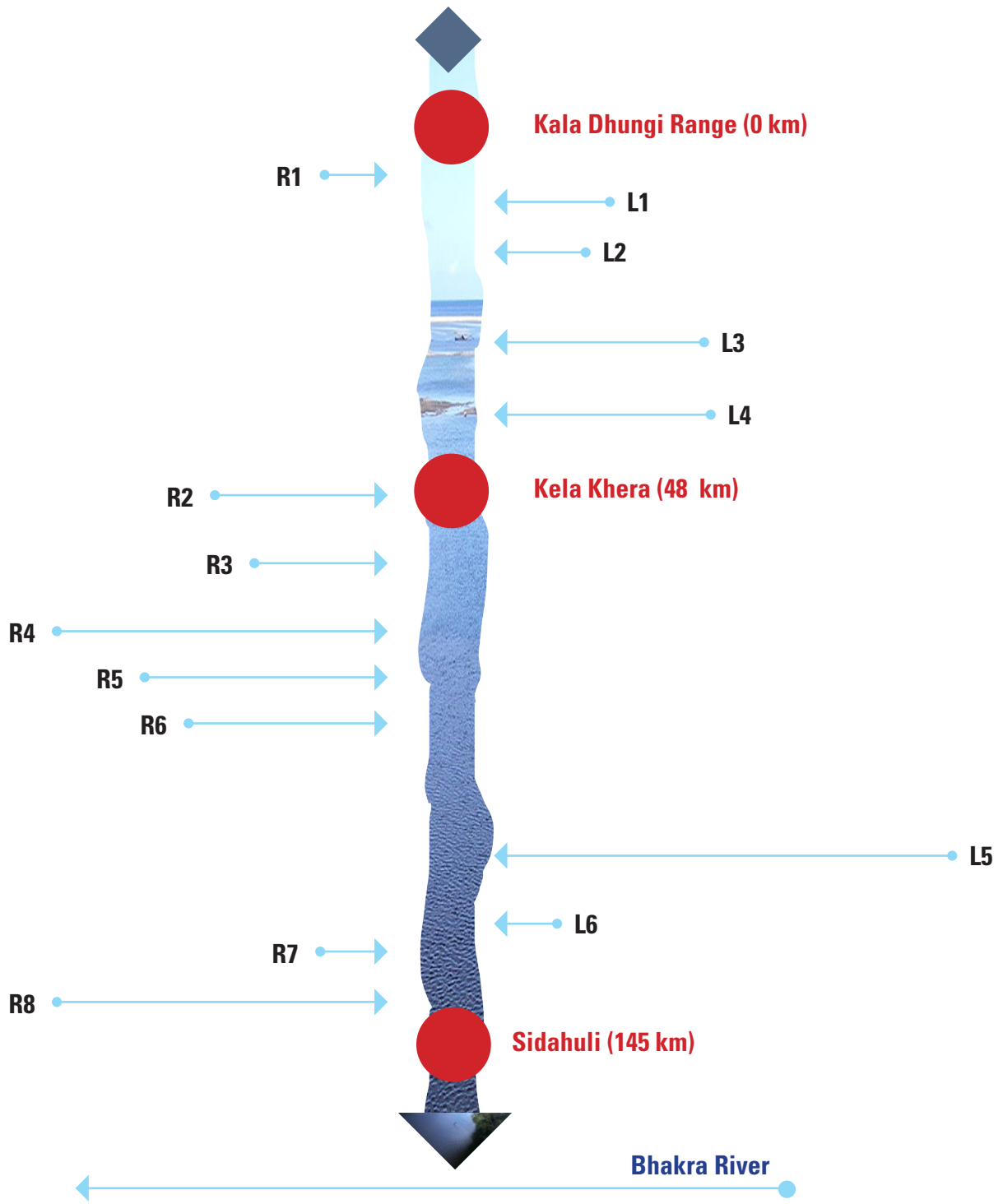


Figure: Flow Diagram of Pilakhar River



PILAKHAR RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Sakar Sot	R1	3.2	29.40	79.36	0
2	Bajun Gad	L1	5.78	29.40	79.36	0
3	Ghugwa Gad	L2	4.75	29.35	79.33	8
4	Goruni gadhera	L3	6.67	29.31	79.34	12
5	Nihal River	L4	6.78	29.24	79.32	21
6	Dabka River	R2	23.8	29.08	79.18	48.3
7	Stream 2	R3	7.13	29.05	79.15	54.7
8	Bamnia or Khera River	R4	53.3	29.00	79.14	61.2
9	Ghuga River	R5	52.9	28.99	79.14	64
10	Gendai River	R6	31.4	28.88	79.13	83.5
11	Nihal River	L5	77.6	28.87	79.16	89.4
12	Stream 1	L6	3.12	28.75	79.20	111.4
13	Sarenda Drain	R7	6.68	28.64	79.21	132.1
14	Nahal River	R8	69.4	28.56	79.23	145.15

SOHAYA BASIN

Sohaya River UID Code:
Basin Area: 603.03 Sq. Km.
Number of rivers: 28
River network: 380.54 Km

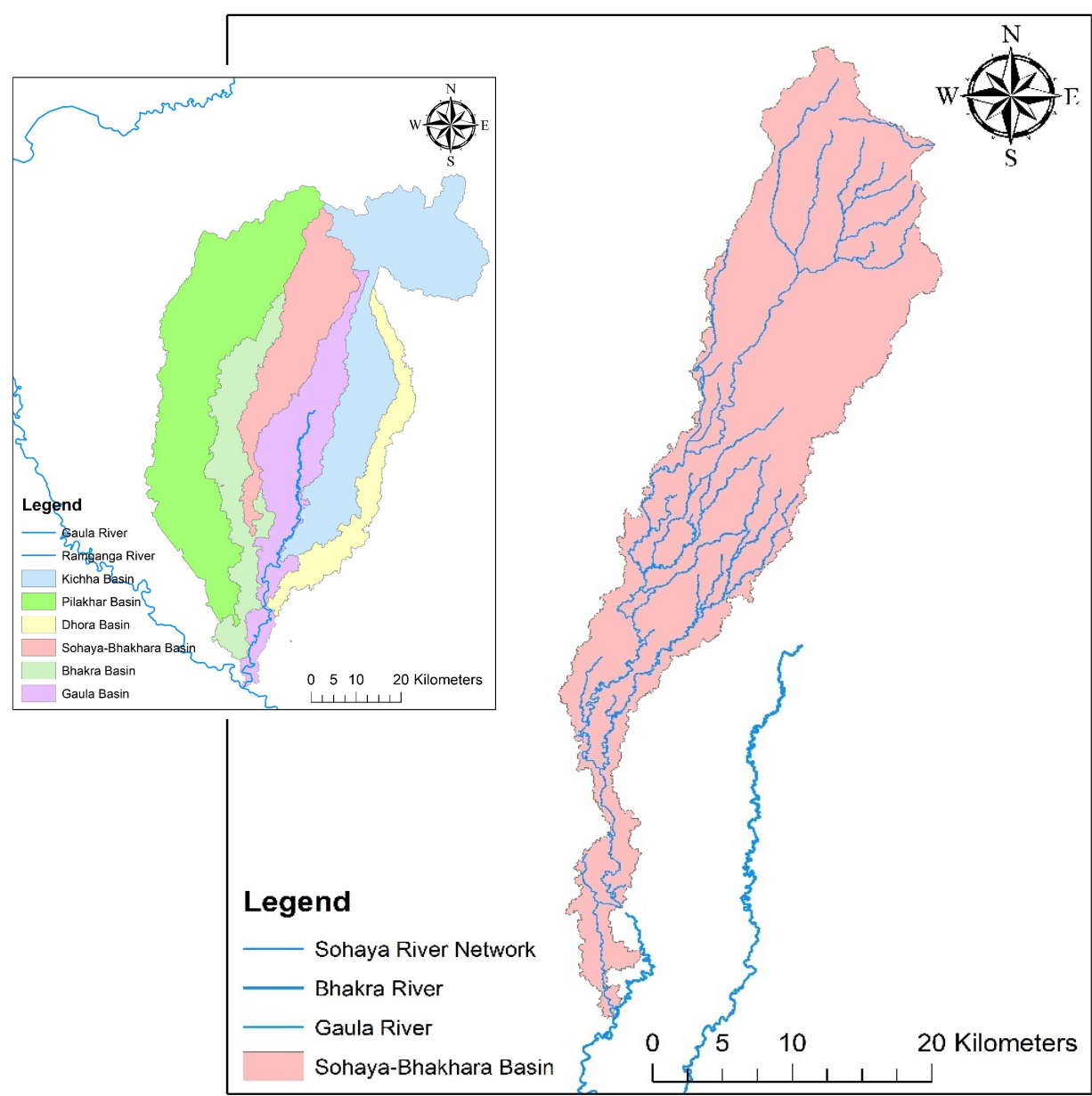
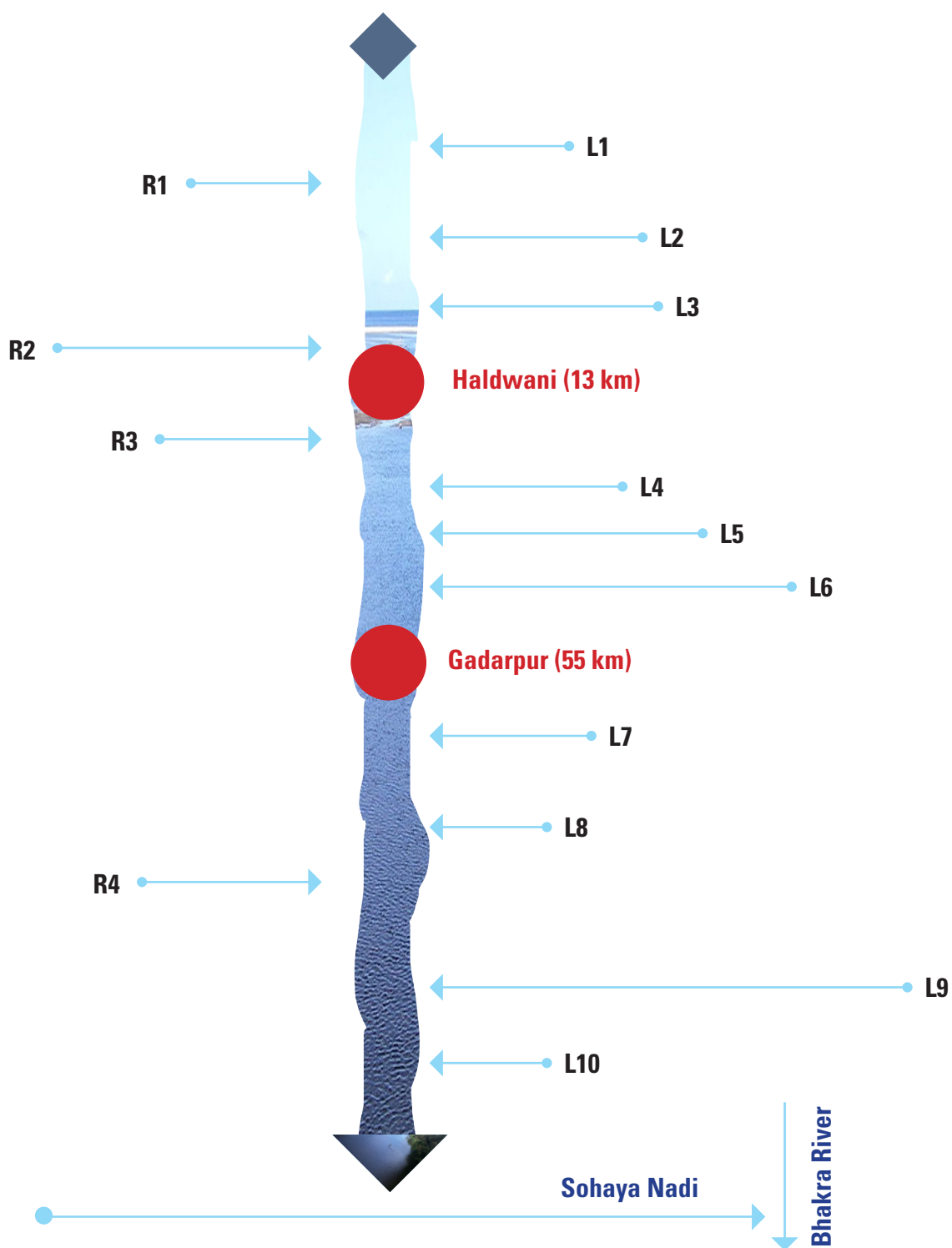


Figure: Sohaya River Network



SOHAYA RIVER MAINSTEM FLOW DIAGRAM



SOHAYA RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Ghat Gad	L1	4.68	29.29	79.46	4
2	Stream 4	R1	7.14	29.28	79.45	6
3	Machhiya Gad	L2	9	29.26	79.45	8
4	Paniyali Gad	L3	9.62	29.25	79.44	10
5	Bhakra Nadi 2	R2	12.7	29.24	79.42	13
6	Kalikich	R3	8.12	29.12	79.33	35
7	Stream 3	L4	5.76	29.06	79.31	46
8	Khala Nadi	L5	12.2	29.03	79.30	54
9	Kagarsen Nadi	L6	23.5	29.02	79.30	55
10	Stream 2	L7	3.57	29.00	79.29	62
11	Bhakra Nala	L8	1.24	28.99	79.30	63
12	Stream 1	R4	6.74	28.93	79.26	82
13	Dhimri Nadi	L9	49.7	28.90	79.27	90
14	Jalali	L10	1.57	28.81	79.28	105



MANDAL BASIN: MAJOR SUB-BASINS



KALI BASIN

Kali River UID Code:
Basin Area: 116.12 Sq. Km.
Number of rivers: 10
River network: 65.40 Km

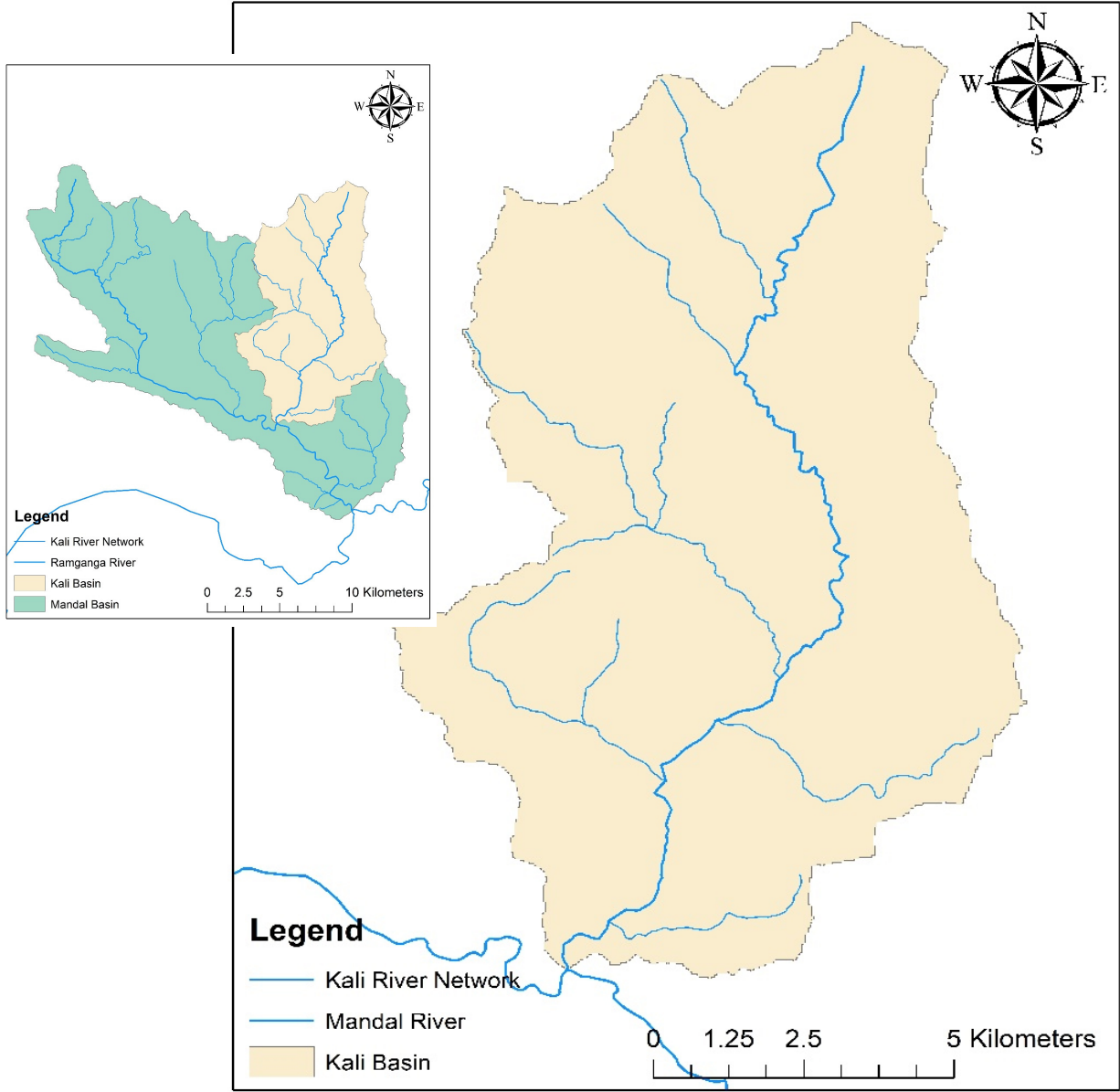


Figure: Kali River Network



KALI RIVER MAINSTEM FLOW DIAGRAM

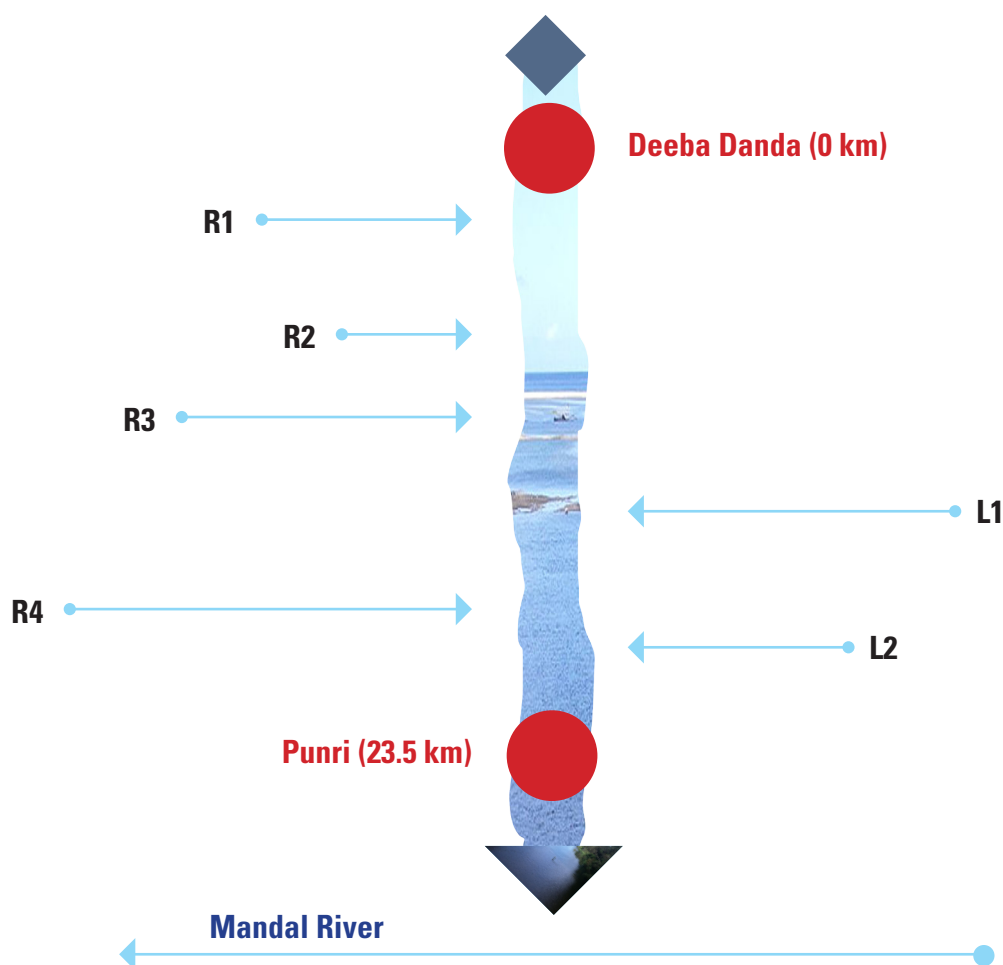
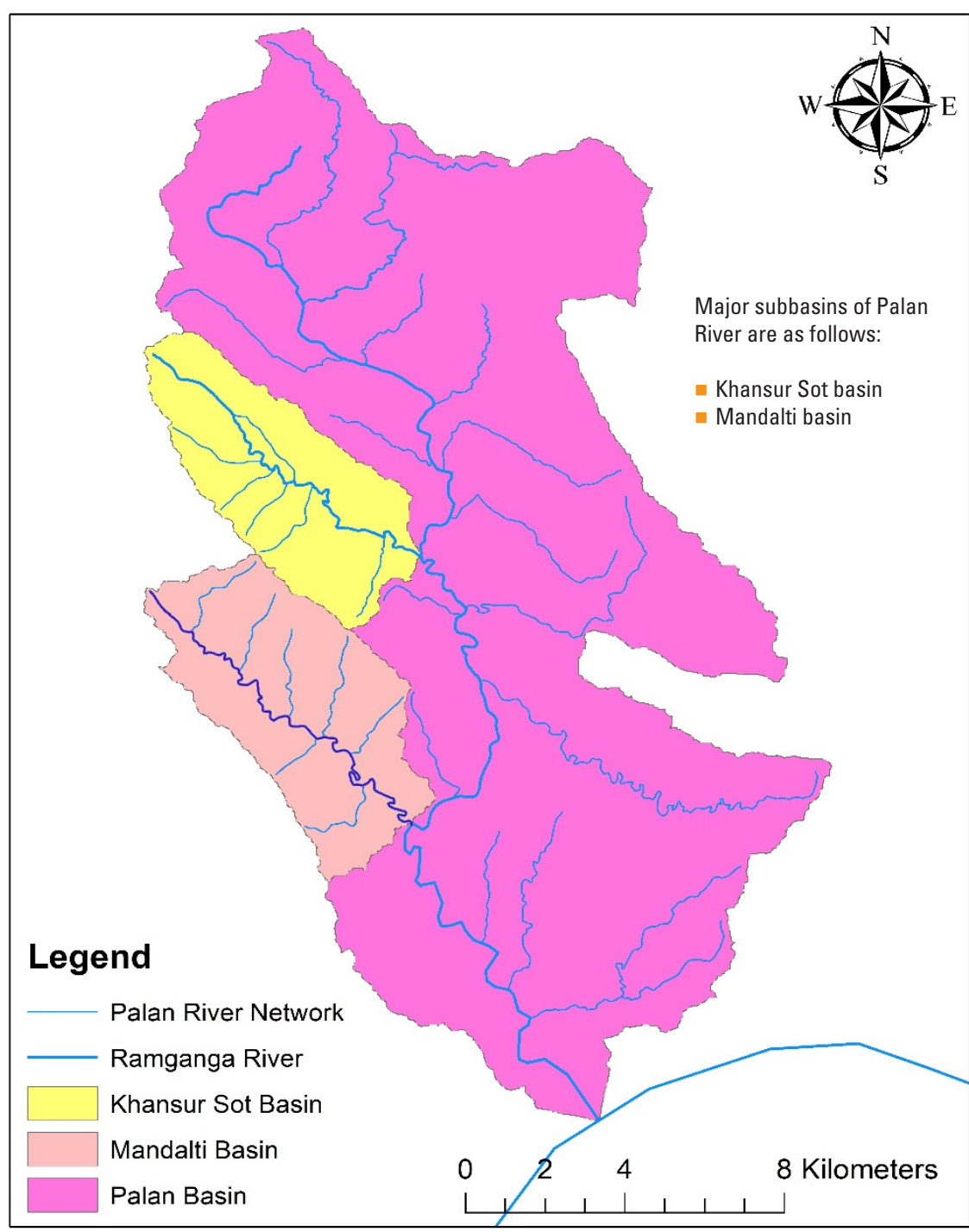


Figure: Flow Diagram of Kali River

KALI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Baragod Sot	R1	4.75	29.75	78.99	5.4
2	Dudera Sot	R2	3.92	29.74	78.98	7.2
3	Bhumkiya Nala	R3	6.1	29.69	78.99	15.31
4	Khiyunai Ka Raula	L1	6.1	29.68	78.98	16.72
5	Golagadi Nala	R4	6.84	29.67	78.97	18.34
6	Garhkhету Nala	L2	4.07	29.65	78.96	21.63

PALAN BASIN: MAJOR SUB-BASINS





KHANSUR SOT BASIN

Khansur Sot River UID Code:

Basin Area: 26.23 Sq. Km.

Number of rivers: 07

River network: 26.77 Km

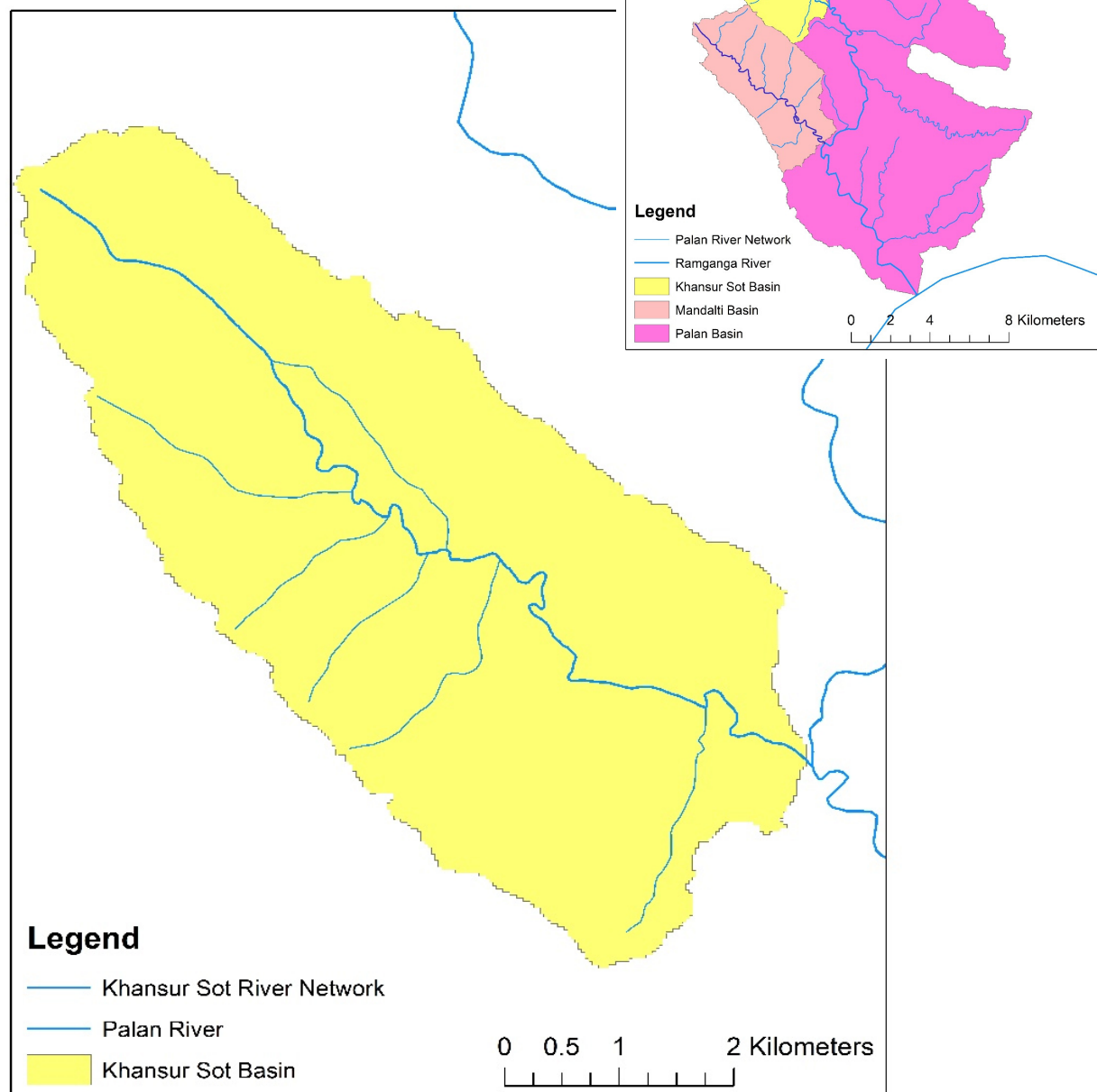


Figure: Khansur Sot River Network

KHANSUR SOT RIVER MAINSTEM FLOW DIAGRAM

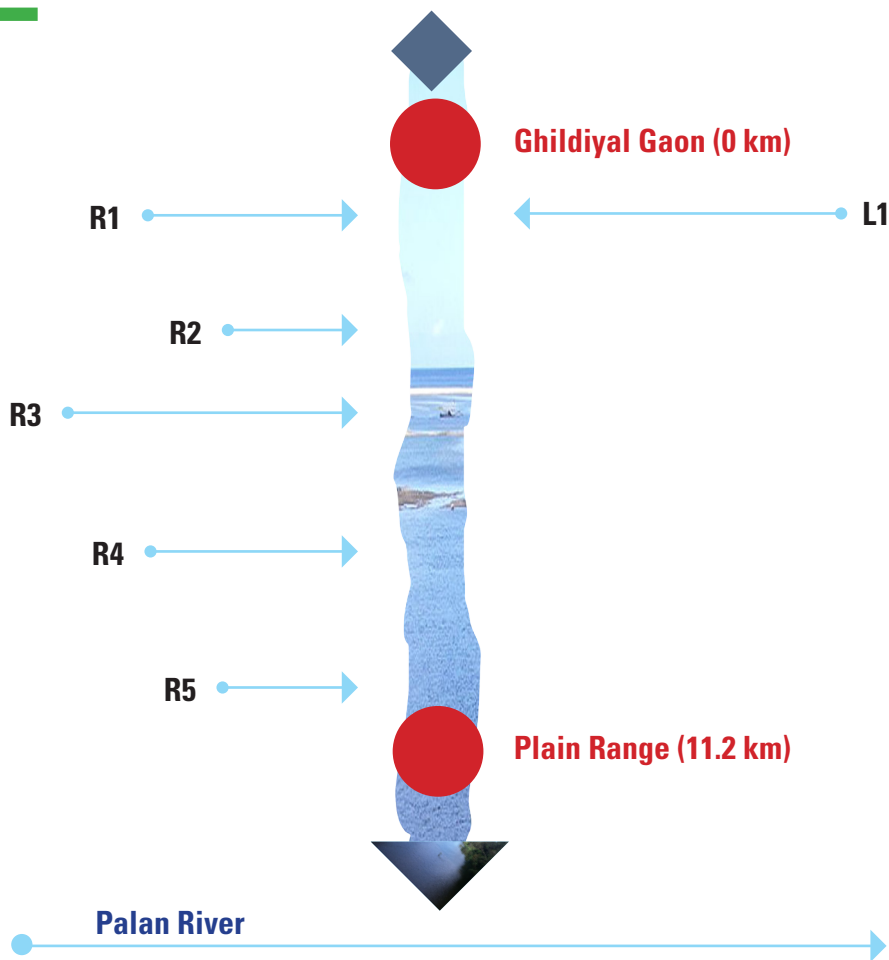


Figure: Flow Diagram of Khansur Sot River

KHANSUR SOT RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Am Sot	L1	2.5	29.75	78.69	1.69
2	Lohakothi Sot	R1	2.54	29.74	78.69	2.78
3	Sidhgadhal Sot	R2	1.74	29.73	78.70	3.1
4	Am Sot	R3	3.98	29.73	78.70	3.56
5	Bhangrawala Sot	R4	2.45	29.73	78.71	4
6	Dewalbari Sot	R5	2.33	29.72	78.73	5.99



MANDALTI BASIN

Mandalti River UID Code:

Basin Area: 31.95 Sq. Km.

Number of rivers: 08

River network: 30.04 Km

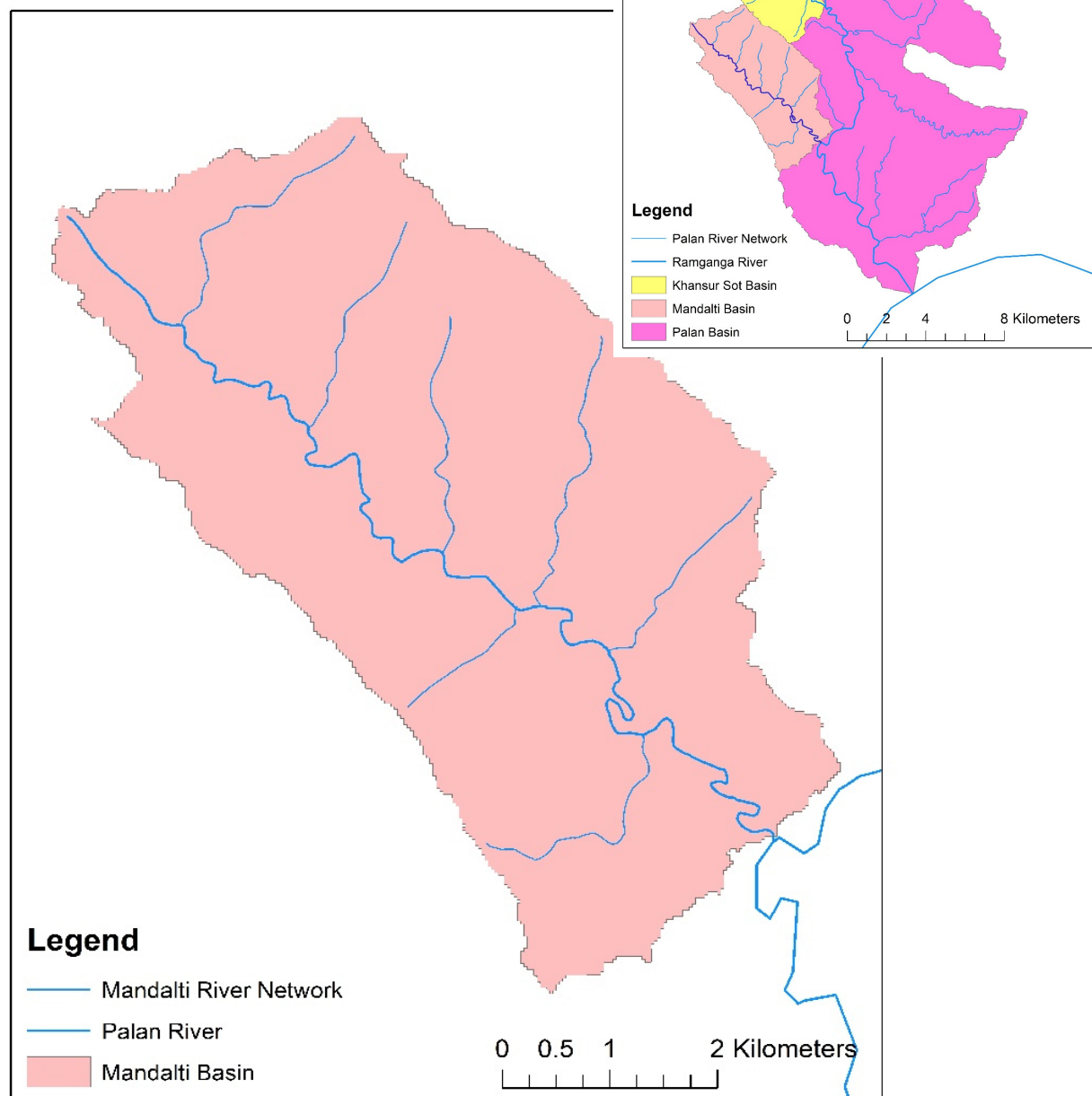


Figure: Mandalti River Network

MANDALTI RIVER MAINSTEM FLOW DIAGRAM

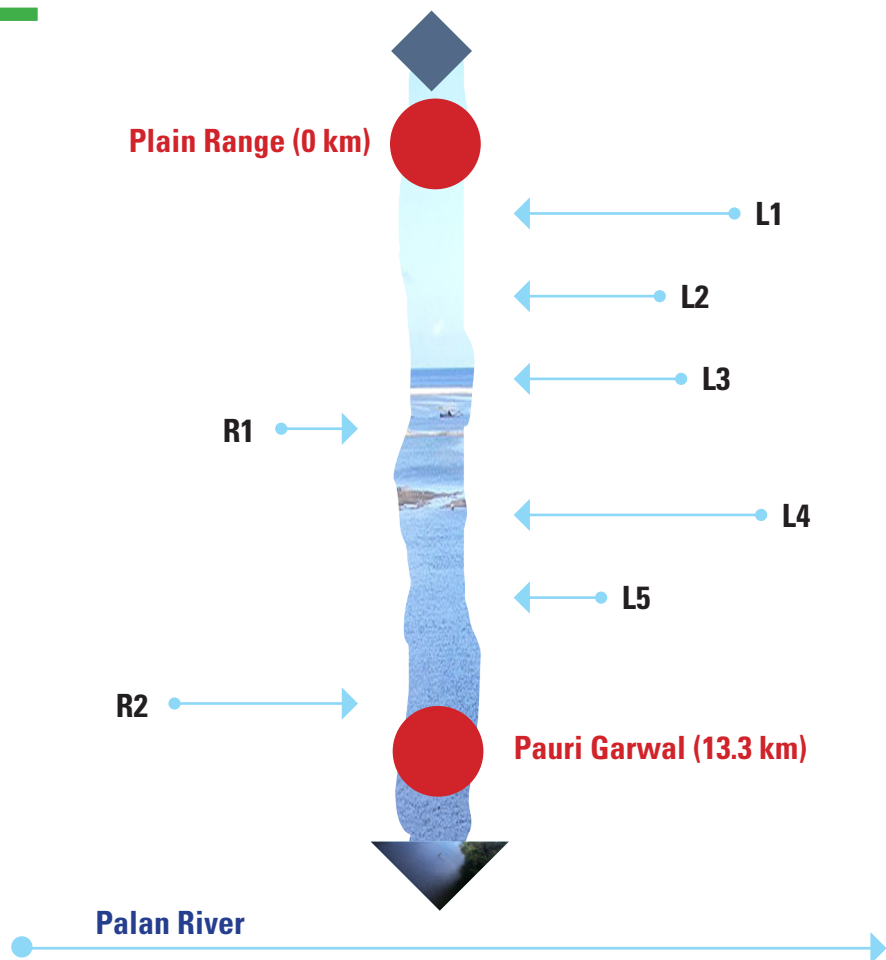
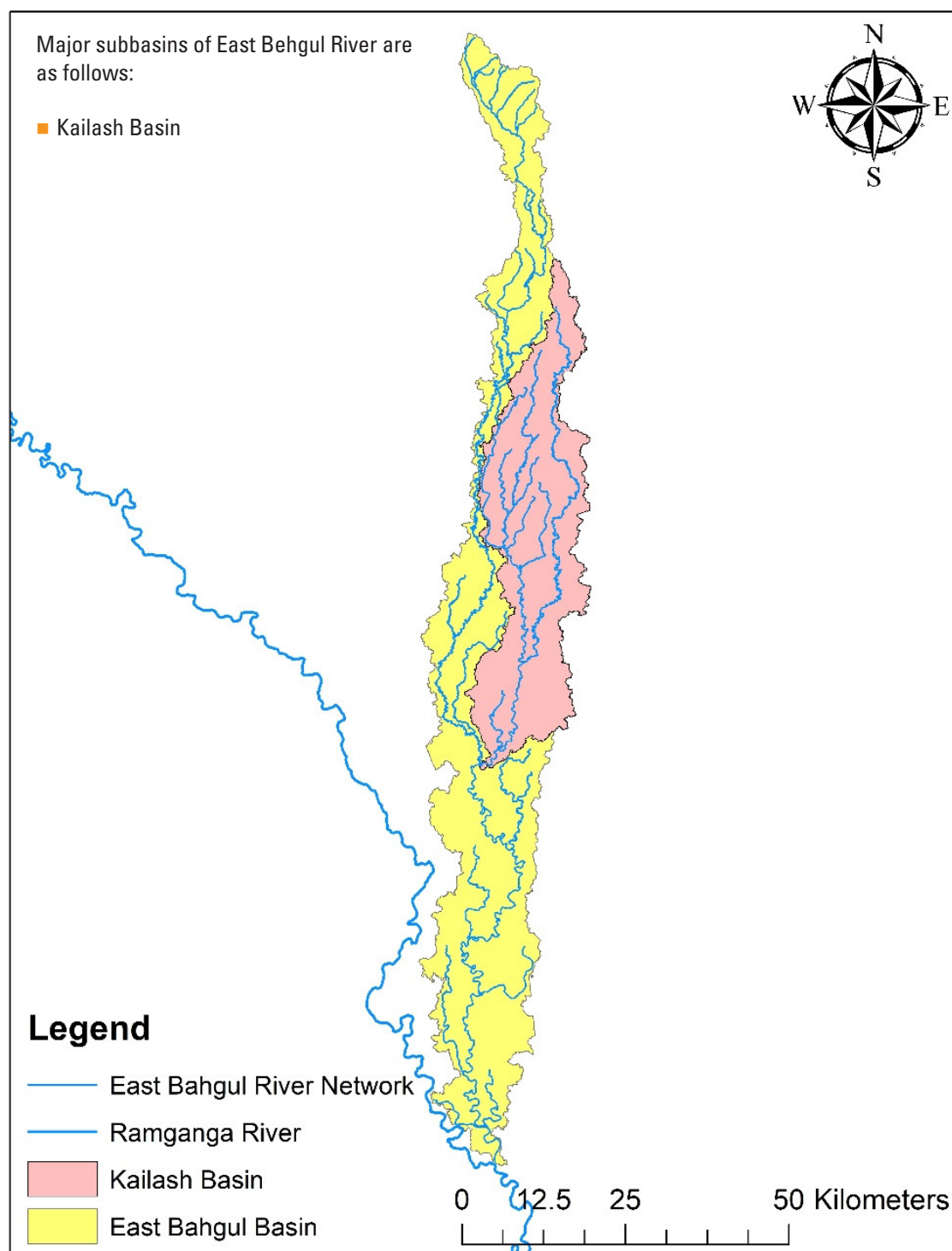


Figure: Flow Diagram of Mandalti River Network

MANDALTI RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Chhugalpani Sot	L1	2.8	29.69	78.68	1
2	Semal Sot	L2	2.3	29.69	78.69	2.25
3	Ghentiwala Sot	L3	2.52	29.67	78.70	3.96
4	Ulası Sot	R1	1.47	29.67	78.71	4.6
5	Ramavali Sot	L4	2.97	29.67	78.71	4.74
6	Gamdiru Sot	L5	2.13	29.67	78.72	5.45
7	Kolu Sot	R2	2.55	29.66	78.72	6.55



EAST BEHGUL BASIN: MAJOR SUB-BASINS



KAILASH BASIN

Kailash River UID Code:
Basin Area: 831.64 Sq. Km.
Number of rivers: 11
River network: 373.80 Km

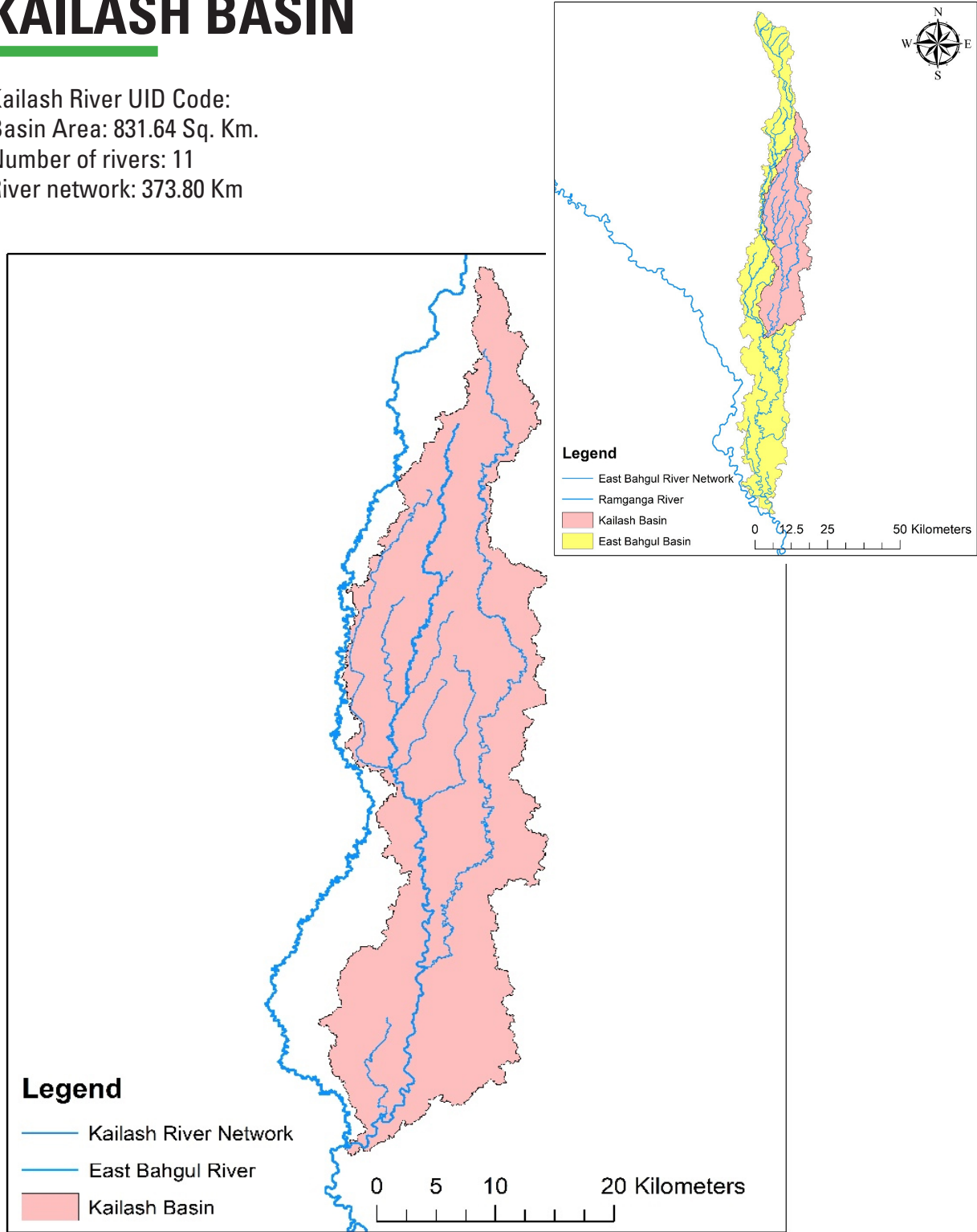


Figure: Kailash River Network



KAILASH RIVER MAINSTEM FLOW DIAGRAM

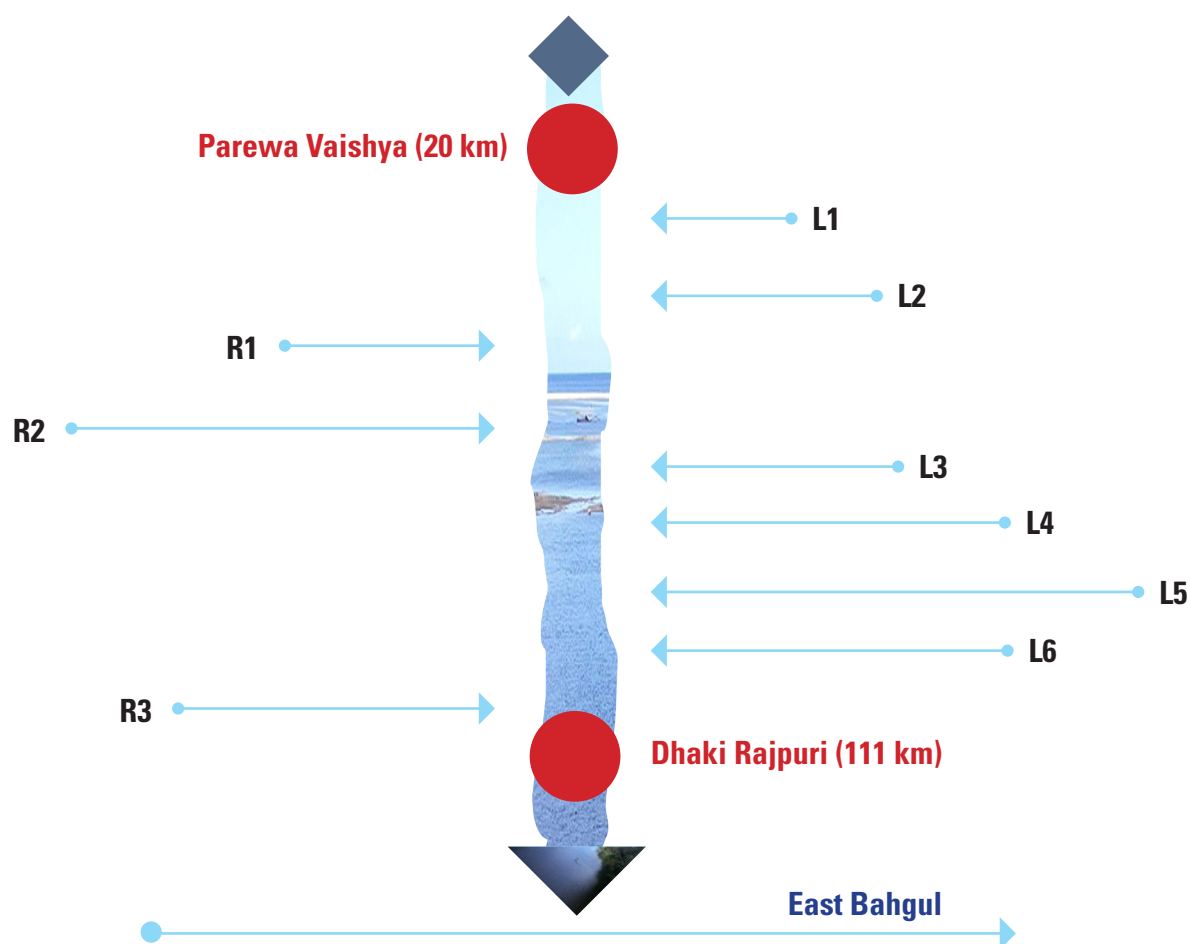
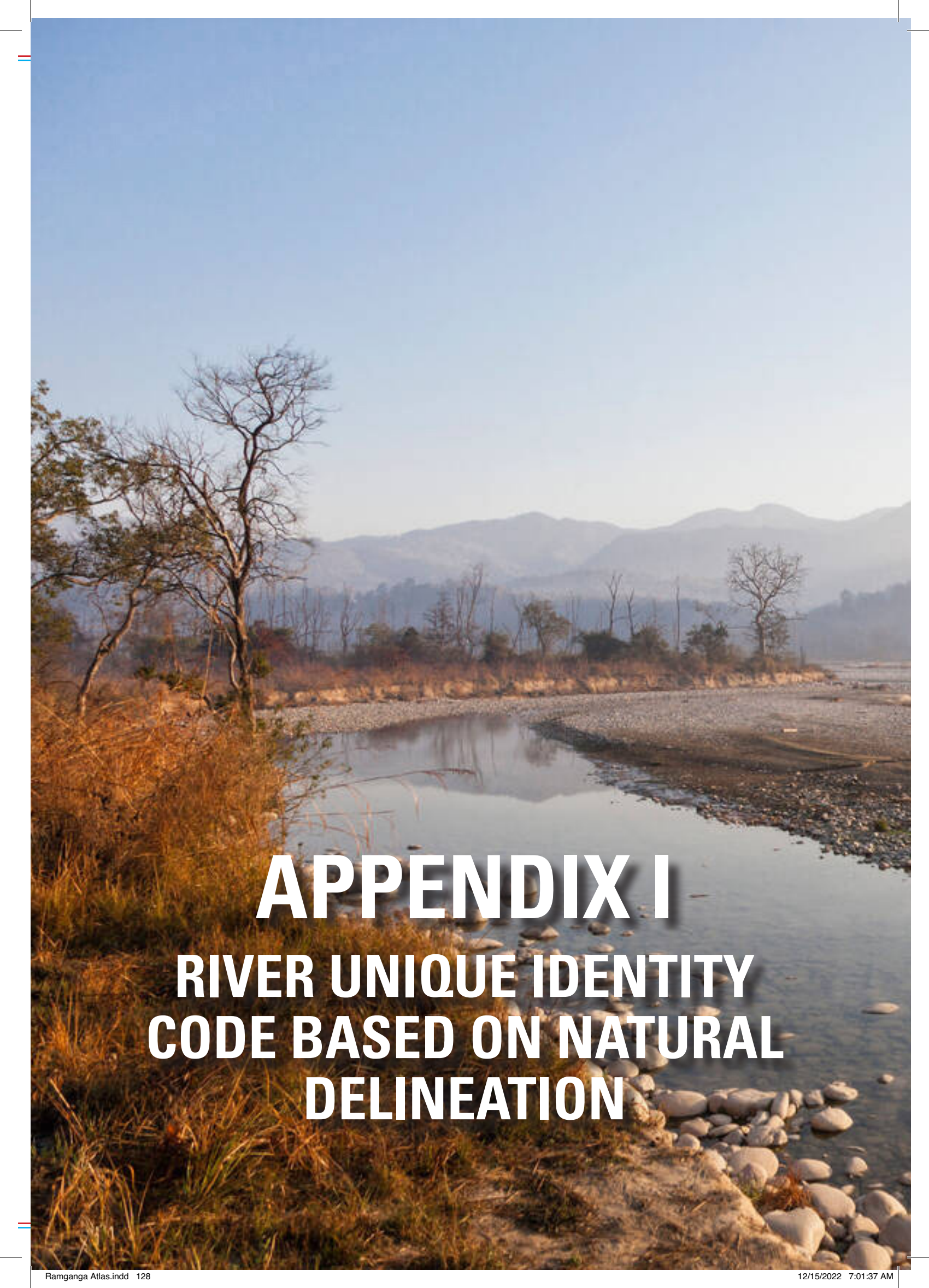


Figure: Flow Diagram of Kailash River

KAILASH RIVER MAINSTEM NETWORK						
S.No.	River Name	Confluence Bank	River Length (Km)	Confluence Co-ordinate		Distance from origin (km)
				Lat	Long	
1	Stream 5	L1	2	28.71	79.67	23.6
2	Stream 4	L2	10.6	28.62	79.64	42.8
3	Stream 3	R1	15.2	28.60	79.63	44.8
4	Singia Nala	R2	33.3	28.56	79.63	53.5
5	Stream 2	L3	11.2	28.56	79.63	54.3
6	Banarsi Nala	L4	21.6	28.52	79.65	61.1
7	Absara Nadi	L5	121	28.40	79.66	83.7
8	Launchha Nala	L6	21.9	28.28	79.63	102.31
9	Stream 1	R3	15	28.28	79.62	103.9



APPENDIX I

RIVER UNIQUE IDENTITY CODE BASED ON NATURAL DELINEATION



RIVER UNIQUE IDENTITY CODE BASED ON NATURAL DELINEATION: RAMGANGA BASIN

S.No	River Code	Origin Data			Confluence Data					
	Unique Identification Number	Co-ordinate		Ele (m)	Co-ordinate		Ele (m)	Confluence with		Length Of the river (km.)
		Lat	Long		Lat	Long				
1	02-L-29-R-01	30.04	79.25	2251	30.05	79.28	1500	Ramganga River	7	
2	02-L-29-R-01-R-01	30.05	79.19	2935	30.05	79.26	1680	GhurGhat Gad Rive	9.11	
3	02-L-29-L-01	30.08	79.33	2750	30.06	79.29	1585	Ramganga River	5.37	
4	02-L-29-R-02	29.99	79.28	1443	29.99	79.32	1297	Ramganga River	10.1	
5	02-L-29-R-02-R-01	30.02	79.22	2417	29.98	79.27	1495	Maigra Nadi (Drain20)	7.96	
6	02-L-29-R-03	30.01	79.25	2251	30.03	79.29	1409	Ramganga River	5.43	
7	02-L-29-R-04	30.01	79.24	2315	30.04	79.28	1439	Ramganga River	4.94	
8	02-L-29-L-02	29.99	79.45	1525	29.95	79.41	1095	Ramganga River	9.84	
9	02-L-29-L-02-R-01	30.04	79.42	2437	29.99	79.43	1253	Khansar Gad River	9.89	
10	02-L-29-L-03	29.88	79.42	1209	29.89	79.38	1050	Ramganga River	4.48	
11	02-L-29-L-03-L-01	29.87	79.51	2439	29.87	79.46	1286	Tarag Gadhera River	5.85	
12	02-L-29-L-03-L-02	29.84	79.51	2601	29.87	79.46	1287	Tarag Gadhera River	8.53	
13	02-L-29-L-04	29.94	79.48	2092	29.92	79.42	1042	Ramganga River	7.90	



S.No	River Code	Origin Data			Confluence Data				Length Of the river (km.)
	Unique Identification Number	Co-ordinate		Ele (m)	Co-ordinate		Ele (m)	Confluence with	
		Lat	Long		Lat	Long			
14	02-L-29-L-04-01	29.97	79.48	2270	29.94	79.46	1322	Bimali Gadhera	6
15	02-L-29-L-04-02	29.90	79.50	2194	29.93	79.44	1145	Bimali Gadhera	7.43
16	02-L-29-L-05	30.03	79.37	2596	29.99	79.35	1276	Ramganga River	7.5
17	02-L-29-L-05-01	30.04	79.38	2931	30.00	79.35	1431	Suvru Gad	7.8
18	02-L-29-L-06	29.82	79.42	1276	29.88	79.36	1050	Ramganga River	10.2
19	02-L-29-R-05	29.94	79.30	1271	29.89	79.35	936	Ramganga River	12.1
20	02-L-29-R-06	29.92	79.30	1421	29.88	79.34	927	Ramganga River	7.41
21	02-L-29-R-07	29.90	79.29	1249	29.88	79.34	926	Ramganga River	6.1
22	02-L-29-R-08	29.87	79.29	1349	29.86	79.30	892	Ramganga River	1.99
23	02-L-29-R-09	29.99	79.13	1813	29.78	79.24	829	Ram Ganga	39.3
24	02-L-29-R-09-L-01	30.02	79.17	2604	29.97	79.16	1366	Bino Nadi	7.38
25	02-L-29-R-09-R-01	29.94	79.14	1670	29.90	79.23	955	Bino Nadi	11.8
26	02-L-29-R-09-R-02-R-01	29.96	79.13	1959	29.93	79.16	1102	Basola Gad	5.84
27	02-L-29-R-09-R-03	29.91	79.15	1572	29.86	79.22	919	Bino Nadi	10.7
28	02-L-29-R-09-R-04	29.86	79.13	1833	29.85	79.20	885	Bino Nadi	9.86
29	02-L-29-R-09-R-05	30.03	79.18	2773	29.90	79.23	955	Bino Nadi	19.6
30	02-L-29-R-09-R-05-R-02	29.96	79.27	1845	29.93	79.23	1025	Masangari	6.28
31	02-L-29-R-09-R-05-R-03	29.98	79.23	2204	29.94	79.22	1098	Masangari	5.3





APPENDIX II

RIVER UNIQUE IDENTITY CODE BASED ON ADMINISTRATIVE DELINEATION

RIVER UNIQUE IDENTITY CODE BASED ON ADMINISTRATIVE DELINEATION: RAMGANGA BASIN

S.No	River Code	Village/ Town Entry Data		Village/ Town Exit Data		Village/Town
	Unique Identification Number	Coordinates		Coordinates		
		Lat	Long	Lat	Long	
1	356-UK-11-XX-02-01	30.09	79.28	30.08	79.29	Sare Gwar
2	356-UK-11-XX-02-01	30.08	79.28	30.08	79.29	Kuneli Laga
3	356-UK-11-XX-02-01	30.07	79.28	30.07	79.28	Tal Gaon
4	356-UK-11-XX-02-01	30.06	79.28	30.06	79.28	Rikholi
5	356-UK-11-XX-02-01	30.08	79.28	79.25	79.26	Parwari
6	356-UK-11-XX-02-02	30.06	79.28	30.05	79.28	Kumoli
7	356-UK-11-XX-02-01	30.05	79.28	30.04	79.28	Ganwali
8	356-UK-11-XX-02-01	30.04	79.28	30.04	79.28	Gairsain
9	356-UK-11-XX-02-01	30.04	79.28	30.03	79.29	Pajaisera
10	356-UK-11-XX-02-01	30.03	79.28	30.03	79.29	Musaun
11	356-UK-11-XX-02-01	30.03	79.28	30.02	79.30	Sumon Malla
12	356-UK-11-XX-02-01	30.02	79.28	30.02	79.30	Mand
13	356-UK-11-XX-02-01	30.02	79.28	30.02	79.30	Sumerpur
14	356-UK-11-XX-02-01	30.02	79.28	30.02	79.31	Siman Talla
15	356-UK-11-XX-02-01	30.02	79.28	30.01	79.31	Agar Chetti
16	356-UK-11-XX-02-01	30.01	79.28	30.00	79.32	Rani Garhare Re-served Forest
17	356-UK-11-XX-02-01	30.00	79.28	29.99	79.32	Bisar
18	356-UK-11-XX-02-01	29.99	79.28	29.99	79.32	Mehal Chauri
19	356-UK-11-XX-02-01	29.99	79.28	29.98	79.32	RANGCHAUNA
20	356-UK-11-XX-02-01	29.98	79.28	29.98	79.33	Sarar
21	356-UK-11-XX-02-01	29.98	79.28	29.98	79.34	Sarar
22	356-UK-11-XX-02-01	29.98	79.28	29.97	79.35	Rani Garhare Re-served Forest
23	356-UK-11-XX-02-01	29.97	79.28	29.96	79.36	Pana
24	356-UK-11-XX-02-01	29.96	79.28	29.95	79.37	Malkot
25	356-UK-11-XX-02-01	29.95	79.28	29.95	79.37	Seda
26	356-UK-11-XX-02-01	29.95	79.28	29.95	79.39	Tewa Kharak
27	356-UK-11-XX-02-01	29.95	79.28	29.95	79.40	Naugaon Talla
28	356-UK-11-XX-02-01	29.95	79.28	29.95	79.41	Kot Khan
29	356-UK-11-XX-02-01	29.95	79.28	29.94	79.42	Timla Khan



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