



# Map Book of Raksirang Rural Municipality

Chainpur, Makwanpur, Bagmati Province, Nepal

Geographic Information System (GIS) | Map Book of Raksirang Rural Municipality



Raksirang Rural Municipality



Supported By:



Field Partners:



Hot Microgrant Recipient



Micrograntee: Rabi Shrestha, Yukesh Byanjankar, Prajwal Sharma



राक्सिराङ्ग गाउँपालिका  
Raksirang Rural Municipality  
गाउँ कार्यपालिकाको कार्यालय  
Office of the Rural Municipal Executive

Chainpur, Raksirang

✉ :- info@raksirangmun.gov.np  
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☎ :- ९८५५०७७६०१ (न्ययस)  
☎ :- 9855077601 (Chairperson)  
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☎ :- 9855088866 (C.A.O.)

पत्र संख्या / Ref.No :- 2078/079

च.नं./Dispatch No :- २७५१

बागमती प्रदेश, नेपाल  
Bagamati Province, Nepal

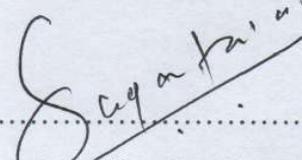
Date: 5/24/2022

### Note of Thanks

Data being a very core part of each initial stage of the development works. Availability of the data of the specific region is essential infrastructures one region must have. Geomatics Engineering Students of Kathmandu University has done a very astonishing work in preparing the datasets for the Raksirang Rural Municipality. I would like to congratulate Geomatics Engineering Student of Kathmandu University for successfully mapping and surveying the Raksirang Rural Municipality corners of land. Besides the COVID-19 pandemic, they managed to come to the field activities reaching multiple of household and taking a demographic survey.

I am thrilled with the work completion in such a short period of time by the students and happy to welcome every time with all the important efforts for the upliftment of the Raksirang community by contributing with mapping all the important infrastructures which shall directly or indirectly helping the development of the Raksirang Rural Municipality.

With such a difficult terrain, project team took the various geographical and demographic data. I hope this initiative would encourage their willpower to work more for the Rural Communities in upcoming days. I will always welcome and extend our hands for such good initiative in coming future. Lastly, I would like to congratulate the entire Project team and Geomatics Engineering Society for completing the project.

  
.....  
Dev Chandra Gartaula  
Chief Administrative Officer

Chief Administrative Officer

# FOREWORD



Open Mapping Hub  
Asia-Pacific

Nama Raj Budhathoki, Ph.D.  
Regional Director  
Open Mapping Hub, Asia-Pacific

I would like to congratulate the group of students from the Department of Geomatics at Kathmandu University for their incredible work in creating this Mapbook. The Mapbook makes Raksirang Rural Municipality and its Chepang Communities visible to the eyes of outsiders and decision-makers. In addition to the Mapbook, this project contributes to enrich OpenStreetMap data and advance Open Mapping movement in Nepal and the Asia-Pacific region.

Such projects provide students with an opportunity to connect classroom learning to the real world, and help them prepare for professional work after their graduation. I would encourage them to make use of similar other opportunities whenever available.

Finally, it is always a pleasure working with students and faculty at Kathmandu University. I look forward to expanding our collaboration in the future. There are plenty of opportunities for us to work together!



**Department of Geomatics Engineering**  
School Of Engineering,  
Kathmandu University, Dhulikhel, Kavre

**Dr. Subash Ghimire**  
Associate Professor and Head of Department,  
School of Engineering  
Department of Geomatics Engineering,  
Kathmandu University

## FOREWORD FROM HEAD OF DEPARTMENT

It's an honor as well as privilege to utilize this space to convey my message to everyone involved with the result of the Mapping Chepang Community, a map book that reflects the mapping activities of the "Chepang Community" over the Raksirang Rural Municipality. I feel proud of our departmental club, Geomatics Engineering Students for achieving the "Facebook HOT Community Microgrant 2021" from Humanitarian OpenStreetMap Team (HOT) and completing mapping the Chepang Communities. This noteworthy activity is done by them through the Geomatics Engineering Society (GES).

I have observed that, apart from their regular studies, students are always doing something different that ultimately contributes to their professional development and humanitarian sectors. I would also like to appreciate the project team for their hard work and dedication to achieve this milestone. I believe this project and their output which include map book and digital data would certainly be very informative and useful for accessing the data for the further analysis works. Finally, the entire GES members must be congratulated for their dedication and coordinated teamwork in producing such a wonderful and informative "Map Book".

I personally, as well as on behalf of the Department of Geomatics Engineering, would like to wish to continue such devotion towards professional development, which is indeed commendable and encouraging.



**Department of Geomatics Engineering**  
School Of Engineering,  
Kathmandu University, Dhulikhel, Kavre

Dr. Reshma Shrestha,  
Associate Professor  
School of Engineering  
Department of Geomatics Engineering,  
Kathmandu University

## FOREWORD

Being an academicians in the geoinformation domain and its application in various cross-cutting disciplines, ranging from urban planning to land management, including health and the environment, and many more, I am very enthusiastic to see the societal impact of the HOT microgrants project on “Mapping Chepang Community”.

A question that frequently arises in my mind is how geoinformation can be used to combat vulnerable groups. How to unpack the unheard voice through spatial information? The attempt to map indigenous nomad Chepang communities at Raksirang and Kailash Rural Municipalities is leading to answers to the particular questions.

As an advisor to this HOT micro grant project led by GES and a member of the Institute for Indigenous Affairs and Development’s advisory board, I believe I was able to assist in gathering ground data about the Chepang community. This, in fact, enriches the spatial information initially collected through Open Street mapping (OSM).

I believe that the various thematic spatial information collected by the team members, visiting 302 chepang households in two rural municipalities, is supportive evidence for further intervention that can be planned by the government as well as NGOS and INGOS, to improve the situation of Chepang communities. Essentially, thematic maps such as education, health and sanitation, food and drinking water, energy, and so on.

I congratulate the entire team members of GES society who are able to receive HOT microgrant and able to complete this project successfully. I am very hopeful for an impactful societal intervention in the near future for the Chepang community, which definitely will be based upon the collected Chepang Geo data.

Best Wishes Ahead!!!



**Department of Geomatics Engineering**  
School Of Engineering,  
Kathmandu University, Dhulikhel, Kavre

Uma Shankar Panday  
Assistant Professor  
Department of Geomatics Engineering,  
School of Engineering  
Kathmandu University

## FOREWORD

Poor availability of spatial data is a harsh reality in Nepalese rural communities such as Chepang communities. I must appraise the team of Geomatics Engineering students from Kathmandu University for their quest to work for such communities by utilizing the knowledge, skills, and tools they have obtained during their studies for contributing to society. I am delighted to learn that the Geomatics Engineering Society (GES), the departmental club of the Department of Geomatics Engineering at Kathmandu University has secured HOT Facebook Community Microgrant for mapping Chepang Communities in Nepal.

I am amused to see that the mapping activities were smoothly carried out in Raksirang Rural Municipality, Makwanpur District despite the COVID-19 restrictions. The data collection in remote villages was not without challenges. I know that the project team worked very hard to achieve what they had dreamed. I believe their contribution to the municipality, development planner, and the open data community will be instrumental. I trust the GES and Geomatics students will keep utilizing their knowledge and skills for the betterment of the Nepalese society in the future and will inspire others to apply their knowledge unconventionally.

I would like to congratulate the GES, the department, and the project team on completing the project. I extend my best wishes and complete support for innovative works in the coming days too.



**Department of Geomatics Engineering**  
School Of Engineering,  
Kathmandu University, Dhulikhel, Kavre

Sudeep Kuikel  
GES President 2019/20  
Teaching Assistant  
Department of Geomatics Engineering  
School of Engineering  
Kathmandu University

## FOREWORD

It is my honor to express my few words in this “MapBook” as an Advisor of this project and also former President of Geomatics Engineering Society(GES). I’m glad with my hard working and active Executive Committee 2019/20 who achieved this project from Humanitarian OpenStreetMap Team(HOT) during my reign as president.

During the span of Project, I am glad that I could help the “Chepang Mapping Team” with the knowledge, experience and support that I could aid. I trust the team, their objective in this project and work execution to make their objective come true. I as an advisor feel happy and satisfied when students of Department of Geomatics Engineering, Kathmandu University are working to bring positive changes in the society with the knowledge they acquire during their educational career. Through all the thick and thin, this team led by Mr. Rabi Shrestha executed their work and demonstrated that we are also capable and competent to work on various projects from early university life.

I would like to congratulate the GES, the Department of Geomatics Engineering, and the project team on completing the project and making an impact. I am also hopeful that GES will apply the Geospatial knowledge to uplift the communities in near future as well. I extend my best wishes and complete support for innovative works in the coming days too. “Alone we can do so little; together we can do so much.”

Long live GES.



Open Mapping Hub  
Asia-Pacific

Mikko L. Tamura  
Regional Community Manager  
Open Mapping Hub Asia Pacific  
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## FOREWORD

The role and significance of maps and map data for humanitarian impact has been increasing in recent years. Maps provide us with crucial insight about physical and human landscapes that allow communities, decision-makers, and policy-makers to make informed decisions.

In 2021, the Facebook Community Impact Microgrants, with the partnership of the Humanitarian OpenStreetMap Team, was launched to implement three (3) open mapping projects in the Asia Pacific region to empower and catalyze local OSM communities and groups to utilize mapping to create impacts in their societies.

Among the three projects selected, Geomatics Engineering Society from Kathmandu University led the mapping of areas home to historically indigenous Chepang communities in Nepal. Through mapping these areas, they were able to alleviate the issues being faced by these indigenous communities to policymakers, government bodies, and a wide global network. The data collected and mapped are presented in this Map Book.

The Map Book, consisting of 36 maps, represents the hard work and dedication of the GES community members, students, faculty, and the OSM Nepal community to demonstrate how maps can be used as tools to change the lives of the most marginalized and vulnerable. Furthermore, aside from being a collection of visual representations of spatial data, this document is a testament of the great potential of students and the youth to change the world.

As I look at this book, I am filled with immense pride and respect for this young team that has spent months on end to take on the challenge of supporting one of the most vulnerable communities in Nepal. I am certain that this map book is not a culmination of this initiative - but merely the start of more meaningful ventures this young team will embark on. I look forward to supporting more creative and world-changing ideas! More power!

## FOREWORD FROM THE PROJECT LEAD



**Department of Geomatics Engineering**  
School Of Engineering,  
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Rabi Shrestha  
Project Lead,  
Secretary 2019/20, Geomatics Engineering  
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Kathmandu University, Dhulikhel  
Data Quality Intern & Voting Member-HOT  
Email: frozenrabi28@gmail.com

I feel extremely delighted and honored to serve as a project lead on our deservedly received Humanitarian OpenStreetMap Team(HOT) Microgrant 2021. It is a matter of extreme privilege to lead a team of 13 other dynamic members to pursue our objective of “Mapping Indigenous Chepang Communities” of Makwanpur district. I felt extremely energized when I get support of our respected advisors from Department of Geomatics Engineering, Kathmandu University, Geomatics Engineering Society(GES) and Open Asia Pacific Hub. The journey from drafting an idea for microgrant and making it happen, impacting the chepang community by comprising team of advisors, GES, students, NGO/INGO, Government organization, local stakeholders is itself a huge task. And I am glad that we were able to accomplish our targeted goals by awakening the local government, involving various stakeholders and activating various OpenStreetMap(OSM) communities in Nepal. We can proudly say that in this project we left no stone unturned to help add the Raksirang Rural Municipality on map and making an positive impact in the community. This tremendous team effort of remote mapping, validation, field survey, data collection and Geographic Information System(GIS) map book preparation would have been impossible without the joint collaboration and effort of my entire team and various stakeholders.

Being a GES executive member 2018/19 and Secretary 2019/20, I had always supported and actively participated in various club activities, trainings and conferences. This Microgrant is the recognition of all that hardwork. I would like to support and hope GES members would knock new horizons of such projects and sets itself as a benchmark of accomplishments of similar projects and opportunities in near future. Lastly, I would like to take a moment and thank our advisor panel Dr. Subash Ghimire, Dr. Reshma Shrestha, Mr. Uma Shankar Panday and Mr. Sudeep Kuikel, Regional Director of Asia Pacific Hub-Dr. Nama Raj Budhathoki and community manager Mikko Tamura, GIS Analyst Mr. Naresh Shrestha and my supportive project partners Mr. Yukesh Byanjankar and Mr. Prajwal Sharma. Also, a special thanks to Youthmappers Fellowship team Ms. Shraddha Sharma and Mr. Saurav Gautam for the collaboration to work together. Thank you all!

## FOREWORD FROM THE PROJECT CO LEAD



**Department of Geomatics Engineering**  
School Of Engineering,  
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Yukesh Byanjankar  
Project Co-Lead,  
Vice President-2019/20, Geomatics Engineering Society  
Department of Geomatics Engineering,  
School of Engineering  
Kathmandu University  
Email: Benzyukays@gmail.com

Co-leading the “Mapping Indigenous Chepang Communities” project is one of my greatest achievements. This project has experienced many ups and downs through the waves of Covid-19. Although it was difficult to work in such a strenuous situation, we were able to complete the mapping and fieldwork in Raksirang Rural Municipality. The mapping of Chepang communities would not have been possible without the continuous support from our advisors, seniors, enthusiastic volunteer’s, students majorly from Kathmandu University and different parts of the Nepal.

Mapping Chepang Communities has encouraged me to work on the open data and I realized the fact that the work of this project shall serve as the base data for the Raksirang Rural Municipality for the development work. The project region being harsh to work in due the difficulties in roads, un built infrastructure, poorly developed and illiterate people. The field mapping through such difficult terrain and harsh COVID situation, our team of 12 members were able to track more than 600 km of GPS and reach out to 300+ Chepang households, 14 governmental, 37 educational institutions, 14 financial institutions, health facilities and cultural points.

Moreover, I feel delighted as this project has initiated to create the OSM benchmark at Kathmandu University and to the different students to work furthermore on the open data. This project has worked as foundation to those students who wants to pursue their education in the open data and dig deeper into the horizon of OSM. I must not forget to mention the hopes and marks this project has left to every student at Kathmandu University at the time receiving the HOT Microgrant 2021 and now completing it altogether.

Finally, I would like to recall all the hard-working time that the team and all the members has contributed to the completion of this project, without it the project was almost impossible. But, with the greatest support from our Advisors Dr. Subash Ghimire, Dr. Reshma Shrestha, Mr. Uma Shankar Panday and Mr. Sudeep Kuikel, Regional Director of Asia Pacific Hub- Dr. Nama Raj Budhathoki and Community Manager Mikko Tamura, and my dear project partners Mr. Rabi Shrestha and Mr. Prajwal Sharma, Youthmapper Fellowship team Mr. Saurav Gautam and Ms. Shradha Sharma, this project is accomplished leaving the high base point for all the OSM enthusiasts.

Thank you Humanitarian OpenStreetMap Team (HOT) for this wonderful experience!

# FOREWORD FROM THE MAPATHON ANALYST



**Department of Geomatics Engineering**  
School Of Engineering,  
Kathmandu University, Dhulikhel, Kavre

Prajwal Sharma, Mapathon Analyst  
Department of Geomatics Engineering,  
School of Engineering  
Kathmandu University  
Email: [pjlsharma14@gmail.com](mailto:pjlsharma14@gmail.com)

I am delighted to be part of Humanitarian OpenStreetMap Team(HOT) Microgrant 2021 as a mapathon analyst. It's been a great journey throughout the project working with a group of people. The main aim of our project is to map the chepang community and make them visible in map, with the support of HOT and other helping hands I think we are able to do so. This project helps me as well as my time to analyze the chepang communities from hawk eyes views.

Mapping chepang community is itself a huge task. I would like to thank a team of advisors, GES, students, NGO/INGO, Government organization, local stakeholders for the support throughout the project. From this project I can proudly said that we are able to make a pragmatic impact in the lives of chepang communities. From this project we are able to bring the revolution in OSM in Kathmandu University as well as students from different colleges. This is a sign than if students gives an opportunity earlier in there carrier they can deliver it in impactful manner.

I would like to thank GES for trusting us to carry out this project as well as Department of Geomatics engineering, Regional Director of Asia Pacific Hub- Dr. Nama Raj Budhathoki and community manager Mikko Tamura, and my beloved project partners Mr. Yakesh Byanjankar and Mr. Rabi Shrestha for the successful completion of the project.



INSTITUTE FOR INDIGENOUS  
AFFAIRS AND DEVELOPMENT

Bishwash Chepang, Chairperson  
Institute for Indigenous Affairs and Development (IIAD)  
Buddhanagar, Kathmandu

## FOREWORD

It gives us immense pleasure to thank the Geomatics Engineering Society (GES) of Kathmandu University for mapping out the GIS of Raksirang, Kailash & Manahari Rural Municipalities where mostly Chepang community resides. I am sure this information will be useful for researchers, development partners, and government agencies who are willing to work in these areas and with Chepang communities.

Despite several challenges including COVID-19 and difficult geographical terrain, GES efficiently carried out the survey. Institute for Indigenous Affairs and Development (IIAD) is glad to be a partner of GES to facilitate field work and look forward to future collaborations to contribute to indigenous people and research areas in Nepal.

Thank you to Rabi Shrestha, Yukesh Byanjankar & Prajwal Sharma and Professor Reshma Shrestha for enabling the collaboration between GES and IIAD.

# FOREWORDS FROM THE PRESIDENT OF GES



Geomatics Engineering Society  
Department of Geomatics Engineering

Manisha K.C.  
President, Geomatics Engineering Society  
Kathmandu University, Dhulikhel  
Email: kc.manisha02@gmail.com

To the Reader of this Work,

Realizing big ideas, inspiring and nurturing revolutionary approaches, learning new things about ourselves, and advancing our community, our city, and our country through mapping as an outcome is an insight of “Mapping Chepang Community”.

It gives me immense gratification to pen my thoughts and share them with our spectrum of readers about a map book that ponders the mapping activities of the Chepang Community over the Raksirang Rural Municipality. It’s a matter of pride for all members of Geomatics Engineering Society(GES), a departmental club of Geomatics Engineering, Kathmandu University, for successfully being able to achieve the “Facebook HOT Community Microgrant 2021” from the Humanitarian OpenStreetMap Team (HOT) and a timely accomplishment of the project.

Working together, looking out for each other, and lifting each other, the project team has personified that being at a student level, a great change can be made in the humanitarian sector through mapping which not only uplifts the indigenous community but also the club as well as their personal development. I truly appreciate the hard work and ingenuity shown by the team and I feel so proud to have the privilege to work with every individual. They have worked tirelessly to develop and implement ways to support their members and help sustain their academic progress along with the local communities. As GES plays a crucial role in determining and channelizing students’ passion and interest, offering limitless opportunities for student leadership and participation much beyond their academic pursuit, this project has helped its members to enrich their knowledge from the OSM perspective and I commend everyone for being flexible and patient under some stressful circumstances. The strength and persistence of this team put me out of words. This project has all of the hallmarks of a great mapping and I feel that the map book, as well as all of the digital data acquired from the field, would be extremely useful and informative for future research.

Being a proud president, I would like to heartily congratulate the entire GES team, especially the project team on the behalf of GES for their commendable work, patience, cooperation, and dedication to flourishing the project and producing the very needed and enlightening “Map Book”. I wish GES to welcome many more awaiting remarkable projects and achievements in the upcoming year.

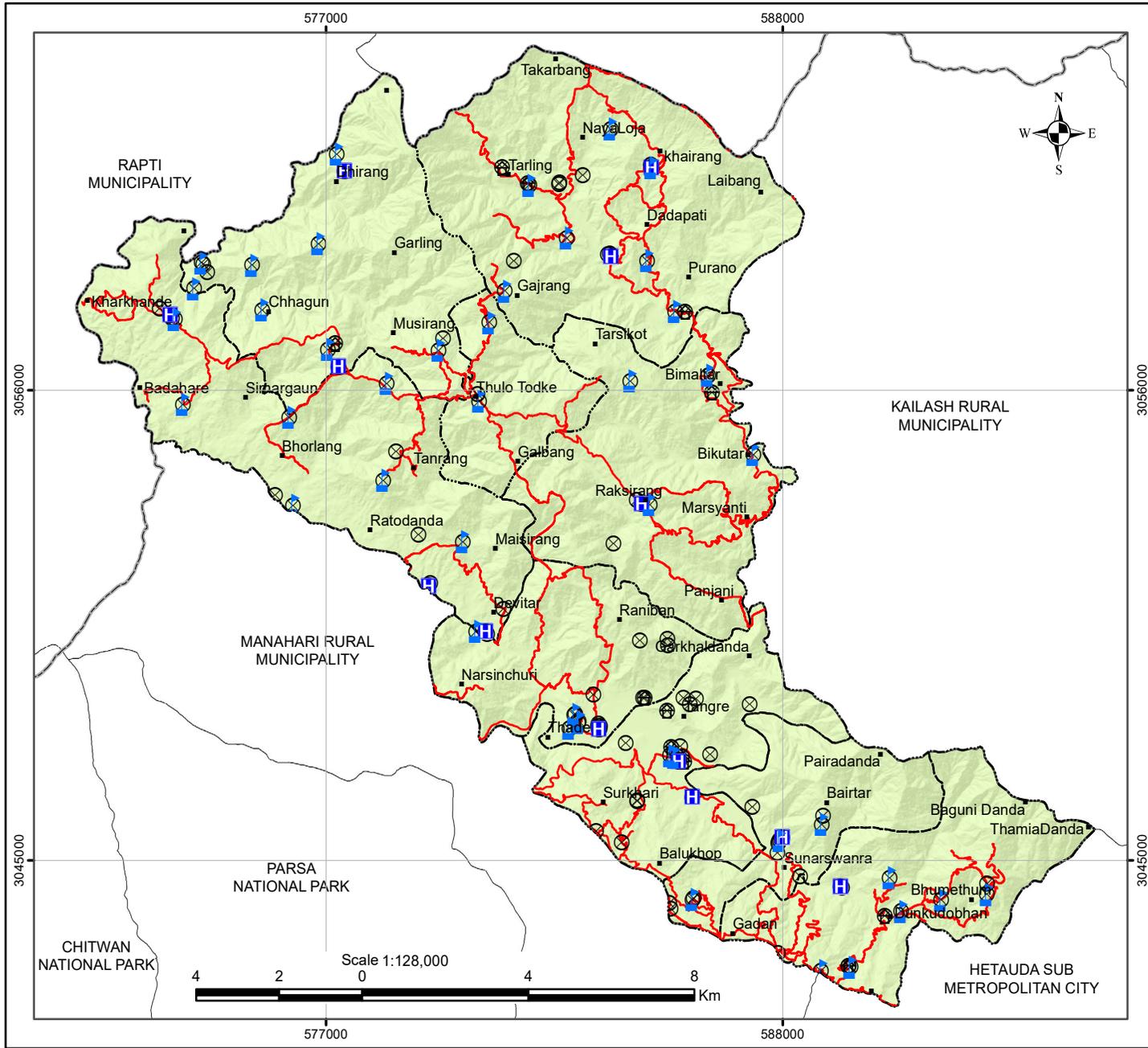
# Table of Content

1. Location Map	1
2. Administrative Map	2
3. Existing Infrastructure Map	3
4. Household Distribution Map	4
5. Existing Agriculture Map	5
6. Population Density Map	6
7. Population Distribution Map	7
8. River Channel Map	8
9. Forest Resource Map	9
10. Geology Map	10
11. Distribution of Government Office Map	11
12. Distribution of Health Post Map	12
13. Distribution of School Map	13
14. Digital Elevation Model Map	14
15. Road Network Map	15
16. Slope Map	16
17. Land Use Map	17
18. Land Use Map (Ward 1-9)	18-26
19. Existing Infrastructure Map(Ward 1-9)	27-35
20. Results	36-37

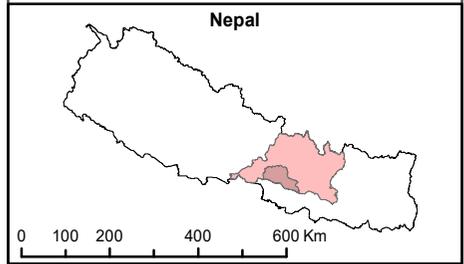
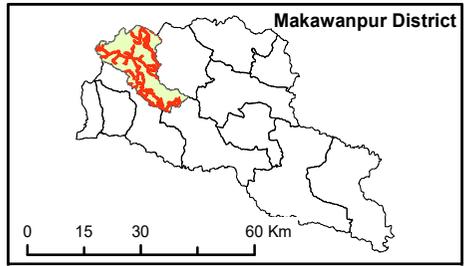
RAKSIRANG RURAL MUNICIPALITY

LOCATION MAP

BAGMATI PROVINCE  
DISTRICT: MAKAWANPUR



Data Source: Boundary from Survey Department, Google satellite image, OSM and Field Verification



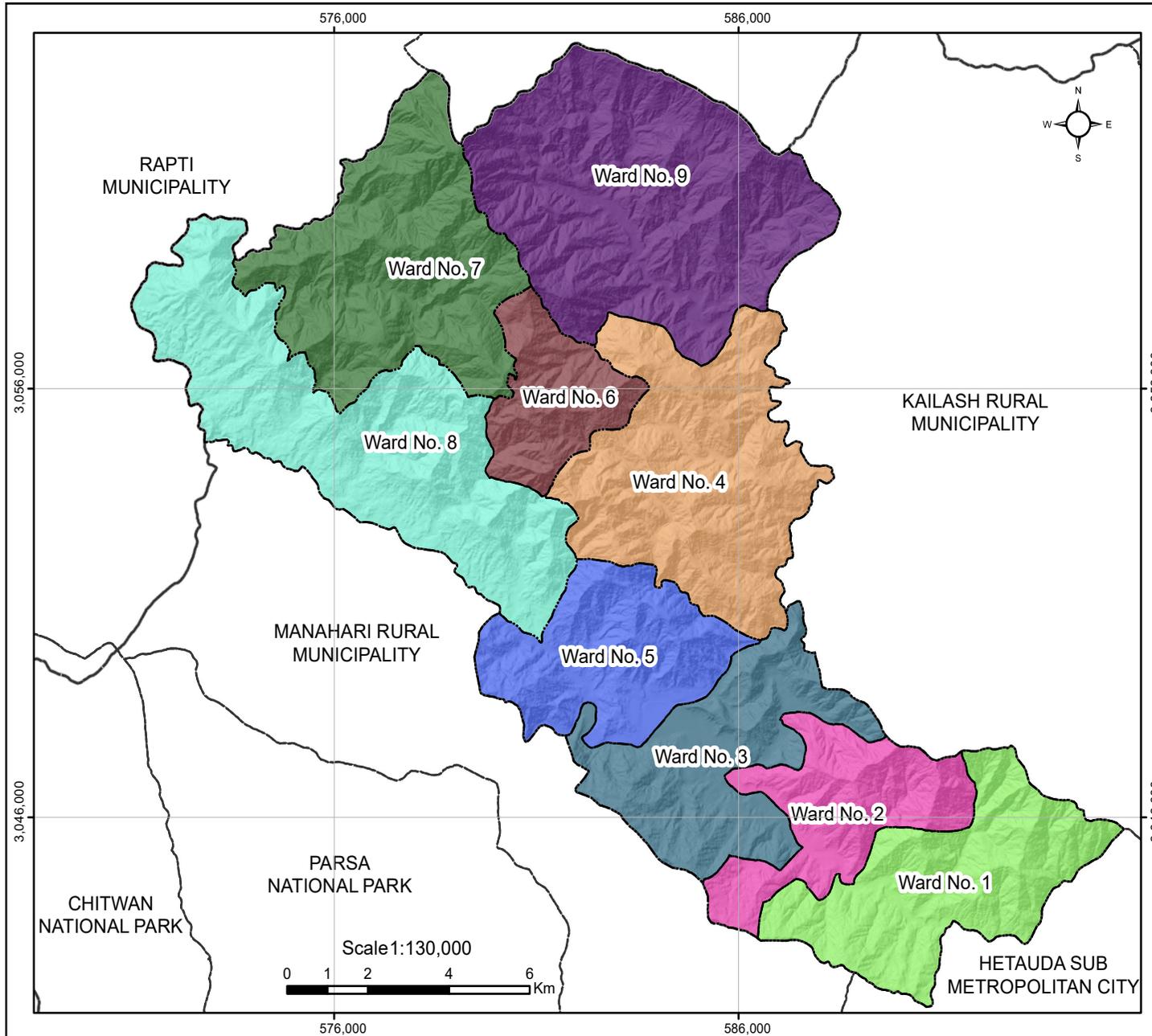
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 False Easting: 500,000 M  
 False Northing: 0 M  
 Central Meridian: 84° E  
 Scale Factor: 0.9999  
 Latitude Of Origin: 0°  
 Units: Meter

**Legend**

■ Settlement	— River
🏫 School	--- Ward Boundary
🏥 Health Institution	--- RM/Municipality Boundary
🏠 Religious Place	--- District Boundary
⊗ Police Station	--- Province Boundary
— Road	--- International Boundary

This project is lead by the Geomatics Engineering Society of Kathmandu University under the support of the 2021 Facebook Community Impact Microgrants, the Humanitarian Open StreetMap Team, and the Open Mapping Hub Asia Pacific





Administrative Boundaries gives administrative areas that show voting districts, redistributions, zoning, socio-economic analysis, regional planning, service distribution and local and state government boundaries.

**Legend**

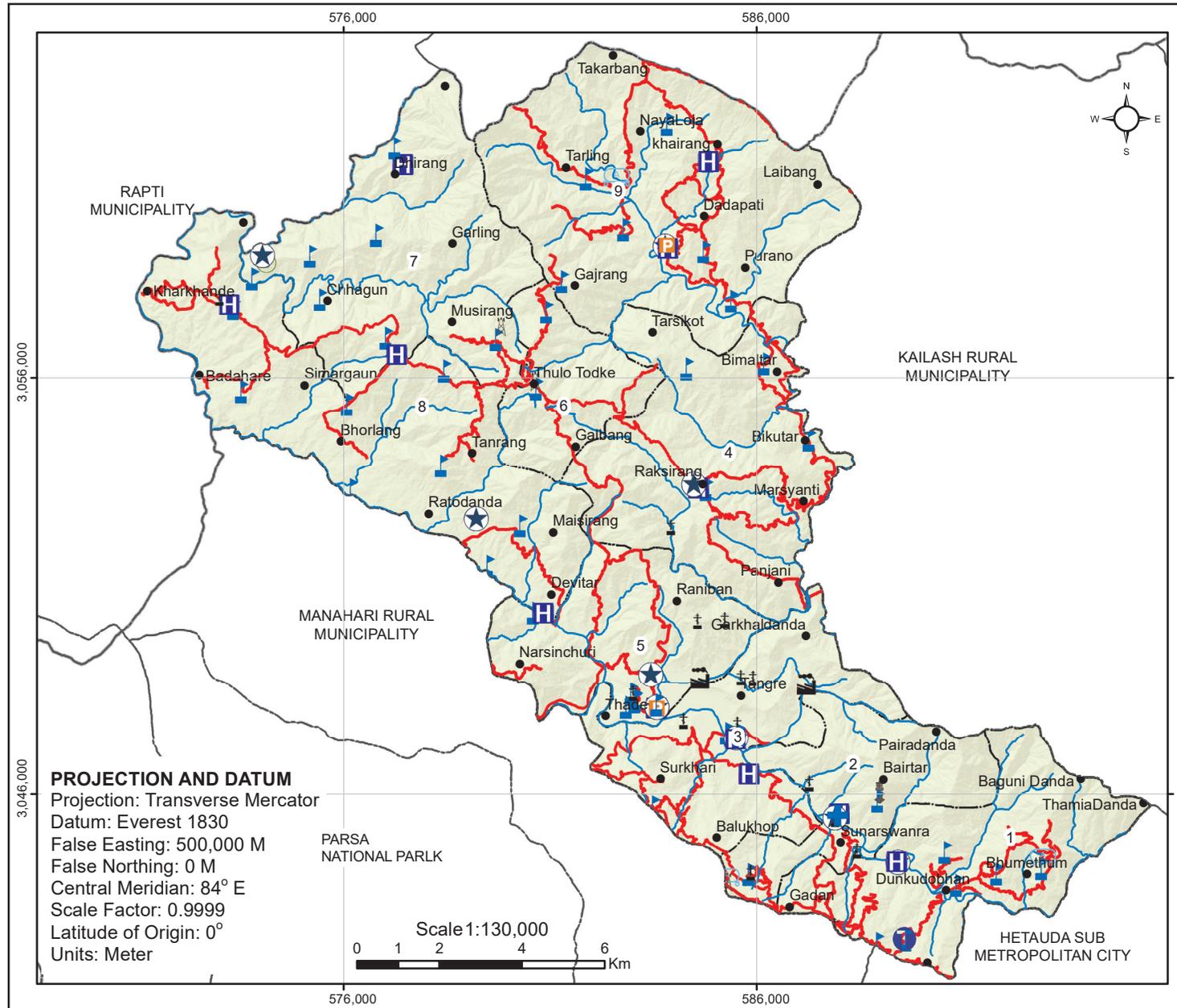
- Ward Boundary  4
  - RM/Municipality Boundary  5
  - District Boundary  6
- Ward**
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  - 8
  - 9

**PROJECTION AND DATUM**

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The basic physical and organizational structures and facilities (e.g. buildings, roads, power supplies) needed for the operation of a society or enterprise.

### Legend

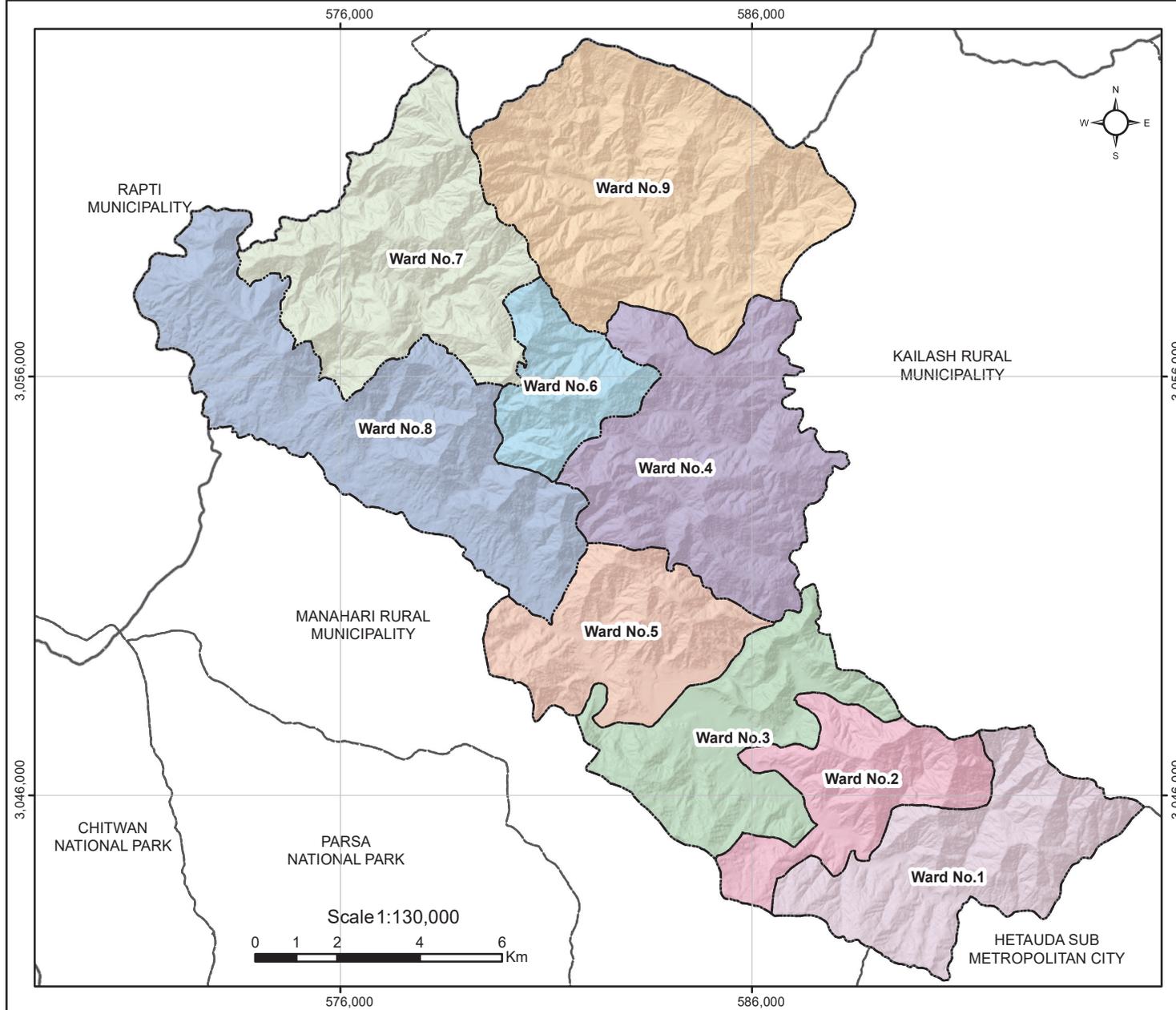
● Settlement	🏠 Hotel
🏛️ Institution	🏭 Industry
🚰 Bridge	⚕️ Medical
🚌 Bus Park	🌳 Park
⛪ Church	🎡 Play Ground
📶 Communication	🚔 Police Post
★ Community	🎓 School
🔄 Cooperative	🛢️ Tank
🏛️ Government Office	🗼 Tower
🏠 Health Post	🗼 View Tower

— Road
— River
- - - Ward Boundary
- - - RM/Municipality Boundary
- - - District Boundary

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Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



**Legend**

- Ward Boundary
- RM/Municipality Boundary
- District Boundary

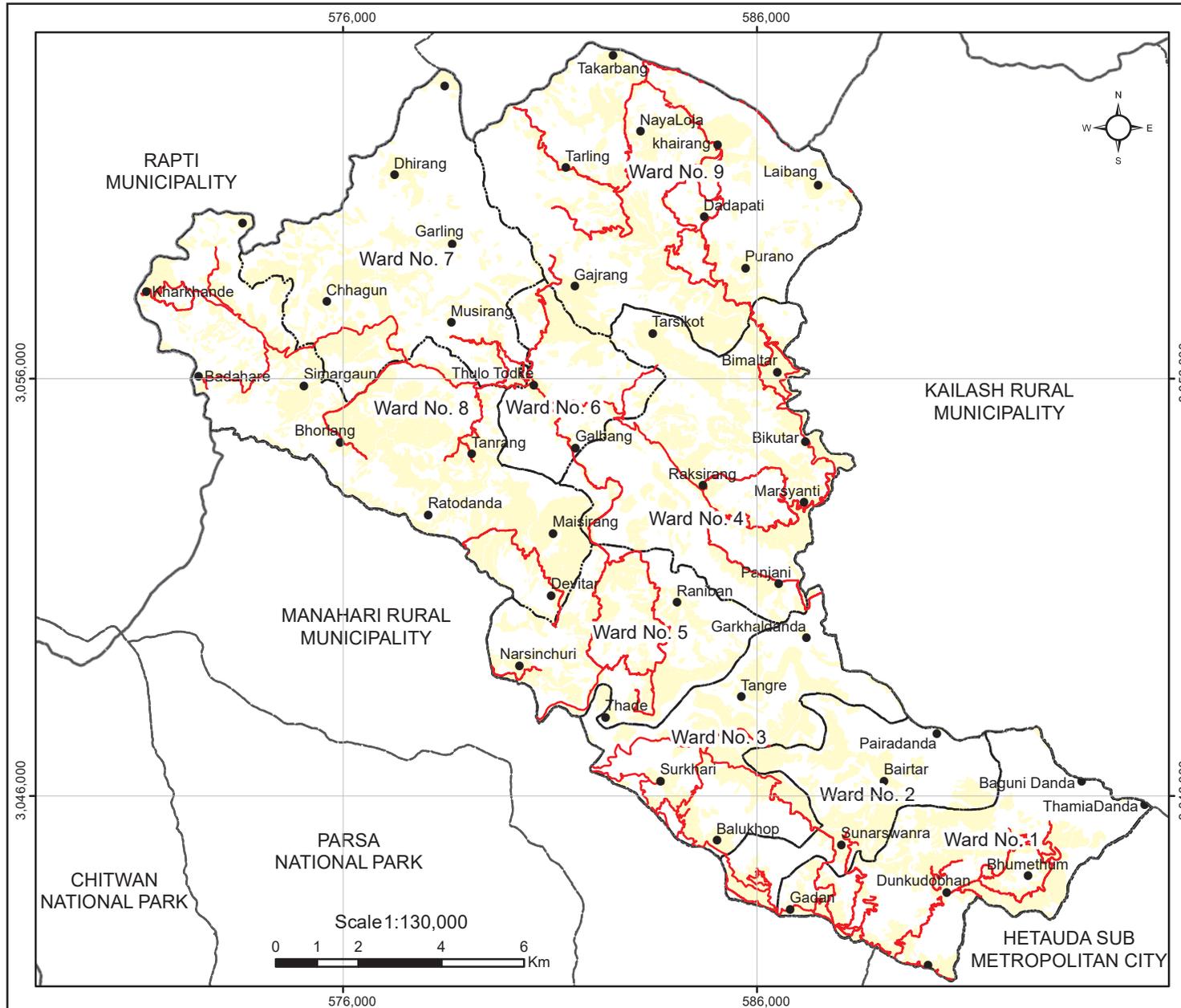
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Data Source: Boundary from Survey Department and Raksirang RM Profile 2074



Agricultural land is defined as the land area that is either arable, under permanent crops, or under permanent pastures. Arable land includes land under temporary crops such as cereals, temporary meadows for mowing or for pasture, land under market or kitchen gardens, and land temporarily fallow.

**Legend**

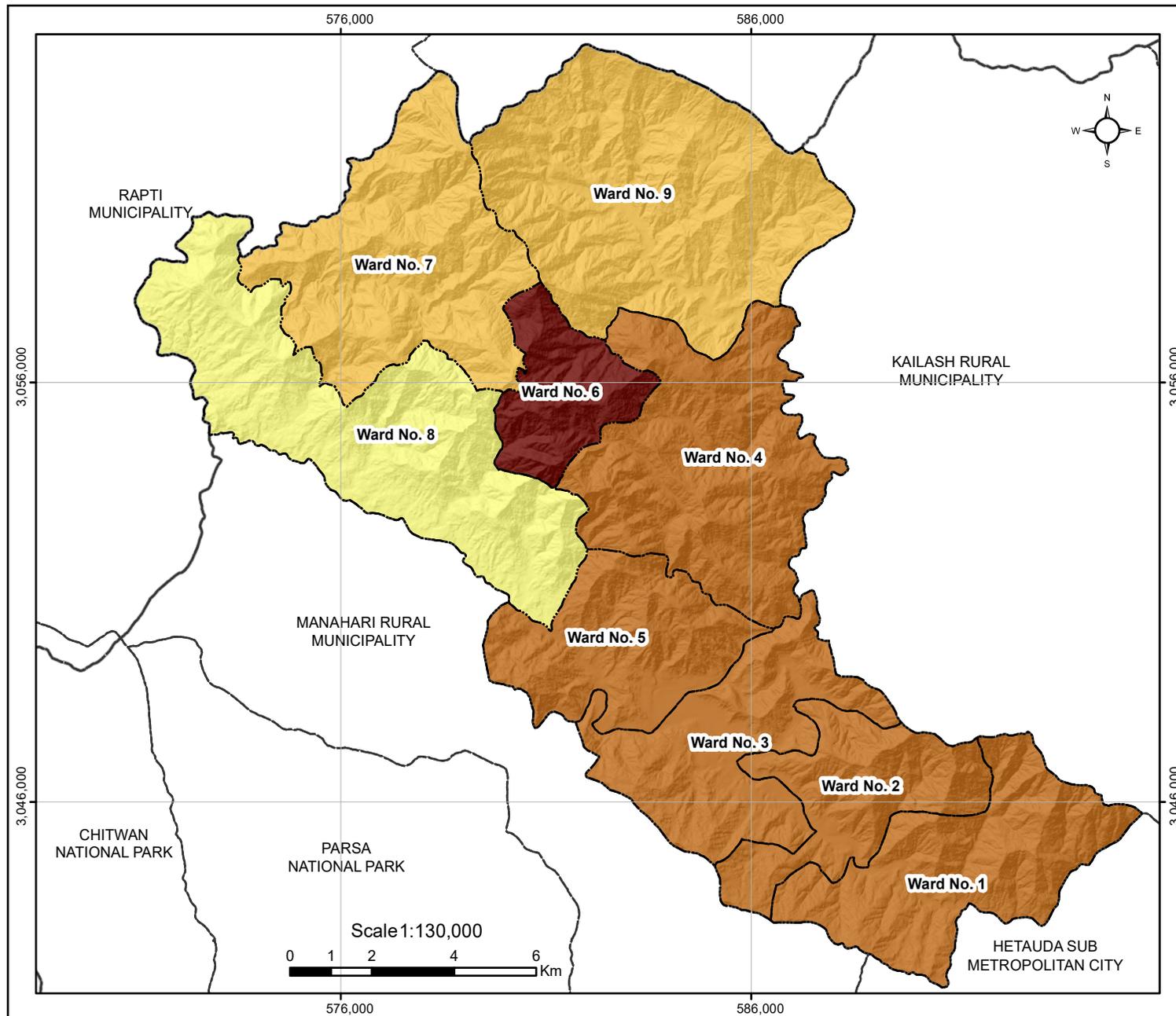
- Settlement
- Road
- - - - Ward Boundary
- - - - RM/Municipality Boundary
- District Boundary
- Agriculture

**PROJECTION AND DATUM**  
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Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



Population density is the number of people per unit of area, usually quoted per square kilometer or square mile. It is frequently applied to living organisms and most of the time to humans. It is a key geographical term.

**Legend**

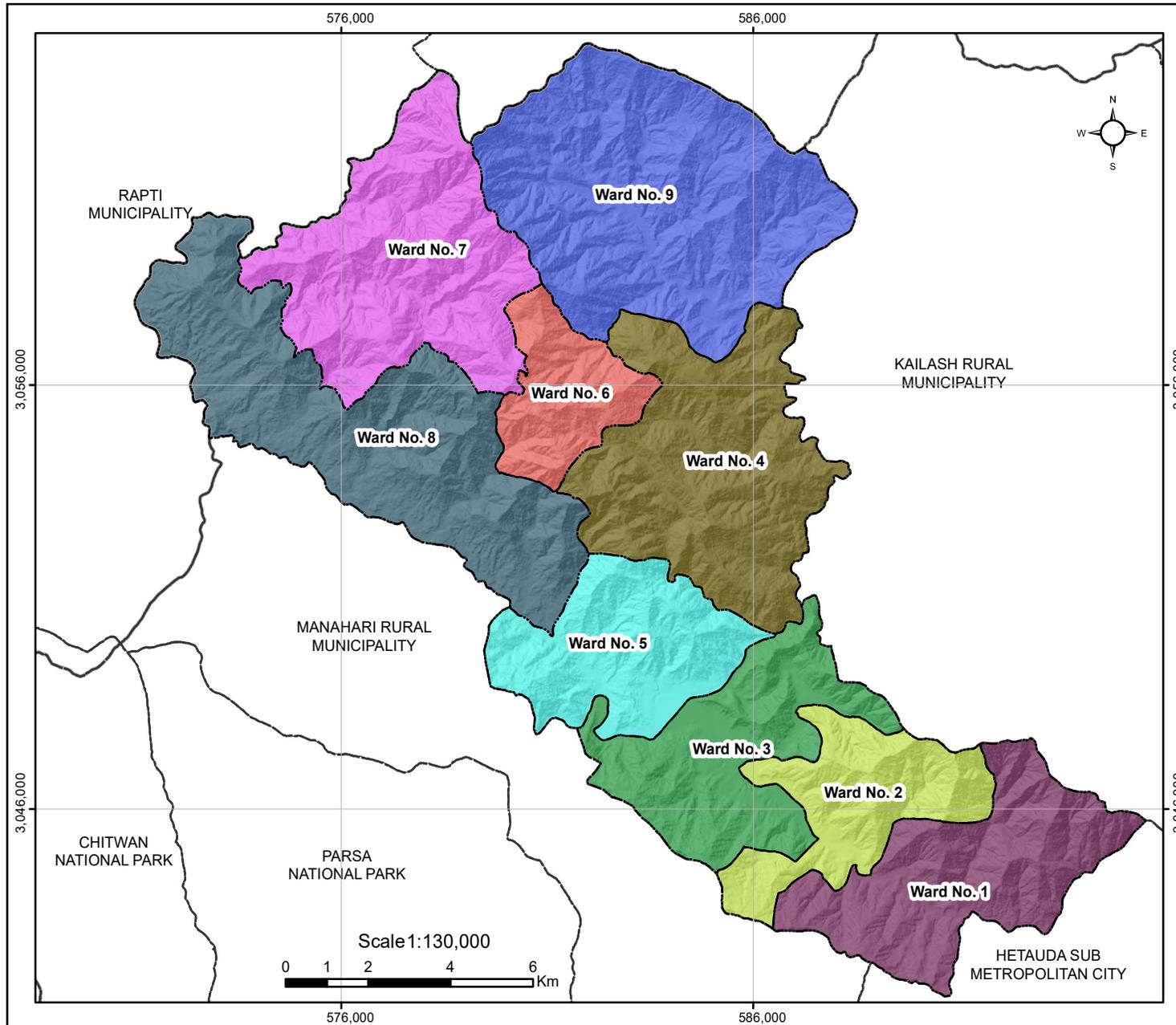
- Ward Boundary
  - RM/Municipality Boundary
  - District Boundary
- Popn Density/SqKM**
- <50
  - 50-100
  - 100-200
  - >200

**PROJECTION AND DATUM**

Projection: Transverse Mercator  
 Datum: Everest 1830  
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The way in which people are spread across a given area is known as population distribution.

**Legend**

- Ward Boundary
- RM/Municipality Boundary
- District Boundary

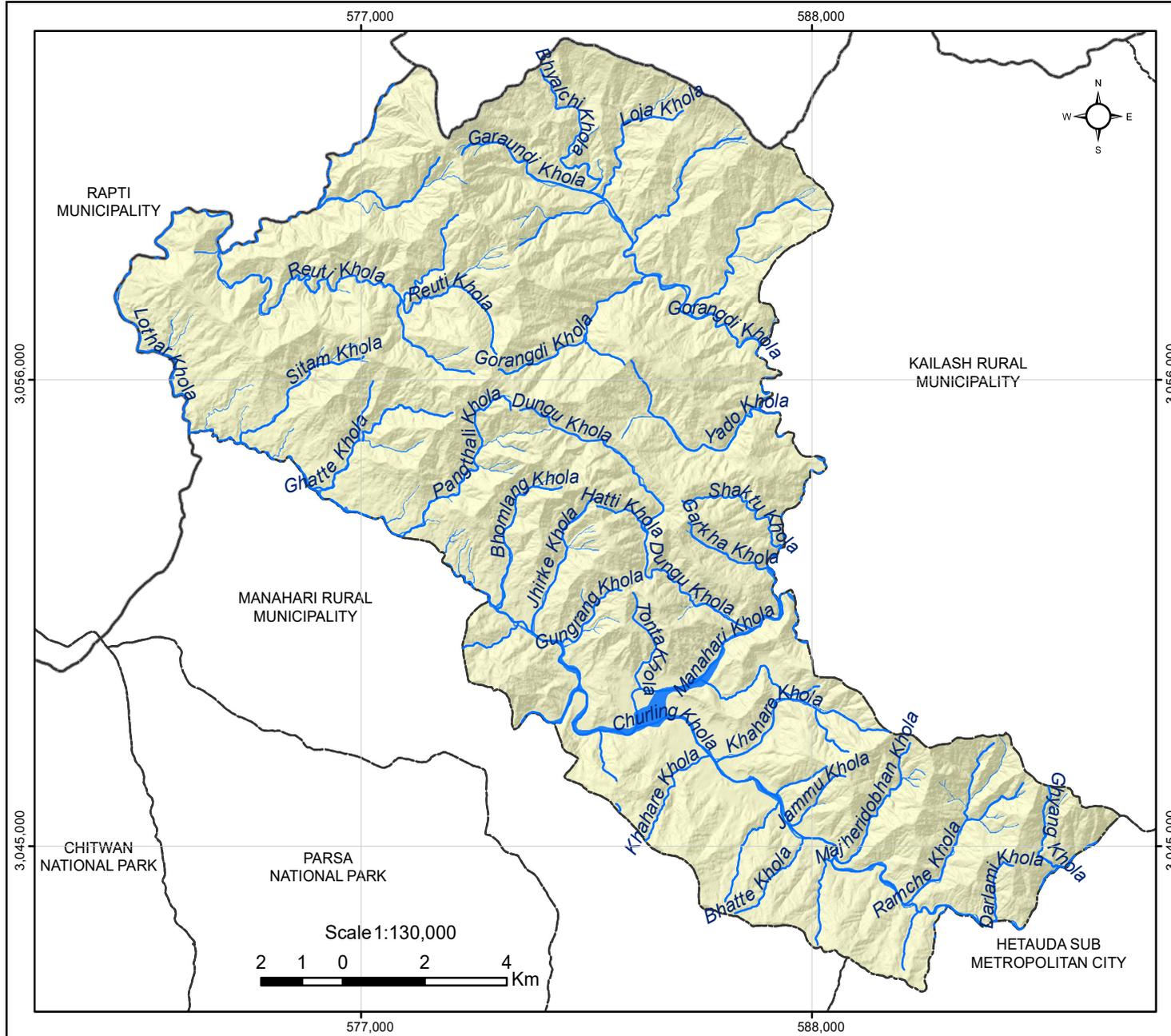
Population	
<span style="color: cyan;">■</span>	3453
<span style="color: magenta;">■</span>	2544
<span style="color: blue;">■</span>	3634
<span style="color: yellow;">■</span>	2819
<span style="color: purple;">■</span>	3670
<span style="color: grey;">■</span>	2986
<span style="color: brown;">■</span>	4037
<span style="color: red;">■</span>	3275
<span style="color: green;">■</span>	4412

**PROJECTION AND DATUM**

Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
 False Northing: 0 M  
 Central Meridian: 84° E  
 Scale Factor: 0.9999  
 Latitude of Origin: 0°  
 Units: Meter

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A drainage basin is any area of land where precipitation collects and drains off into a common outlet, such as into a river, bay, or other body of water.

**Legend**

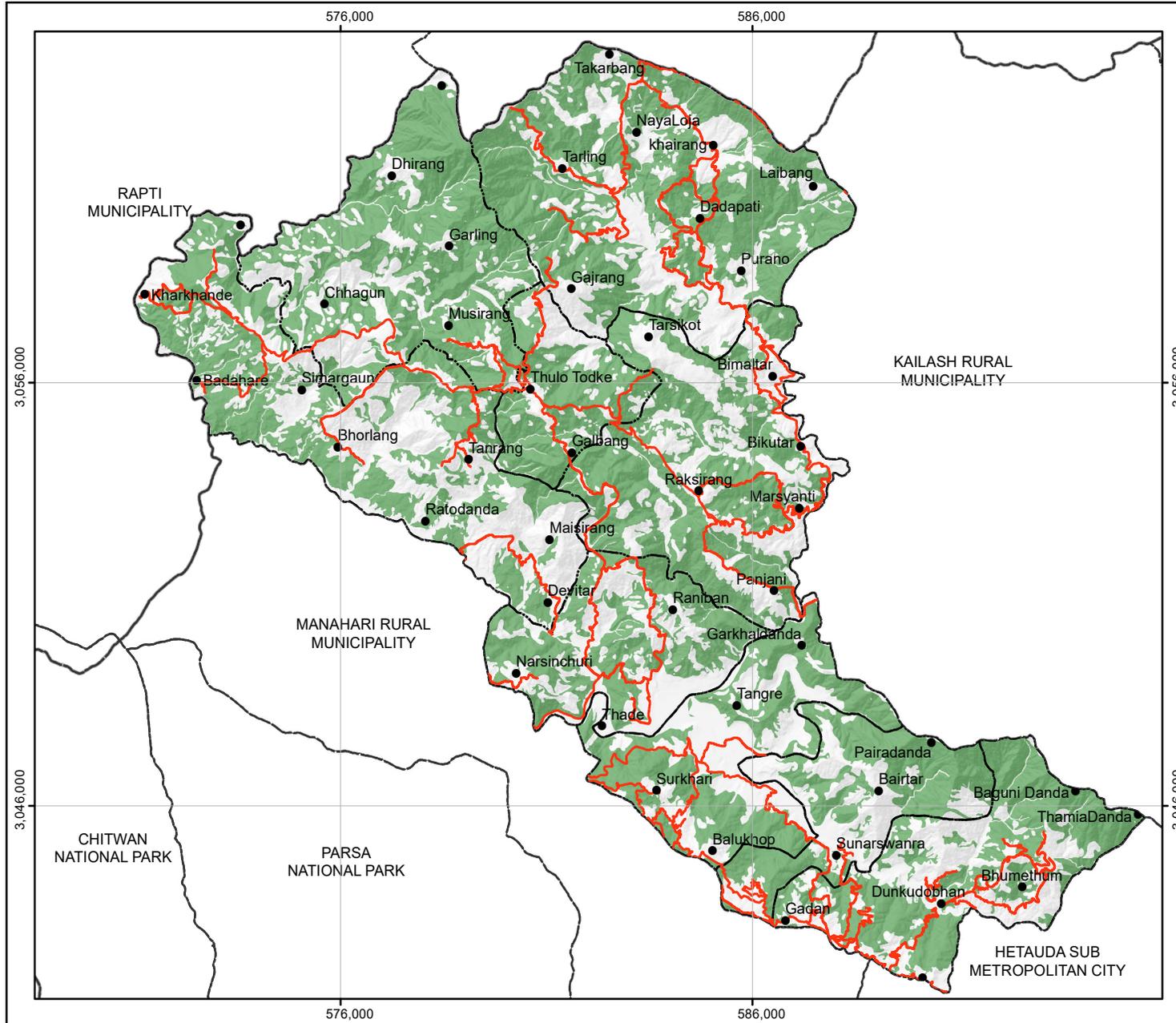
-  River
-  RM/Municipality Boundary
-  District Boundary
-  Riverine & Lake

**PROJECTION AND DATUM**

Projection: Transverse Mercator  
Datum: Everest 1830  
False Easting: 500,000 M  
False Northing: 0 M  
Central Meridian: 84° E  
Scale Factor: 0.9999  
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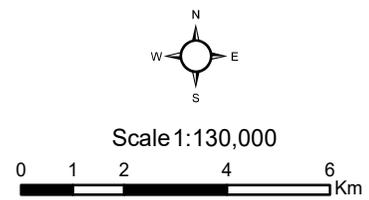




**Legend**

- Settlement
- Road
- - - - Ward Boundary
- RM/Municipality Boundary
- District Boundary
- Forest

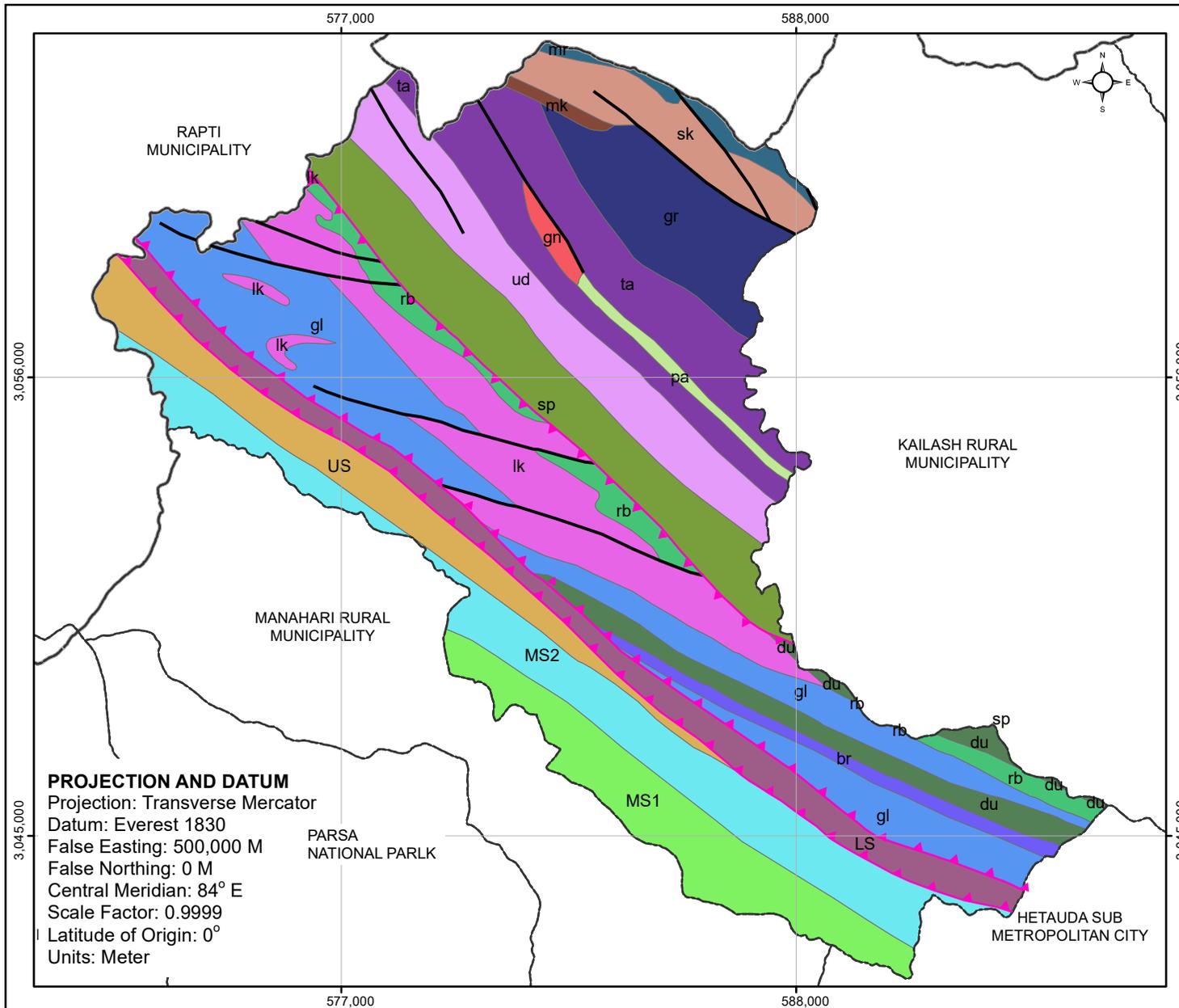
**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
 False Northing: 0 M  
 Central Meridian: 84° E  
 Scale Factor: 0.9999  
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 Units: Meter



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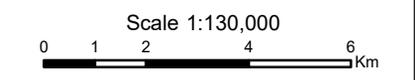
Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



Geology is an earth science concerned with the solid Earth, the rocks of which it is composed, and the processes by which they change over time. Geology describes the structure of the Earth beneath its surface and the processes that have shaped that structure. It also provides tools to determine the relative and absolute ages of rocks found in a given location, and also to describe the histories of those rocks.

**Legend**

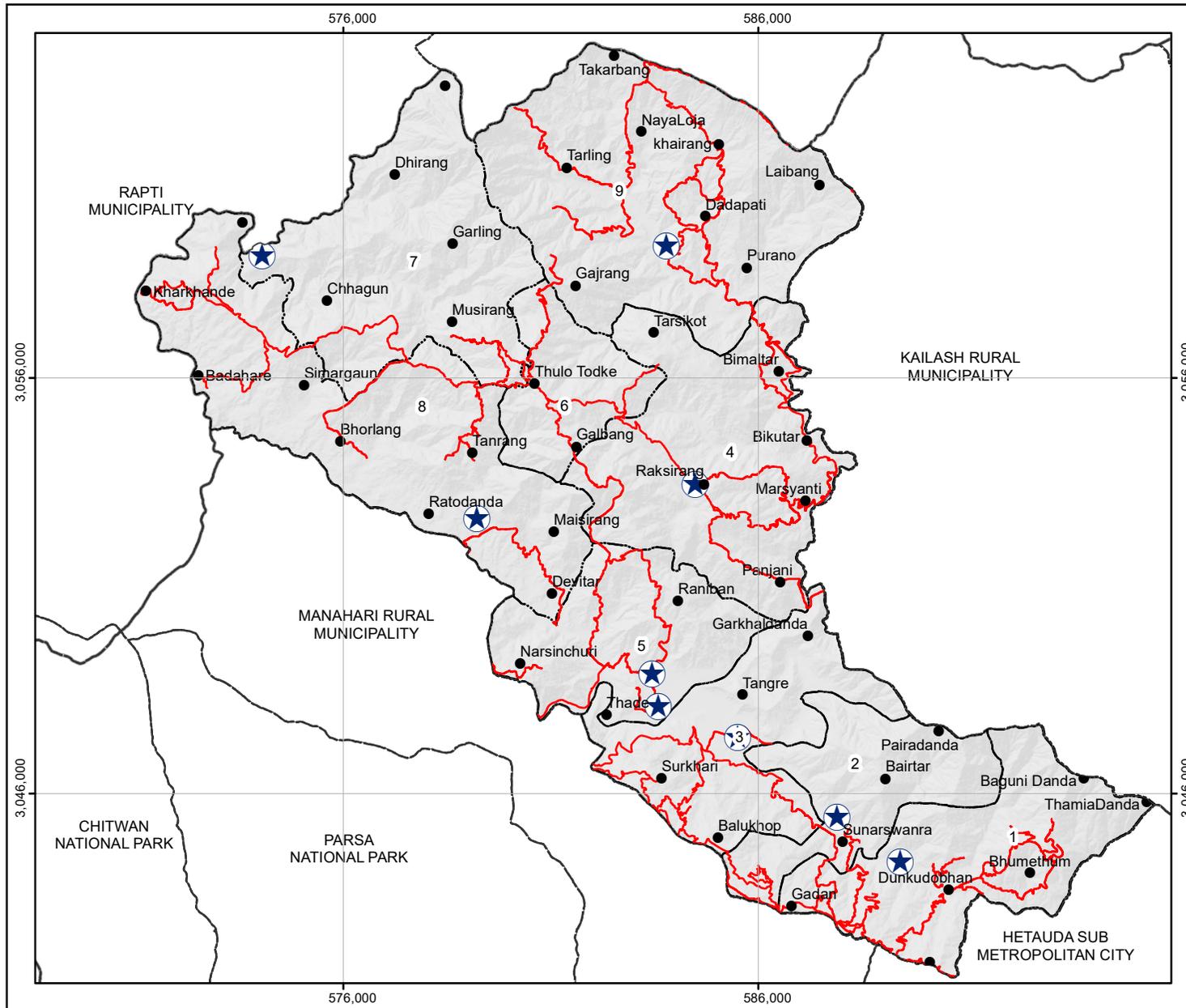
Thrusts	gl
Fault	gn
Synclinal Axis	gr
RM/Municipality Boundary	lk
District Boundary	mk
<b>Type</b>	mr
LS	pa
MS1	rb
MS2	sk
US	sp
br	ta
du	ud



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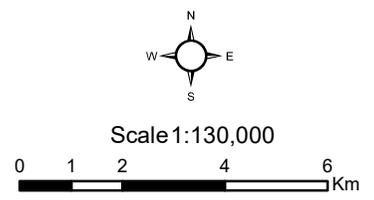
Data Source: Department of Mines and Geology.



**Legend**

- Settlement
- ★ Government Office
- Road
- - - - Ward Boundary
- - - - RM/Municipality Boundary
- District Boundary

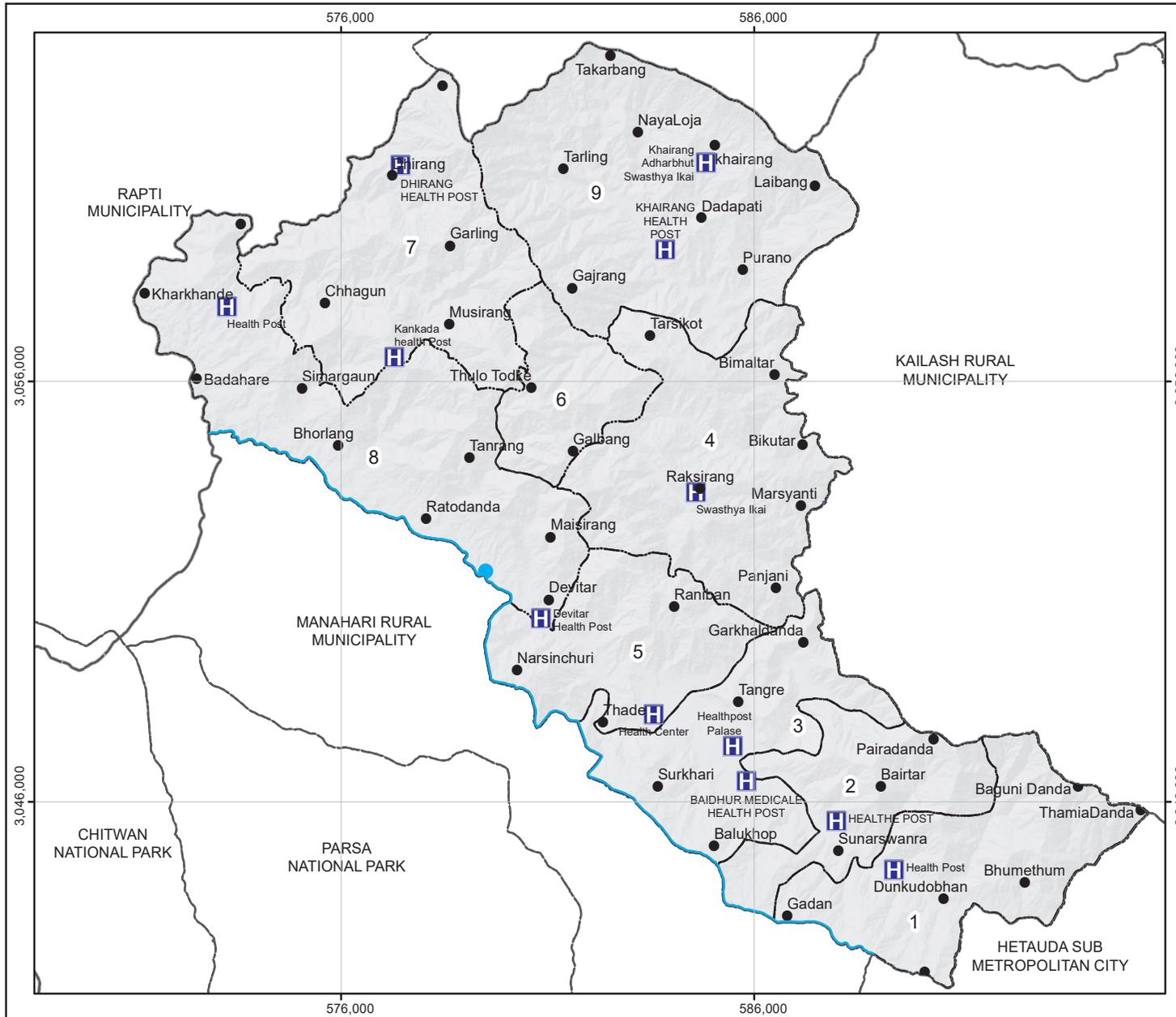
**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
 False Northing: 0 M  
 Central Meridian: 84° E  
 Scale Factor: 0.9999  
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Data Source: Boundary from Survey Department, Google Satellite Image and Field Verification 2021



**Legend**

- Settlement
- H Healthpost
- Ward Boundary
- RM/Municipality Boundary
- District Boundary

**PROJECTION AND DATUM**

Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
 False Northing: 0 M  
 Central Meridian: 84° E  
 Scale Factor: 0.9999  
 Latitude of Origin: 0°  
 Units: Meter



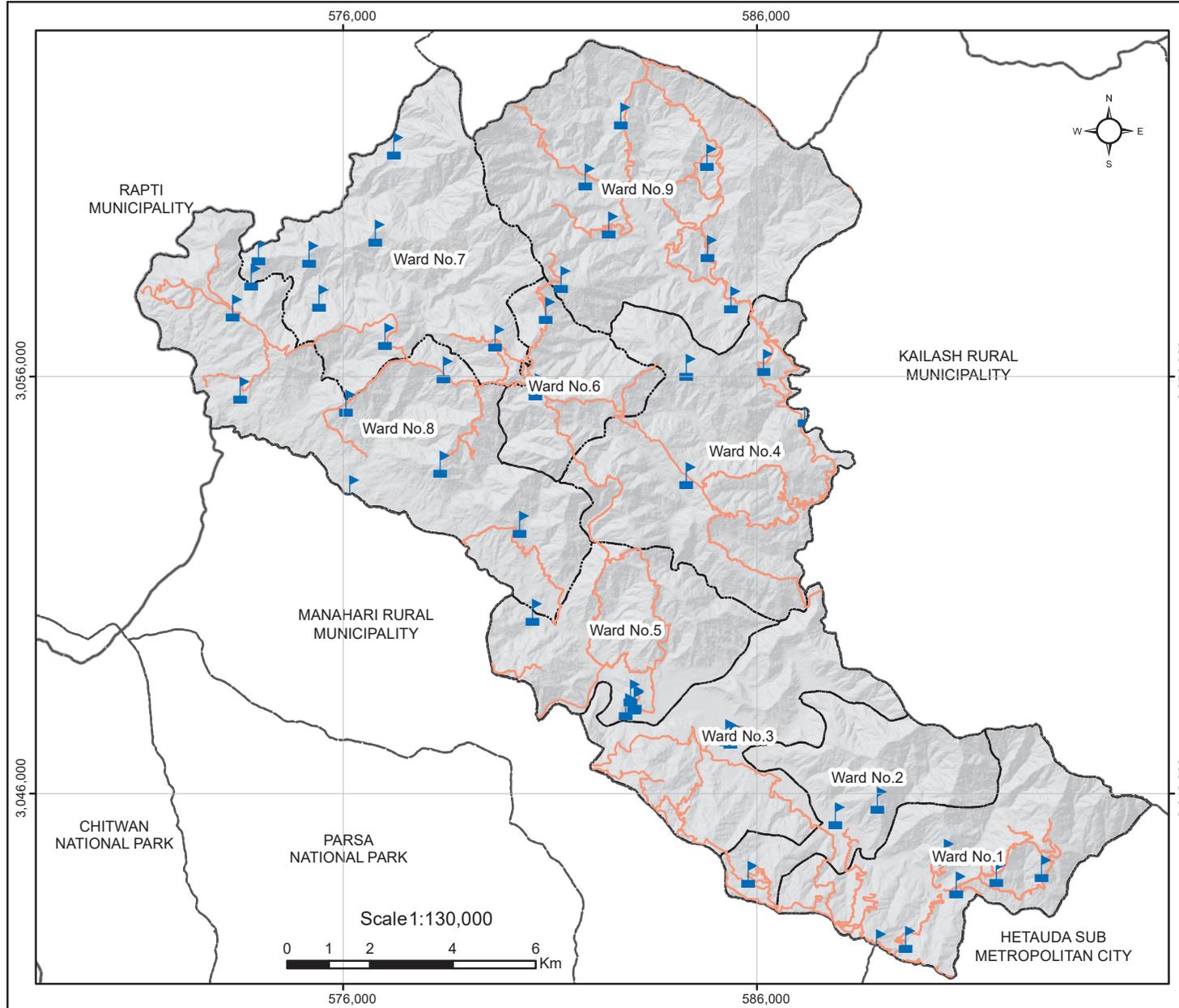
Scale 1:130,000



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Data Source: Boundary from Survey Department, Google Satellite Image and Field Verification 2021



A school is an educational institution designed to provide learning spaces and learning environments for the teaching of students under the direction of teachers.

**Legend**

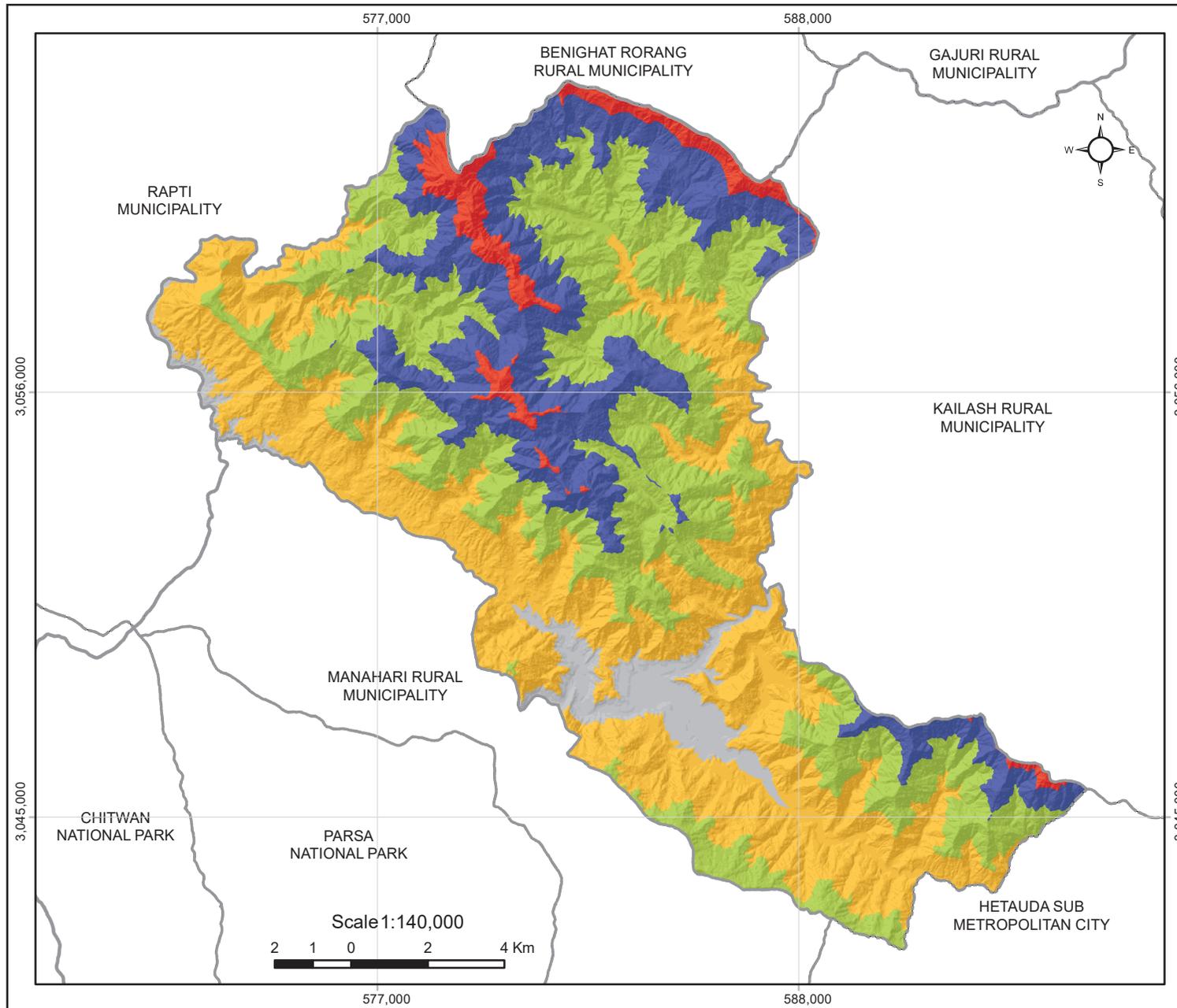
- School
- Road
- Ward Boundary
- RM/Municipality Boundary
- District Boundary

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
 False Northing: 0 M  
 Central Meridian: 84° E  
 Scale Factor: 0.9999  
 Latitude of Origin: 0°  
 Units: Meter

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Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



A Digital Elevation Model (DEM) is a 3D representation of a terrain's surface created from a terrain's elevation data.

**Legend**

- RM/Municipality Boundary
- District Boundary
- Value (Meter)**
- <400
- 400-800
- 800-1200
- 1200-1600
- >1600

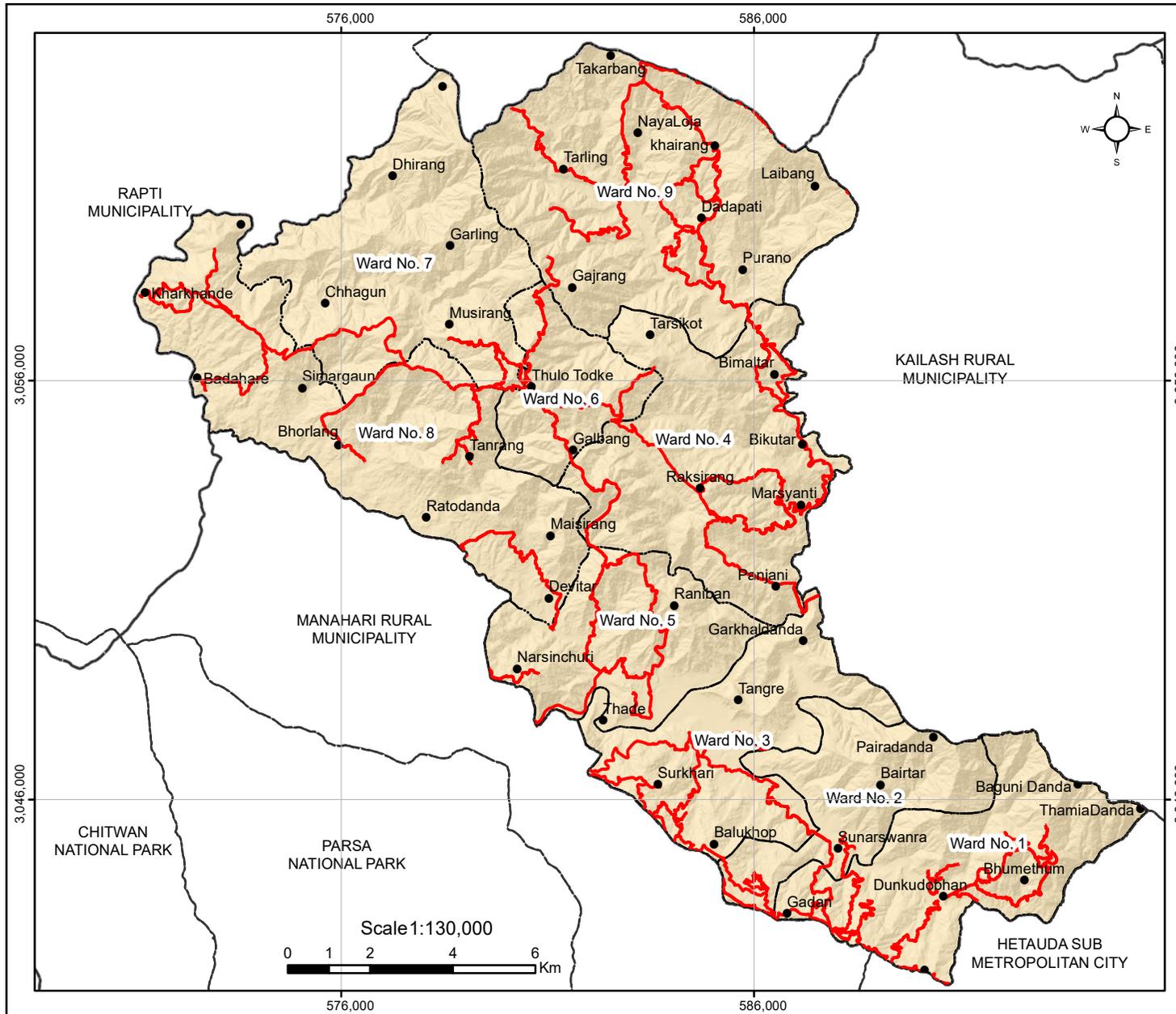
**PROJECTION AND DATUM**

Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
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 Scale Factor: 0.9999  
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Data Source: Boundary from Survey Department and Google Satellite Image



The road used for travelling between places, usually surfaced with Black top or concrete, Gravel and Earthen. Modern roads, both rural and urban, are designed to accommodate many vehicles travelling in both directions.

**Legend**

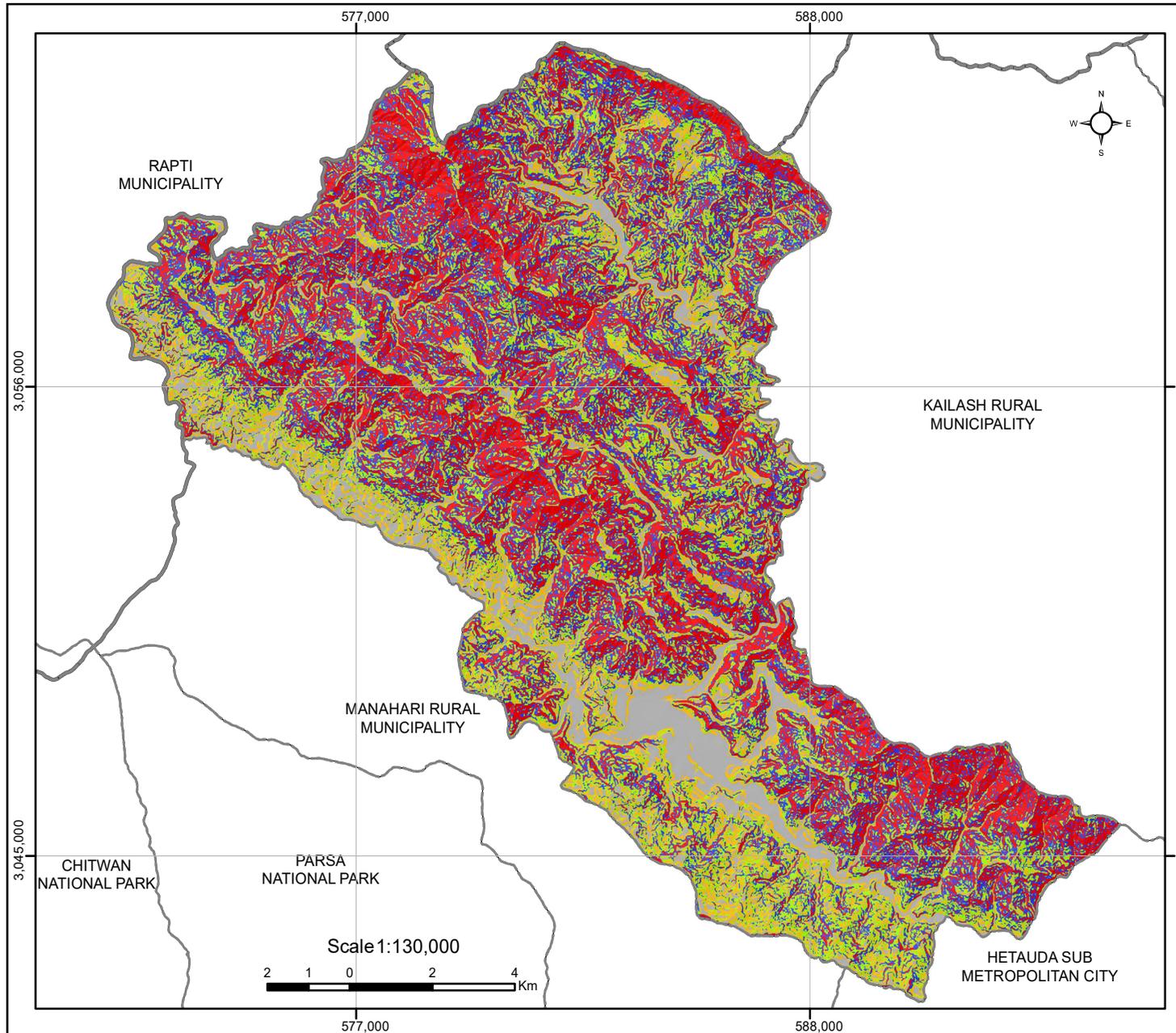
- Settlement
- Road
- - - - Ward Boundary
- - - - RM/Municipality Boundary
- District Boundary

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
 Datum: Everest 1830  
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Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



The slope of a physical feature, landform or constructed line refers to the tangent of the angle of that surface to the horizontal. It is a special case of the slope, where zero indicates horizontality. A larger number indicates higher or steeper degree of "tilt".

**Legend**

- RM/Municipality Boundary
- District Boundary

**Slope (Degree)**

- <10
- 10-20
- 20-30
- 30-40
- >40

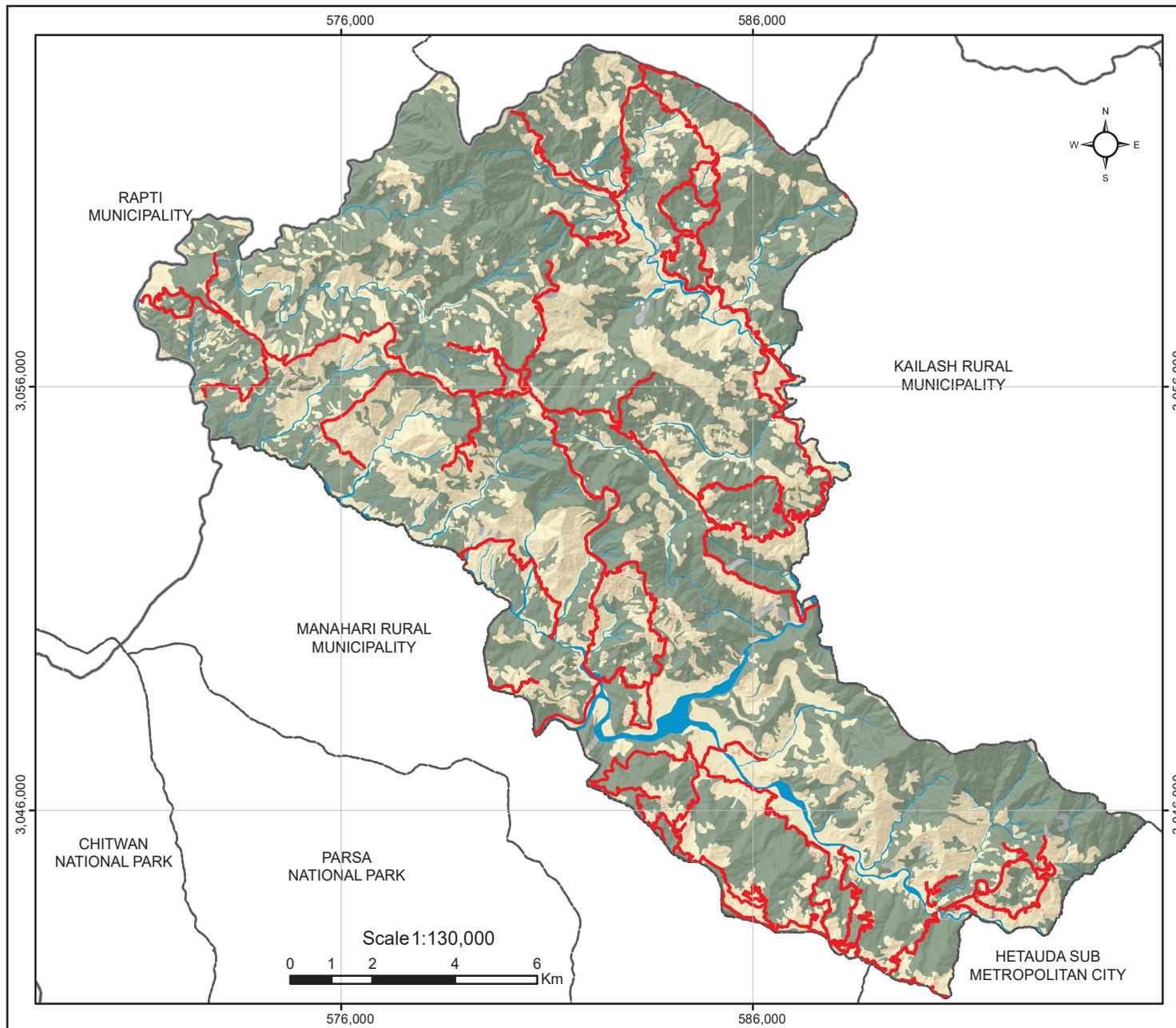
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Data Source: Boundary from Survey, Google Satellite Image



Land management encompasses all activities associated with the management of land and natural resources that are required to achieve sustainable development. The concept of land includes properties and natural resources and thereby encompasses the total natural and built environment. Land use involves the management and modification of natural environment into built environment such as settlements and semi-natural habitats, arable fields, pastures, and managed woods

**Legend**

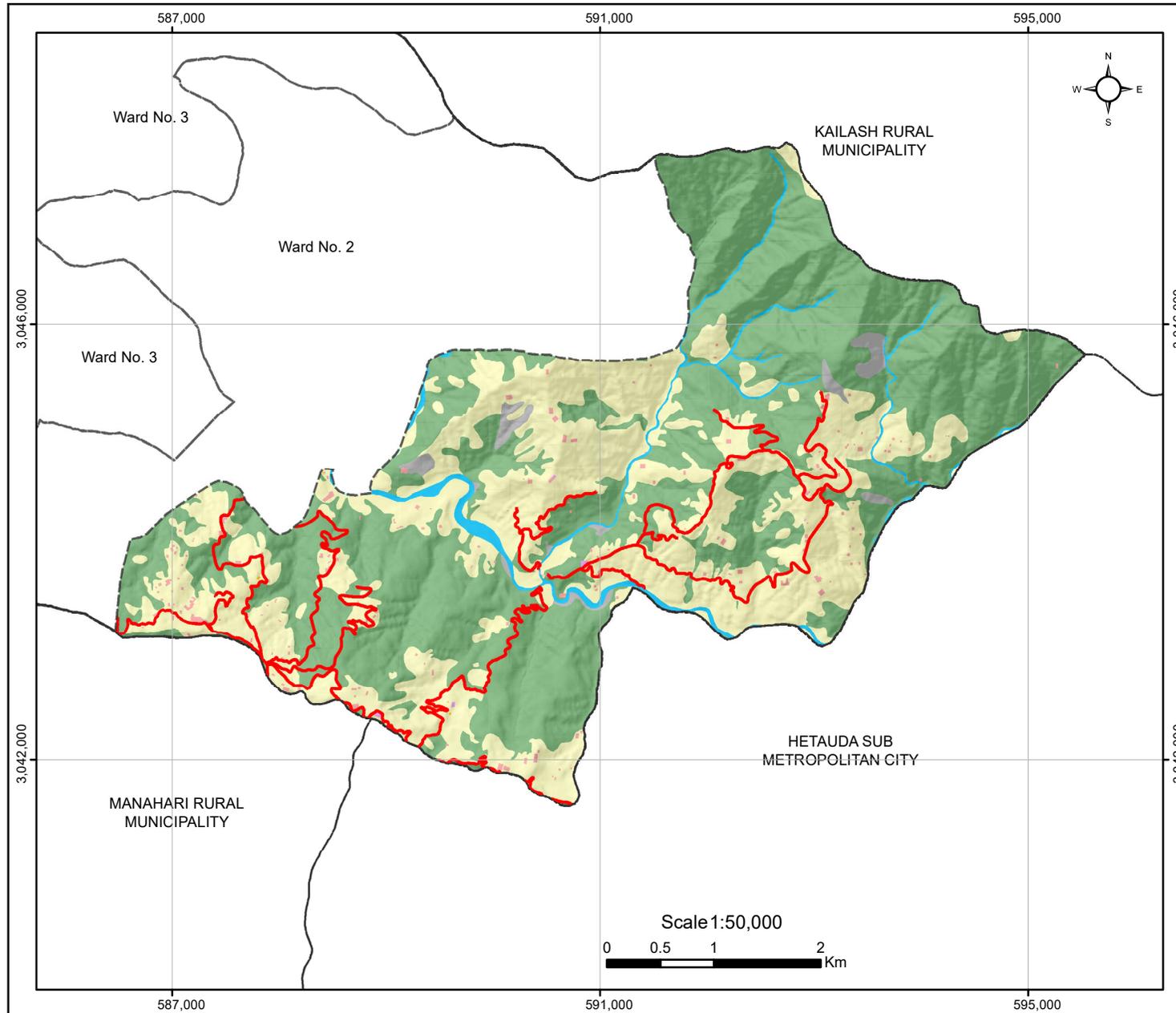
- |                          |                |
|--------------------------|----------------|
| Road_Network             | Forest         |
| RM/Municipality Boundary | Water Body     |
| District Boundary        | Industrial     |
| Agriculture              | Mine & Mineral |
| Commercial               | Other          |
| Cultural                 | Public Use     |
|                          | Residential    |

**PROJECTION AND DATUM**

Projection: Transverse Mercator  
Datum: Everest 1830  
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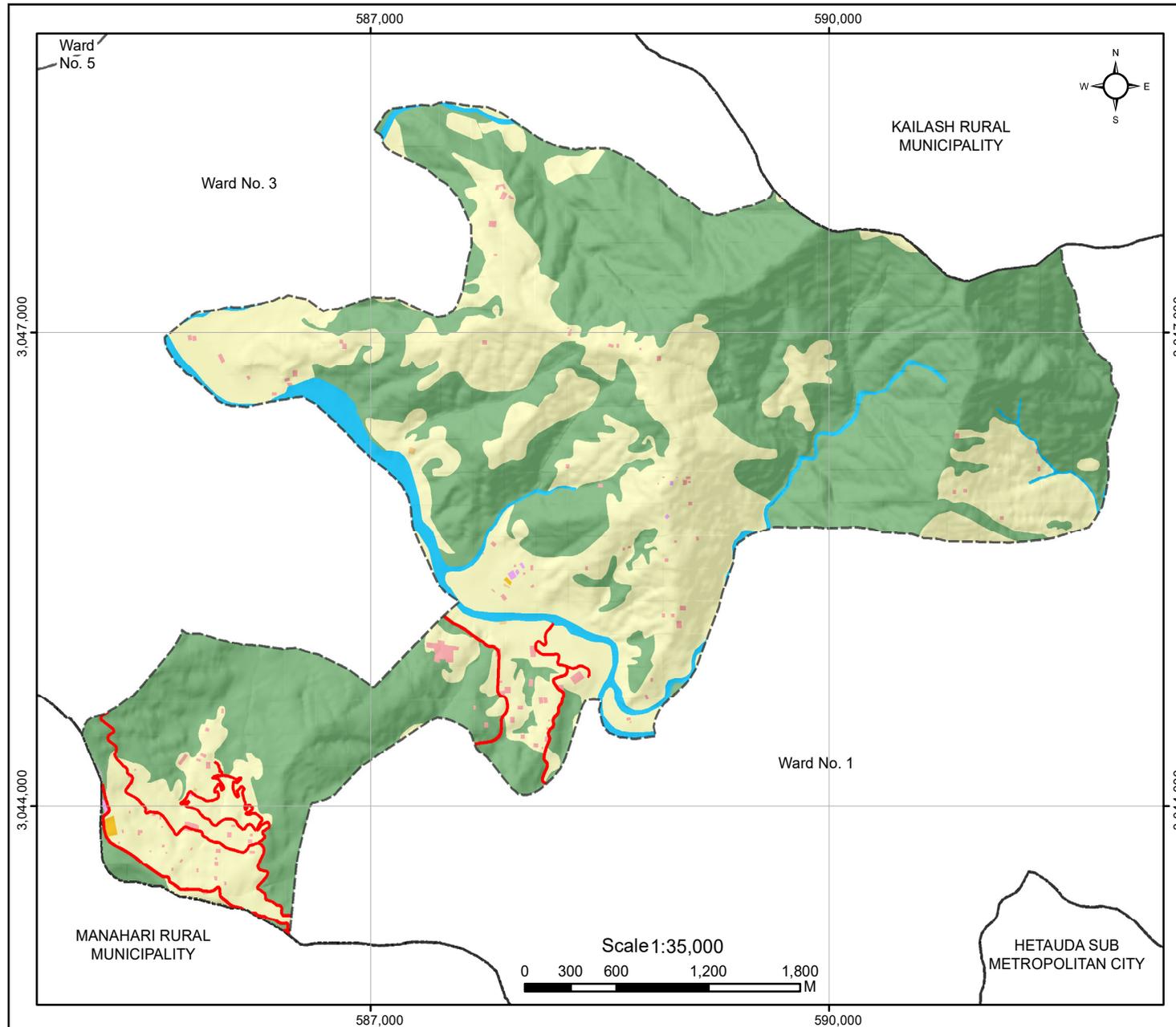
Legend	
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	
Agriculture	Mine & Mineral
Commercial	Public Use
Cultural	Residential

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
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**Legend**

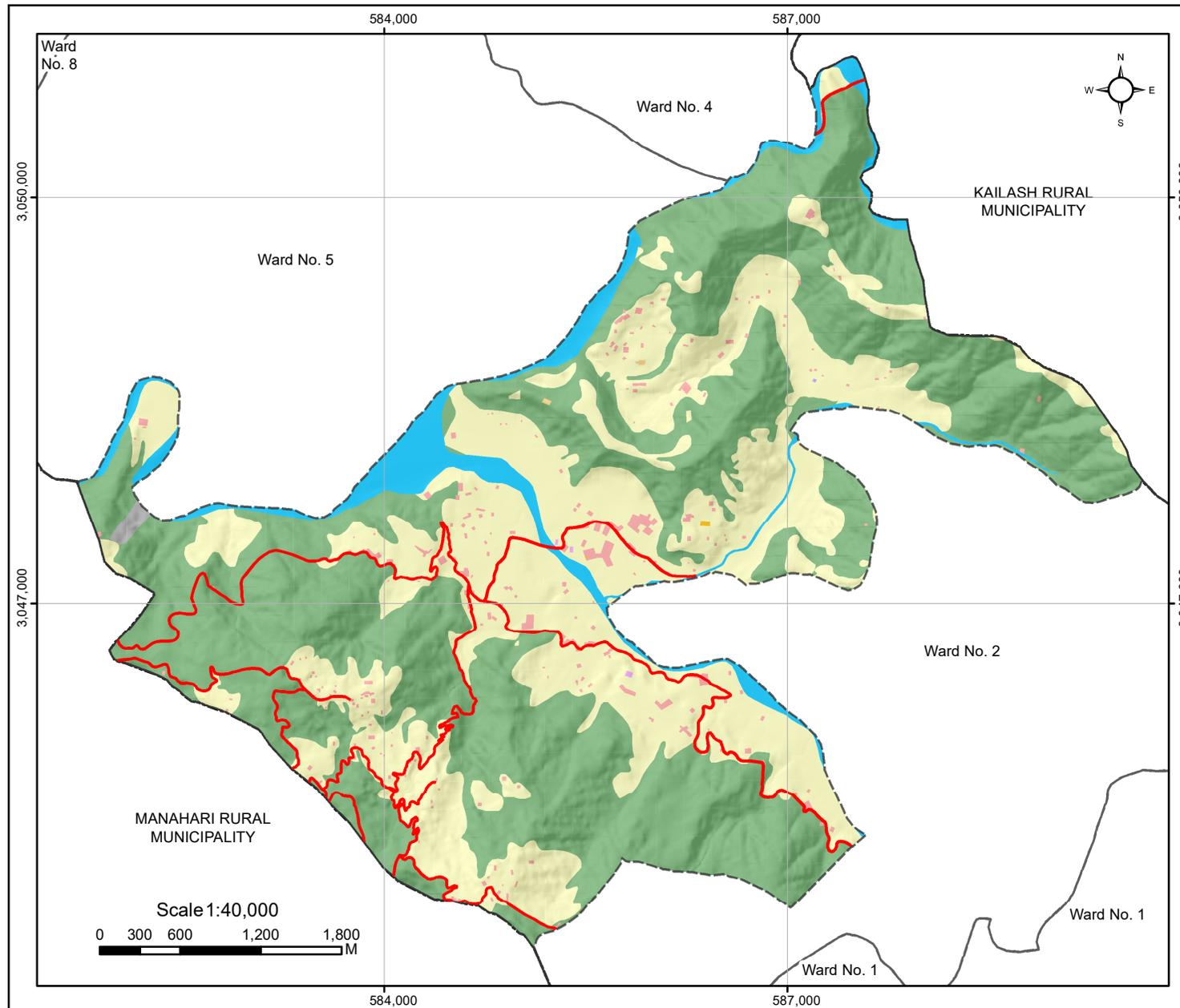
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	Mine & Mineral
Agriculture	Other
Commercial	Public Use
Cultural	Residential

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
 Datum: Everest 1830  
 False Easting: 500,000 M  
 False Northing: 0 M  
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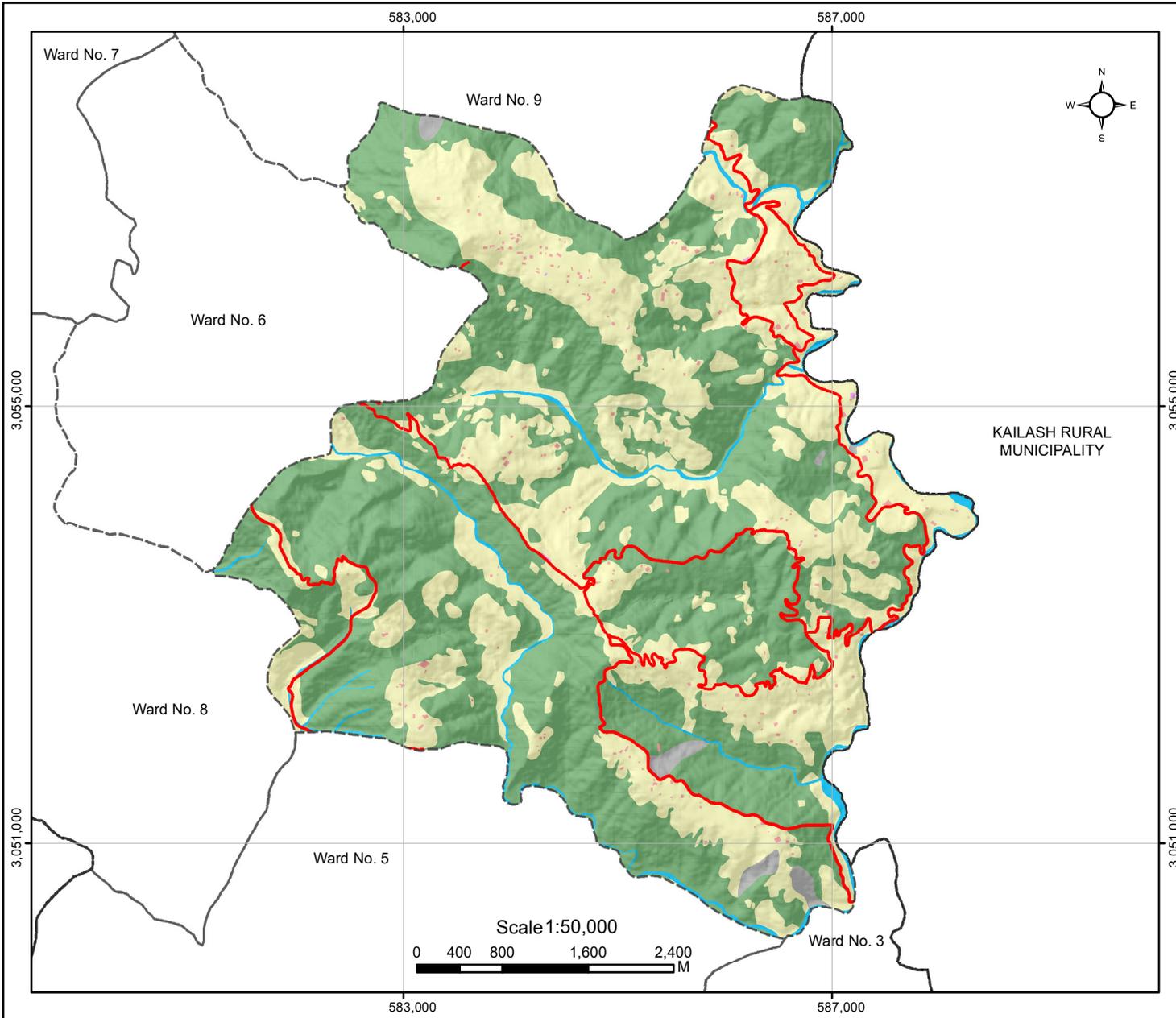
Legend	
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
Agriculture	Mine & Mineral
Commercial	Other
Cultural	Public Use
	Residential

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
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**Legend**

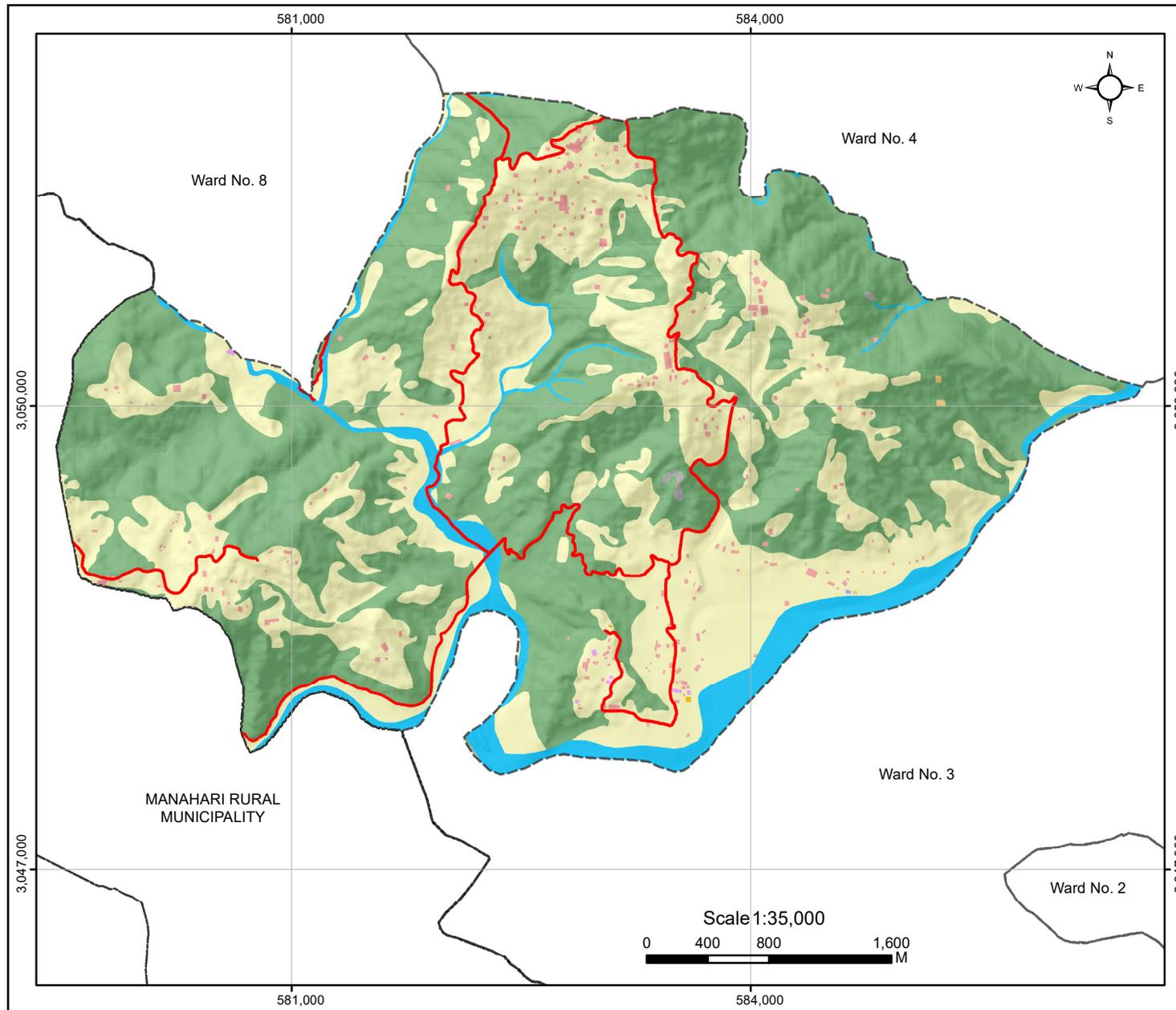
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	Mine & Mineral
Agriculture	Other
Commercial	Public Use
Cultural	Residential

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
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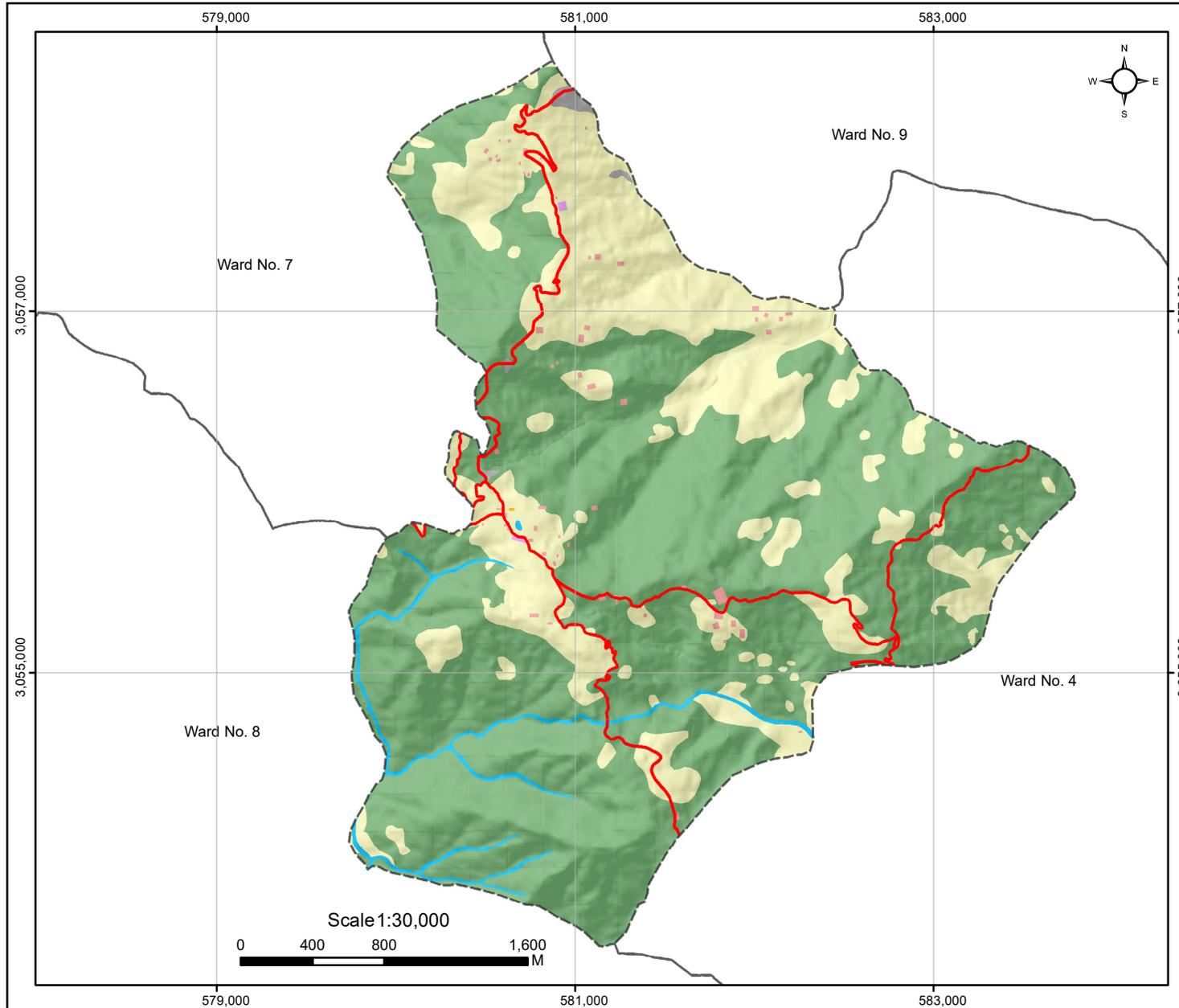
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	Mine & Mineral
Agriculture	Other
Commercial	Public Use
Cultural	Residential

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
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**Legend**

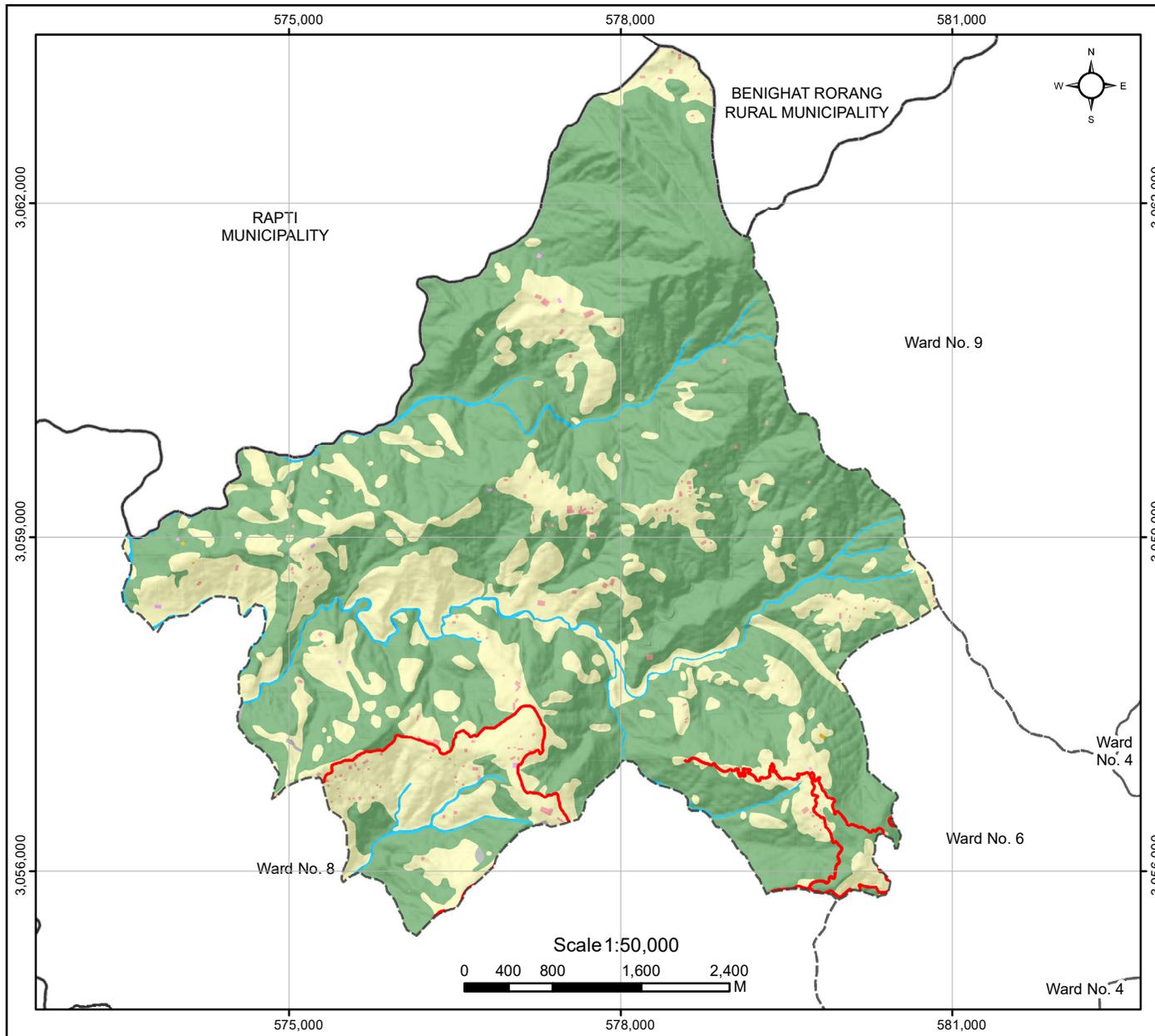
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	Mine & Mineral
Agriculture	Other
Commercial	Public Use
Cultural	Residential

**PROJECTION AND DATUM**  
 Projection: Transverse Mercator  
 Datum: Everest 1830  
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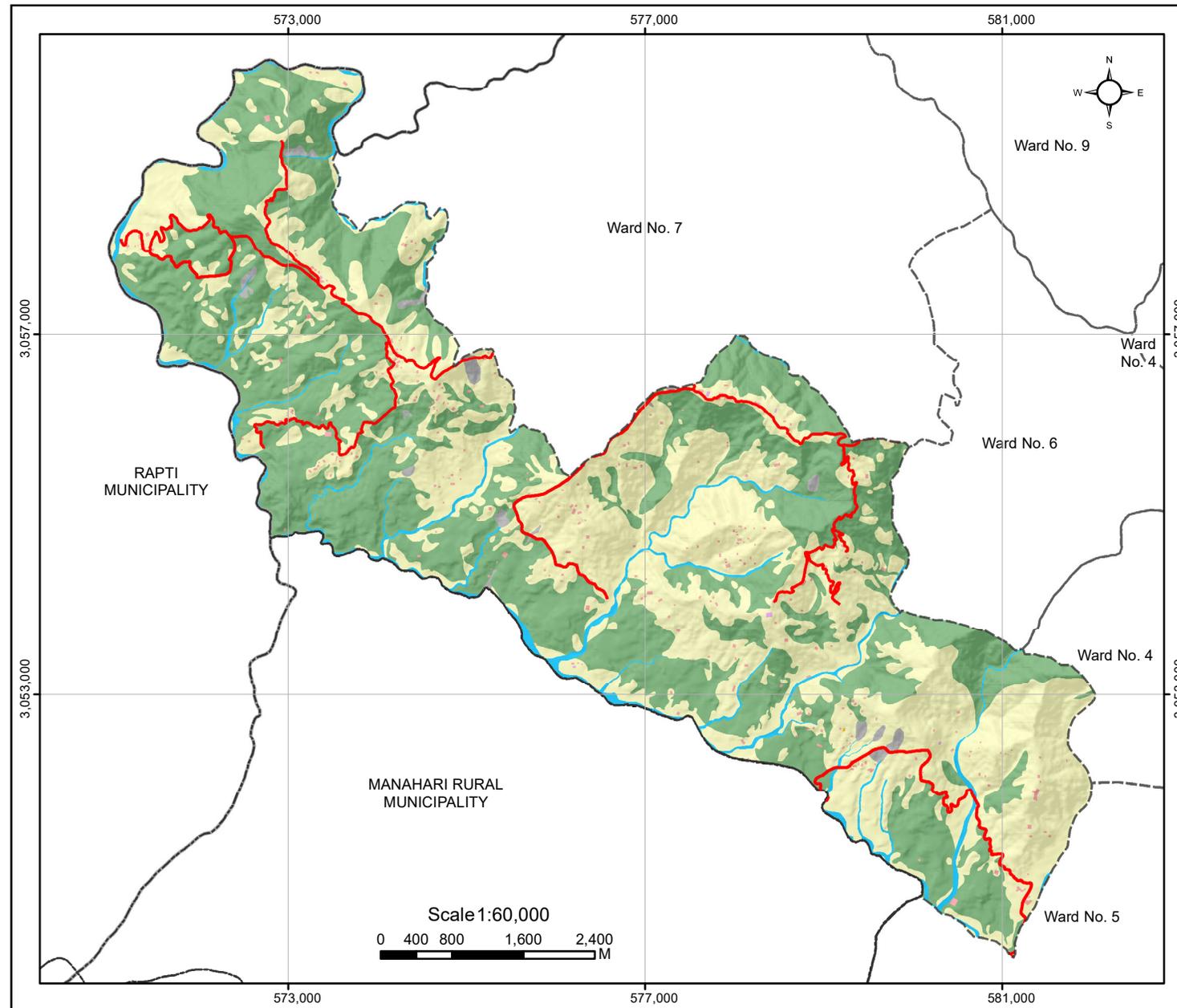
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	Mine & Miniral
Agriculture	Other
Commercial	Public Use
Cultural	Residential

**PROJECTION AND DATUM**  
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**Legend**

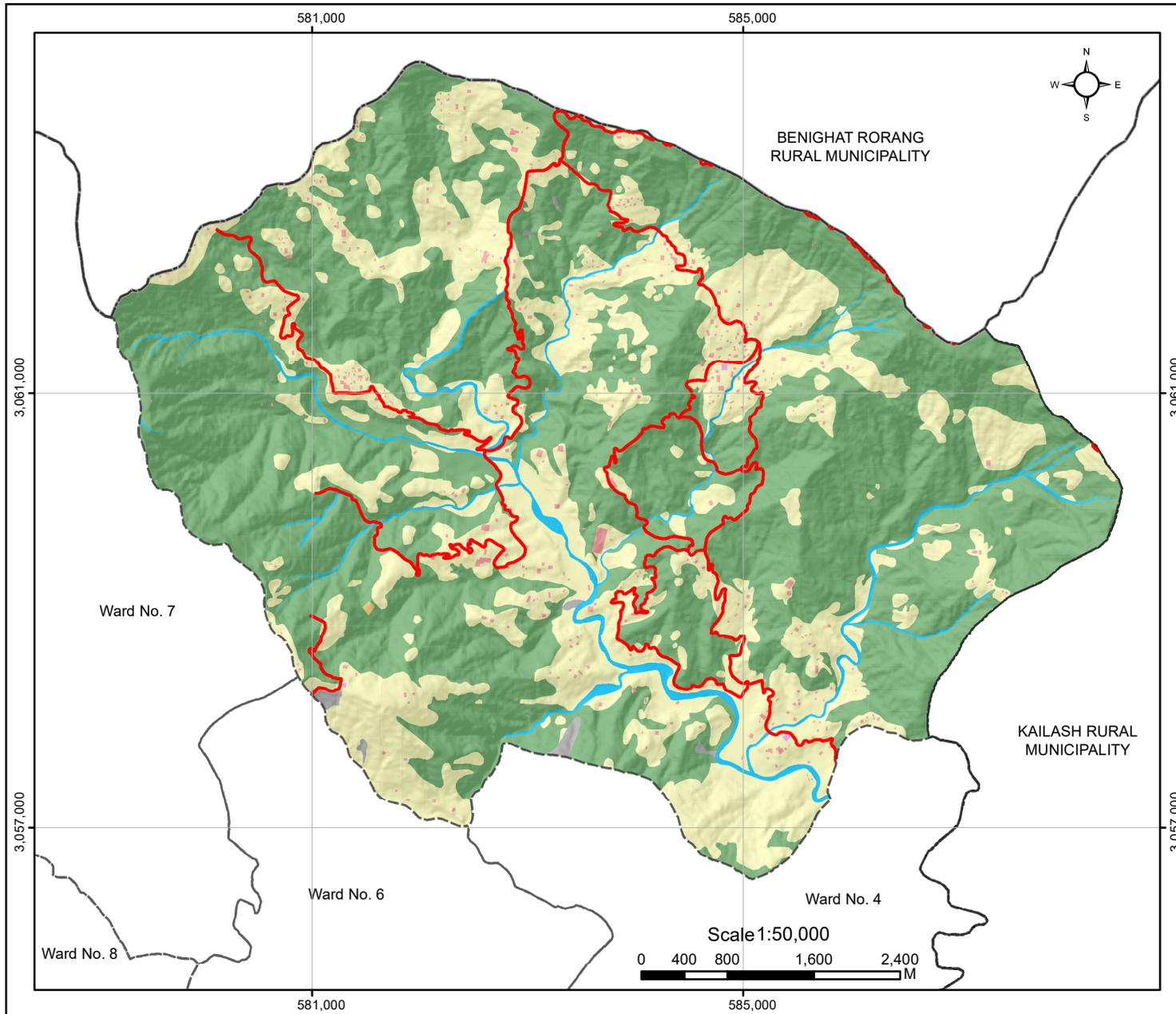
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	Mine & Mineral
Agriculture	Other
Commercial	Public Use
Cultural	Residential

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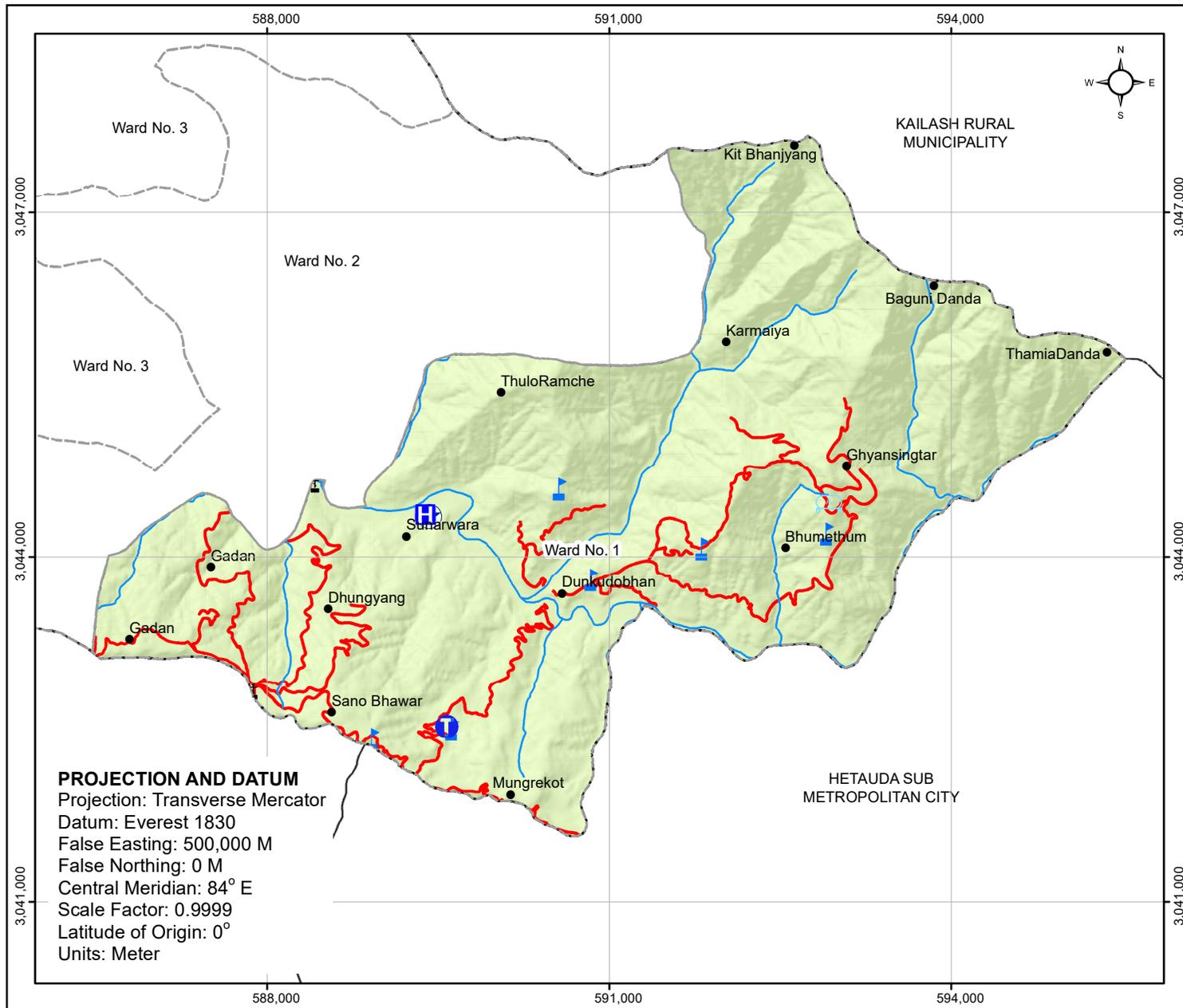
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Legend	
Road_Network	Forest
RM/Municipality Boundary	Water Body
District Boundary	Industrial
<b>Landuse Type</b>	
Agriculture	Residential
Commercial	Public Use
Cultural	Other
	Mine & Mineral

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### Legend

● Settlement	🏠 Hotel
<b>Institution</b>	🏭 Industry
🚰 Bridge	🏥 Medical
🚌 Bus Park	🌳 Park
⛪ Church	🎡 Play Ground
📡 Communication	🚓 Police Post
★ Community	🎓 School
Ⓢ Cooperative	🚰 Tank
🏛️ Government Office	📶 Tower
🏠 Health Post	📡 View Tower

	River
	Road
	Ward Boundary
	RM/Municipality Boundary
	District Boundary

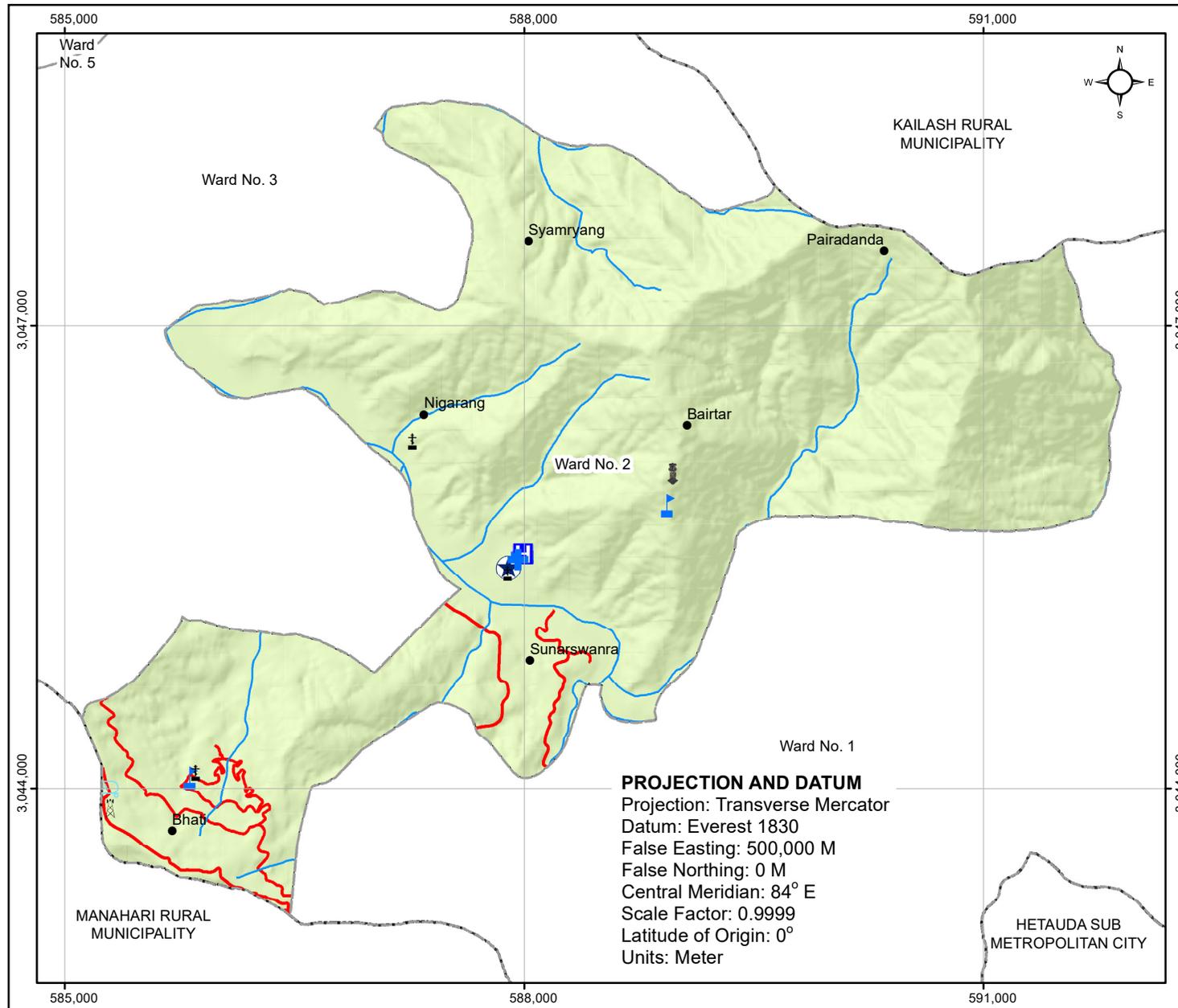


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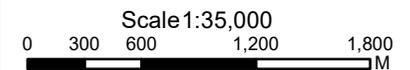


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**Legend**

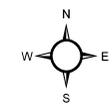
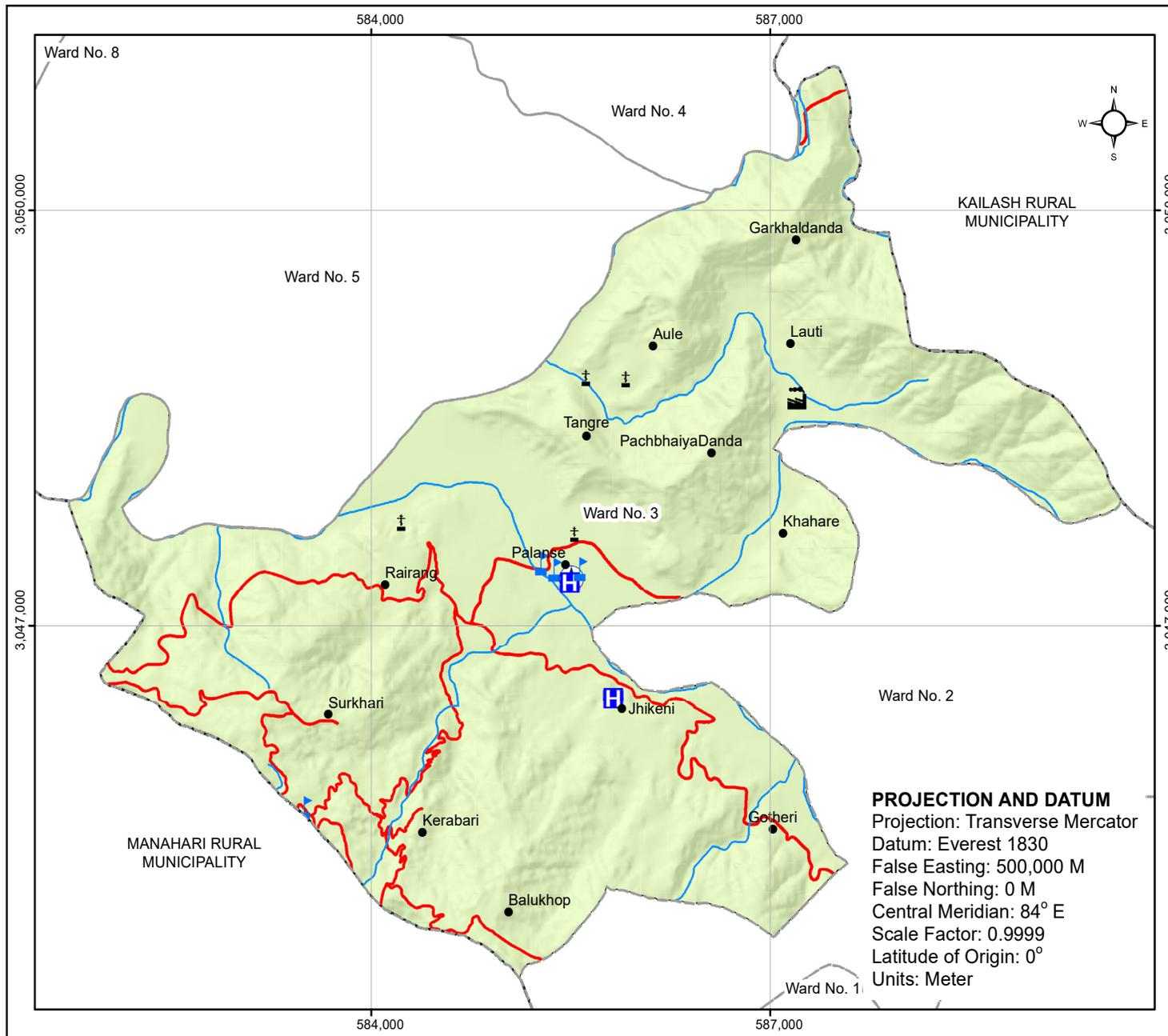
- Settlement
- 🏠 Hotel
- Institution
- 🏭 Industry
- 🚰 Bridge
- ⚕ Medical
- 🚌 Bus Park
- ⛪ Church
- 🌳 Park
- 📡 Communication
- 🎡 Play Ground
- ★ Community
- 🚓 Police Post
- 🏠 Cooperative
- 🎓 School
- 🏛 Government Office
- 🚰 Tank
- 🏠 Health Post
- 📡 Tower
- 📡 View Tower

- River
- Road
- - - - Ward Boundary
- - - - RM/Municipality Boundary
- - - - District Boundary



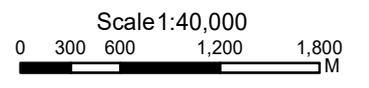
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- ### Legend
- Settlement
  - Bridge
  - Bus Park
  - Church
  - Communication
  - ★ Community
  - Cooperative
  - Government Office
  - Health Post
  - Hotel
  - Industry
  - Medical
  - Park
  - Play Ground
  - Police Post
  - School
  - Tank
  - Tower
  - View Tower

- River
- Road
- Ward Boundary
- RM/Municipality Boundary
- District Boundary

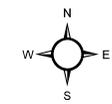
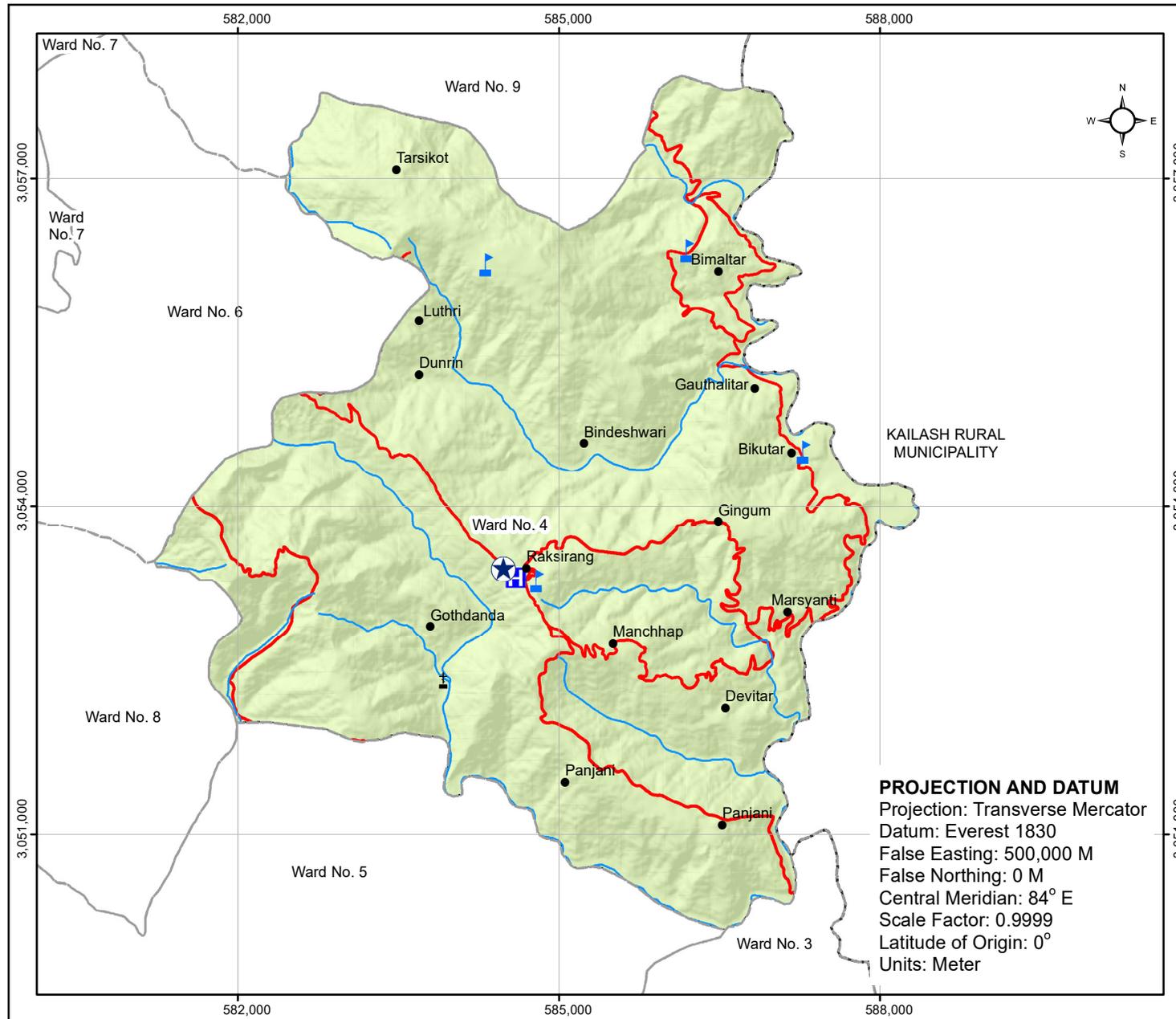


**PROJECTION AND DATUM**  
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 False Northing: 0 M  
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 Scale Factor: 0.9999  
 Latitude of Origin: 0°  
 Units: Meter

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Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



**Legend**

- |                     |               |
|---------------------|---------------|
| ● Settlement        | 🏠 Hotel       |
| 🏢 Institution       | 🏭 Industry    |
| 🚰 Bridge            | 🏥 Medical     |
| 🚌 Bus Park          | 🌳 Park        |
| ⛪ Church            | 🎡 Play Ground |
| 📡 Communication     | 🚔 Police Post |
| ★ Community         | 🎓 School      |
| 🏘 Cooperative       | 🚰 Tank        |
| 🏛 Government Office | 🗼 Tower       |
| 🏠 Health Post       | 📡 View Tower  |

- River
- Road
- Ward Boundary
- RM/Municipality Boundary
- District Boundary

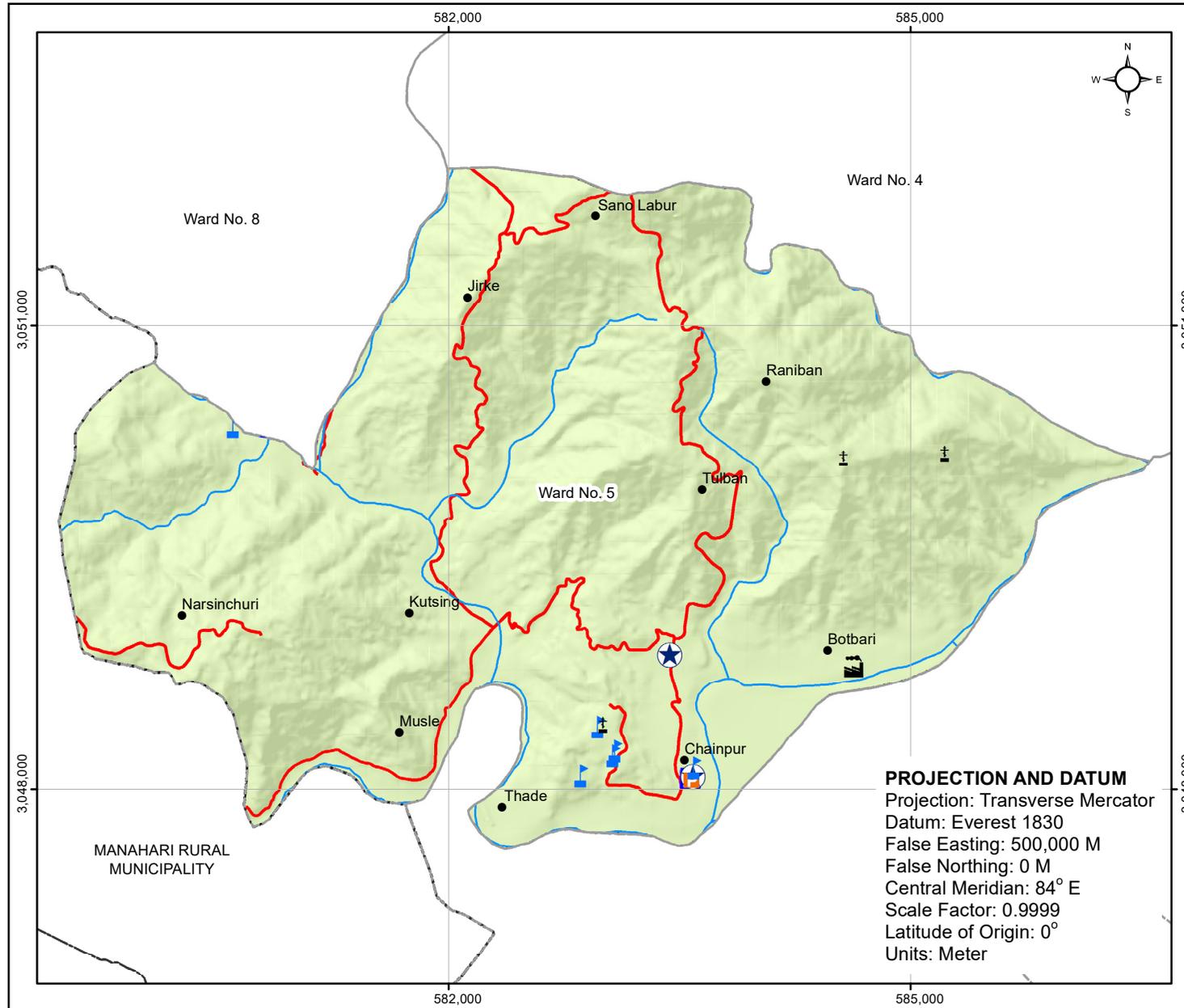


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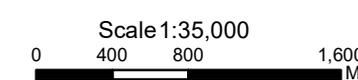
Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



**Legend**

- Settlement
- Bridge
- Bus Park
- Church
- Communication
- ★ Community
- ⊙ Cooperative
- ★ Government Office
- Health Post
- Hotel
- Industry
- Medical
- Park
- Play Ground
- Police Post
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- Tank
- Tower
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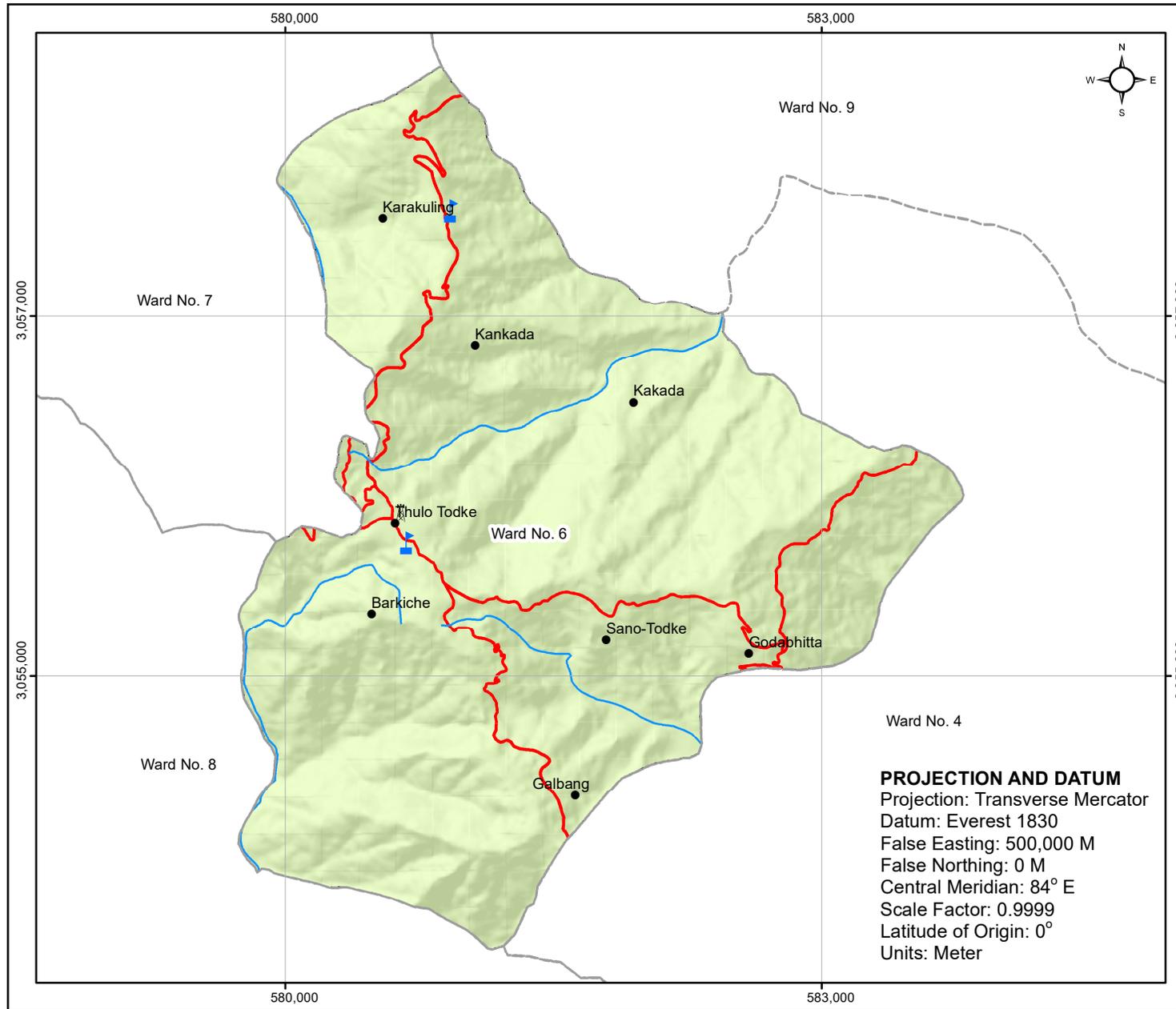


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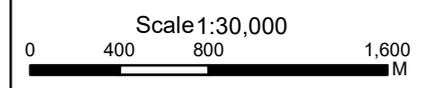


Data Source: Boundary from Survey Department, Google Satellite Image, OSM and Field Verification 2021



- ### Legend
- |                      |               |
|----------------------|---------------|
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- River
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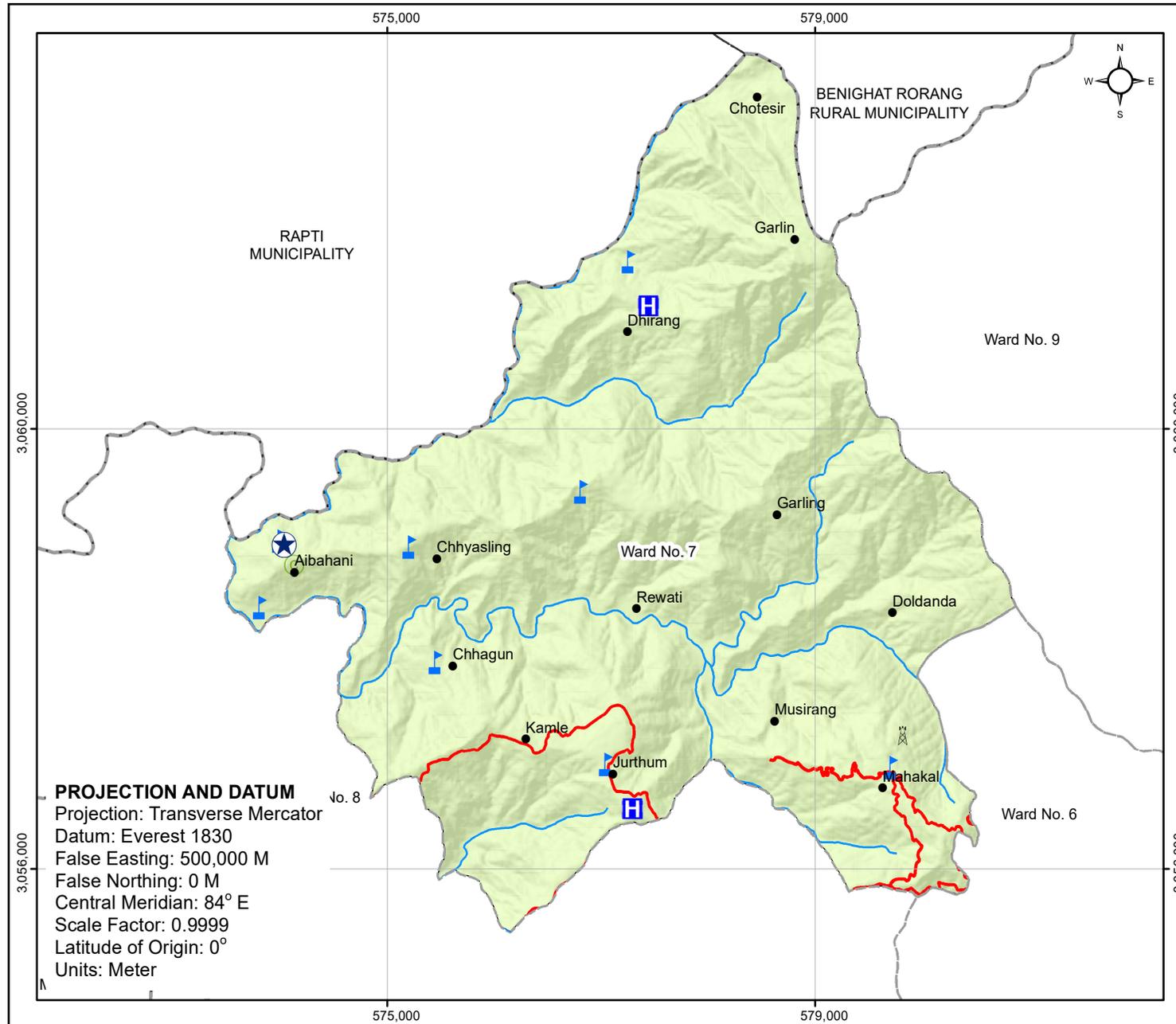


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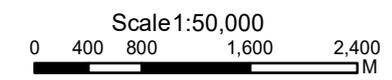


### Legend

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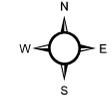
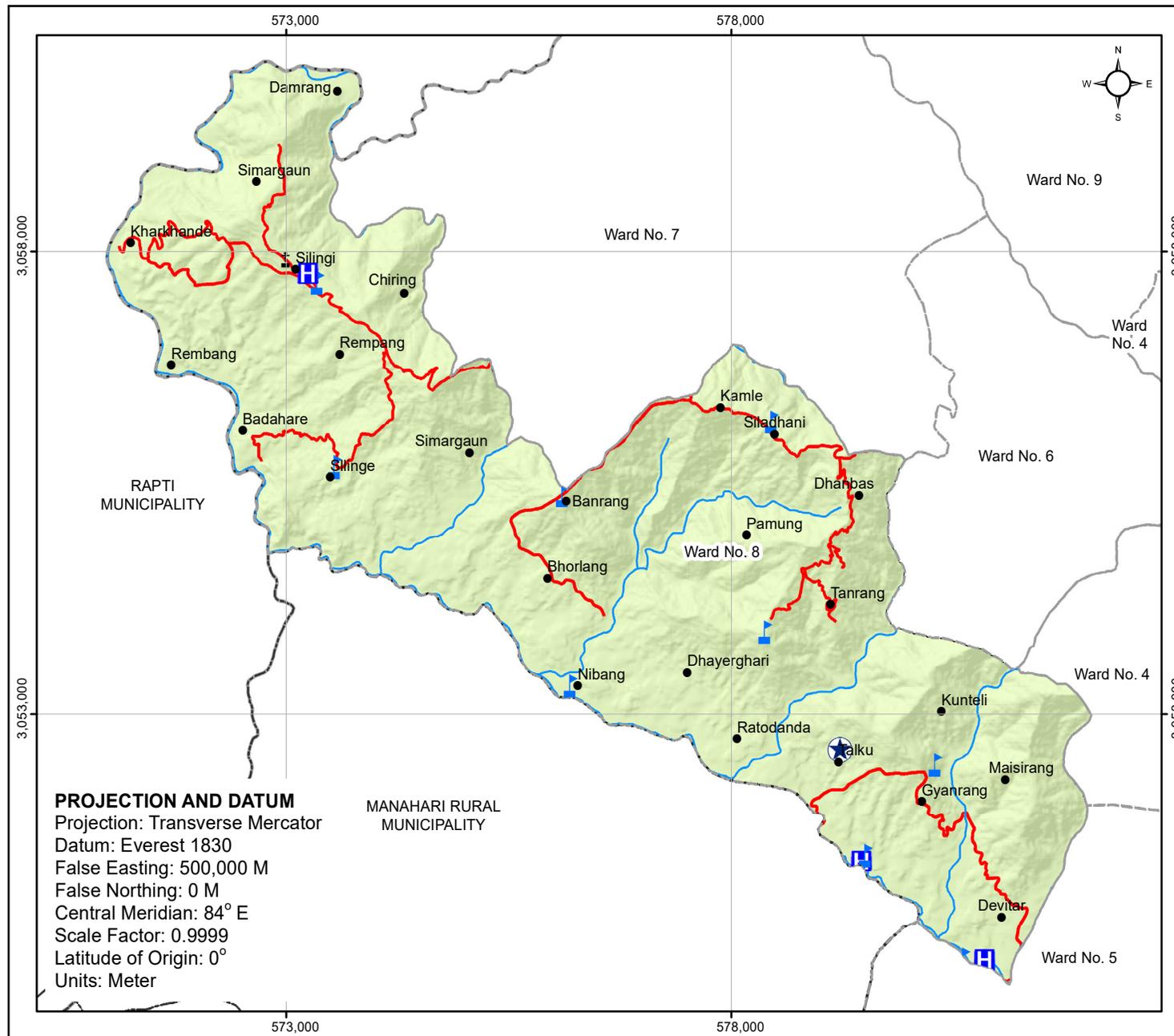


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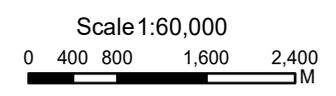
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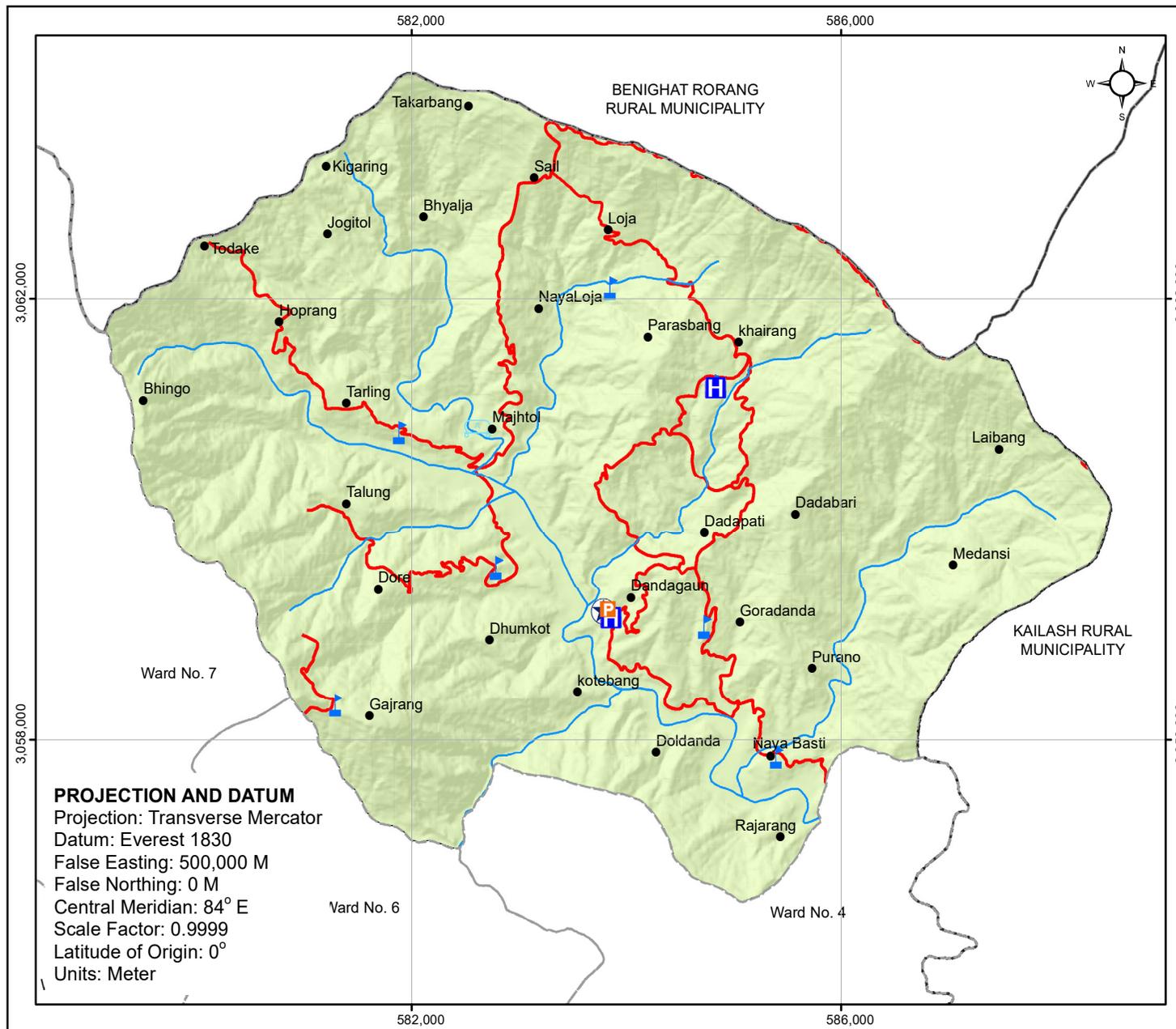


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Scale 1:50,000

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# RESULTS

## Results: Data Collected from the field

- Total Number of household survey : 302
- Governance: 14
- Educational Institutions: 37
- Banking and finance: 14
- Health Facility: 14
- Culture: 14

## Result: Demography

Gender ratio

Average annual income: 400.95 USD  
 Highest income yearly : 1000 USD  
 Lowest income yearly: 41.62 USD

Major Occupation

Labor Works	16.6%
Household	16.6%
Business	6.6%
Agriculture	60.3%

Religion

None	8.9%
Hinduism	8.3%
Christianity	82.8%

## Result: Education

Literacy Rate: 33.9%

Total Number of Children: 733  
 Number of Children Going to School: 576

Out of 302 families 250 of them have drop-out members

Reason behind drop-out

Primary level	77%
Lower Secondary level	23%

Not interested to attend school	8%
Inaccessible school	3%
Engaged in household	42%
Lack of income	47%

## Result: Health and Sanitation

Health post

Health post	42
Shaman and Christian priest	8

Walkable distance to nearest health facilities

0-30 minute	37
30-60 minute	7

Sanitation

Total Family	302
Access to Latrine	179
No Latrine	120

The main reason behind lack of latrine is due to poverty and free open space.

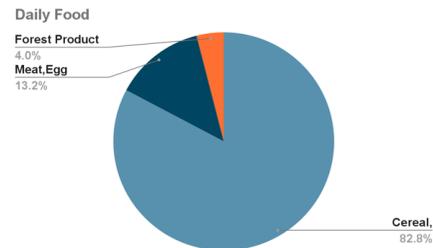
# RESULTS



## Food and drinking water



Major food consumed	
Cereal, Vegetable only	250 families
Cereal, Vegetable, flour, Meat, egg(rarely)	40 families
Forest product only	12 families

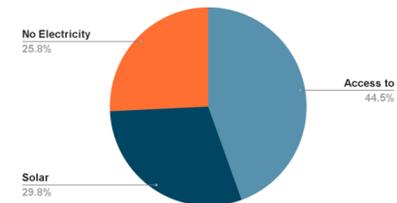


## Result: Energy



Access to Hydropower	133
Solar	89
No Electricity	77

Energy Sources



The major source of cooking fuel in the community is firewood

# PHOTO GALLERY



Figure 1: Group photo of Field Volunteers



Figure 2: Field volunteers with Chepang family



Figure 3: Visit to Chepang household



Figure 4: Sharing smile with Chepang children



Figure 5: Introducing HOTA to Chepang household



Figure 6: Map verification in presence of Ward chief



Figure 11: Coordination with Youthmappers



Figure 12: In frame: Field volunteers with Chepang family

# TEAM MEMBERS



Dr. Subash Ghimire  
Advisor



Dr. Reshma Shrestha  
Advisor



Mr. Uma Shankar Panday  
Advisor



Mr. Sudeep Kuikel  
Advsiors



Mr. Rabi Shrestha  
Project Lead



Mr. Yukesh Byanjankar  
Project Co-Lead

# TEAM MEMBERS



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Ms. Pragya Pant  
Mapathon Analyst



Ms. Rojina Dhakal  
Treasurer



Mr. Jenish Chauhan  
Research and Documentation Ana-  
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Mr. Ashok Thakulla  
Program Coordinator



Mr. Aayush Mahata  
Graphic Designer

# TEAM MEMBERS



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Active member



Mr. Kundan Grodar  
Active member



Mr. Ashim Shrestha  
Active member



Mr. Ashish Dutta  
Active member



Mr. Aadarsh Dhakal  
Active Member



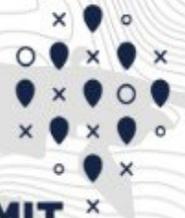
Mr. Aarogya Pandey  
Active Member

# TEAM MEMBERS



Mr. Cecil Ghimire  
Mapbook Designer

## The Evolution of Local Humanitarian Open Mapping Ecosystems: Understanding Community, Collaboration, and Contribution



VIRTUAL SUMMIT

22 NOVEMBER 2021

#HOTSummit2021



*"We are glad that besides this pandemic and unfavorable weather condition in Nepal, we have managed to go to Raksirang and Kailash Rural Municipality and acquired plenty of distributed data. Our team of 12 members were able to track more than 600 kms of GPS traces and reach out to 300+ Chepang households, 14 Governmental, 37 educational institutions, 14 financial institutions, health facilities and cultural points."*



Yukesh Byanjarar & Rabi Shrestha, Geomatics Engineering Society

Mapping Indigenous nomads: Chepang Community